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AIRCREW TRAINING MANUAL
ATTACK HELICOPTER, AH-1

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PREFACE

This manual provides specific guidelines for executing AH-1 aircrew training. It is based on the battle-focused training principles outlined in FM 25-101. Used with TC 1-210, this manual will help aviation commanders at all levels develop a comprehensive aircrew training program. It encompasses individual and collective training and establishes crew member qualification, refresher, mission, and continuation training requirements.

Planning, preflight, and in-flight tasks involve the cooperative effort of all crew members. The prescribed tasks, conditions, standards, and descriptions explain each crew member's responsibilities for the successful completion of maneuvers. Each crew member must understand the actions and directives of the other crew members. This enhances crew coordination and unit interoperability and helps prevent accidents caused by human error.

The crew coordination descriptions in Chapter 6 do not focus exclusively on individual training. Instead, they blend individual training with collective training and provide a link to field manuals, ARTEP mission training plans, and other doctrinal and training material. The goal is to develop cohesive, battle-rostered, combat-ready AH-1 crew members.

This manual applies to unit commanders, trainers, evaluators, maintenance test pilots, and crew members who operate AH-1 aircraft. The ATMs are basic documents that standardize aircrew training programs and flight evaluation procedures. By using the ATMs, commanders ensure that individual crew member and aircrew proficiency is commensurate with their units' mission. They also ensure that aircrews routinely employ standard techniques and procedures. Unit commanders must provide specific guidance for implementing the training outlined in this manual.

TM 55-1520-234-10 or TM 55-1520-236-10 contains aircraft operating procedures. If differences exist between the maneuver descriptions in the technical manual and this manual, this manual is the governing authority for training and flight evaluation purposes. Implementation of this manual conforms to AR 95-1, AR 95-3, and TC 1-210. If a conflict exists between this manual and TC 1-210, TC 1-210 takes precedence.

The proponent of this publication is HQ TRADOC. Send comments and recommendations on DA Form 2028 through the aviation unit commander to Commander, US Army Aviation Center, ATTN: ATZQ-TDI, Fort Rucker, AL 36362-5263.

This publication implements portions of STANAG 3114 (Edition Six)/Air Standard 60/16, Aeromedical Training of Flight Personnel.

Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.

This publication has been reviewed for operations security considerations.

CHAPTER 1

INTRODUCTION

This ATM describes the training requirements for AH-1 aviators and aircrews. It will be used with AR 95-1, AR 95-3, AR 600-105, AR 600-106, NGR 95-210, TC 1-210, and other applicable publications. The tasks in this ATM enhance training in individual and aircrew proficiency. This training focuses on the accomplishment of tasks that support the unit's mission. The scope and level of training to be achieved individually by aviators and collectively by aircrews will be dictated by the METL. The commander must ensure that aircrews are proficient in mission-essential tasks.

1-1. CREW STATION DESIGNATION

The commander will designate a crew station (backseat and/or front seat) for each aviator. The aviator will perform all in-flight duties and be evaluated during all hands-on performance tests in the assigned station(s). If an aviator is designated to fly in both crew stations, he must be evaluated in both stations during hands-on performance tests. This does not mean that the aviator will be required to perform all maneuvers in both stations. IPs, SPs, IEs, and MEs must maintain proficiency in both crew stations.

1-2. BATTLE ROSTERING

Battle rostering is the designation of two or more individuals to perform as a crew. Consistently assigning the same crews together improves crew coordination. Commanders make battle-rostered assignments and should enforce their practice, when possible, consistent with crew resources available within the unit. They should assign an individual to a crew as soon as possible after his arrival in the unit, even if he is required to undergo qualification, refresher, or mission training. The individual may begin flying as a member of that crew while in mission training based on the recommendation of an evaluator and the approval of the commander. TC 1-210 further defines battle rostering.

1-3. SYMBOL USAGE AND WORD DISTINCTIONS

a. Symbol Usage. The diagonal (/) is used to indicate or or and. For example, IP/SP may mean IP or SP or may mean IP and SP.

b. <u>Word Distinctions.</u>

(1) <u>Warning, cautions, and notes.</u> These are used to emphasize important and critical instructions.

(a) A warning indicates an operating procedure or a practice which, if not correctly followed, could result in personal injury or loss of life.

(b) A caution indicates an operating procedure or a practice which, if not strictly observed, could result in damage to or destruction of equipment.

(c) A note highlights essential information which is not of a threatening nature.

(2) <u>Will, must, should, and may.</u> These words distinguish between mandatory, preferred, and acceptable methods of accomplishment.

(a) Will or must indicates a mandatory requirement.

(b) Should indicates a preferred but not mandatory method of accomplishment.

(c) May indicates an acceptable method of accomplishment.

(3) <u>NVS, NVG, and NVD.</u>

(a) NVS refers to the night vision system that is attached to the aircraft; for example, the TADS.

(b) NVG refers to any night vision goggle image intensifier system; for example, the AN/AVS-6 (ANVIS).

(c) NVD refers to NVS and NVG.

CHAPTER 2

QUALIFICATION TRAINING

Initial AH-1 qualification training for active duty aviators is conducted at the USAAVNC and at designated training bases according to an established POI. Units are not authorized to conduct this training. Individuals completing the POI are trained in basic helicopter, NVG, and weapon system tasks. An ARNG aviator will complete aircraft qualification/weapon system training according to NGR 95-210. The commander may waive the requirement that the aviator complete category instrument training before performing pilot duties. Pending the completion of instrument training, the aviator may log pilot time and act as PC if an entry is made on DA Form 759 (Individual Flight Record and Flight Certificate--Army) to indicate such authority.

2-1. ACADEMIC TRAINING

a. During academic training, the aviator must receive sufficient instruction to be knowledgeable in the subjects listed in Figure 2-1. Academic training should be completed-before the corresponding flight training. The subjects may be presented in any order; however, the introduction should be first and the aircraft operator's manual written examination last. To pass the examination, the aviator must obtain a grade of at least 70 percent. Aircraft systems instruction includes training in operation, capabilities, limitations, and malfunction analysis.

b. When an applicable USAAVNC course or ETP is available, POIs and lesson plans from the USAAVNC must be used to conduct training. Although hour requirements in the POIs are not mandatory, training objectives are. Training materials may be obtained by writing Commander, US Army Aviation Center, ATTN: ATZQ-TDI-D, Fort Rucker, AL 36362-5035, or calling DSN 558-3283/5990 or commercial (205) 255-3283/5990. When an applicable USAAVNC course is not available, ARNG units must use POIs and lesson plans approved by the Chief, National Guard Bureau.

Introduction
Flight planning tasks
Structure
Power plant and related systems
Transmission and drive systems
Rotor systems
Electrical systems
Flight controls
Emergency procedures[1]
Hydraulic systems[1]
Weight and balance
Avionics and mission equipment[1]
Precautionary measures and critical conditions
Aircraft limitations and performance planning charts[1]
Armament subsystems
Utility systems
Inspection and test flight requirements[2]
Aircraft survivability equipment
Tactical subjects
Aircraft operator's manual written examination

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[1]These subjects may be covered outside the classroom by the IP/SP.
[2]These subjects are required for maintenance test pilots only.

Figure 2-1. Academic subjects for initial AH-1 qualification

2-2. FLIGHT TRAINING

a. During flight training, the aviator is trained to standards in the tasks listed-in Chapter 5 (Figure 5-1) and those mission/additional tasks selected by the commander. Figure 2-2 shows the minimum flight tasks and hours allotted for general subject areas. Flight training will not be less than that indicated in Figure 2-2.

NOTE: The information in paragraph 2-lb also applies to the initial AH-1 qualification flight training shown in Figure 2-2.

b. Commanders must ensure that realism is maintained during qualification flight training. This includes operation of the aircraft at or near maximum gross weight.

Tasks	Hours[1]
Flight planning[2]	1.0
Takeoff	2.0
Basic flight	2.0
Approach and landing	2.0
Emergency[3]	6.0
Instrument flight[3]	3.0
Tactical and mission	6.0
Gunnery training[4,5]	-
Total hours	22.0

[1]One hour will be at night and will include all night base tasks, as shown in Chapter 5 (Figure 5-1).

[2]Although these tasks apply to flight instruction, they are not considered as part of the total flight time.

[3]A maximum of 50 percent may be accomplished in the AH1FWS.

[4]Gunnery tasks, except Tasks 1109, 1113, and 1114, may be performed in the AH1FWS.

[5]Gunnery qualification training will be per TC 1-140.

Figure 2-2. Flight tasks and hours for initial AH-1 qualification

c. Training in night operations must include the location and operation of all aircraft lighting equipment. It also should include takeoffs and landings with minimum runway or field lighting appropriate for the mission and ambient light conditions.

2-3. NVG QUALIFICATION TRAINING

a. Initial NVG Qualification.

(1) Initial NVG qualification training will be conducted according to this ATM and TC 1-210 (Chapter 4). Before undergoing NVG qualification training, an aviator must be qualified and current in the aircraft. He must complete the NVG training within 45 consecutive days. Figures 2-3 and 2-4 show the recommended academic and flight training requirements for initial NVG qualification.

Vision, depth perception, and night vision orientation
Hemispherical illumination
Introduction to NVG
Aircraft modification requirements for NVG flight
Night terrain interpretation
NVG navigation, to include map preparation
Night tactical operations, to include lighting
NVG ground and air safety

Figure 2-3. Academic subjects for initial NVG qualification training

Tasks	Hours
Flight planning[1]	-
Before-flight[1]	-
Hovering	1.0
Takeoff	2.0
Basic flight	1.0
Approach and landing	2.0
Emergency	2.0
Instrument	0.5
Mission	6.5
After-landing[1]	-
Total hours[2]	15.0

[1]Although these tasks apply to flight instruction, they are not considered as part of the total flight time.

[2]The commander may reduce the total time to no less than 10 hours based on the IP's/SP's recommendation concerning the aviator's proficiency. The training must be conducted in the AH-1.

Figure 2-4. Flight tasks and hours for initial NVG qualification training

(2) Before the first NVG training flight, the aviator must undergo a one-hour training period in the AH1FWS or at night in a static aircraft. Minimum tasks that the aviator must perform are aircraft emergency procedures, NVG emergency procedures, and emergency egress procedures. The NVG flight evaluation and the one-hour training period in the AH1FWS or static aircraft may be applied toward the flight minimum required for NVG qualification. Figure 2-5 lists the tasks that the aviator must perform during NVG qualification training. After the aviator completes the training, his proficiency will be determined by a flight evaluation or by continual evaluation by an NVG IP/SP.

Task	Title
1000	Conduct crew mission briefing
1004	Prepare DA Form 4887-R (RW Performance Planning Card)
1007	Perform engine-start through after-landing checks
1016	Perform hover power check
1017	Perform hovering flight
1018	Perform a normal takeoff
1023	Perform fuel management procedures
1031	Perform confined area operations
1032	Perform slope operations
1033	Perform terrain flight mission planning
1034	Perform terrain flight takeoff
1035	Perform terrain flight
1036	Perform hover OGE check
1037	Perform NOE deceleration
1038	Perform terrain flight approach
1064	Perform terrain flight navigation
1068	Perform or describe emergency procedures for aircraft or armament system malfunction and/or NVG failure
1083	Perform or describe inadvertent IMC procedures/ VHIRP
1090	Perform masking and unmasking
1111*	Operate rocket management system
1113*	Operate M28/M197 turret system

*These tasks may be accomplished during qualification or mission training. The aviator must complete the tasks prior to progressing to RL 1.

Figure 2-5. Training tasks for NVG qualification

Task	Title
1118*	Perform firing techniques
1119*	Perform firing position operations
1144*	Perform target handover

Figure 2-5. Training tasks for NVG qualification (continued)

b. **AH-1NVG Qualification.** An aviator who is NVG-qualified in an aircraft other than the AH-1 must undergo additional NVG qualification in the AH-1. He must complete the requirements in TC 1-210 (Chapter 4) and the training shown in Figure 2-6.

NOTE: An aviator qualified in the AN/PVS-5 series must receive sufficient academic instruction to qualify in the AN/AVS-6 series.

Subjects	Hours
Academic training[1]	-
AH1FWS/static aircraft training period[2]	1.0
Demonstration and practice of NVG tasks (Figure 2-5) and any mission/additional tasks designated by the commander	5.0
Flight evaluation[3]	2.0
Total hours[4]	8.0

[1]Academic training should include the subject areas shown in Figure 2-3 (page 2-4).
[2]If conducted in the aircraft, the training must be conducted at night.
[3]This may be a continual evaluation.
[4]This time may be reduced to no less than 4.5 hours of actual flight time based on the IP's/SP's recommendation concerning the aviator's proficiency. It may include the NVG flight evaluation but not the AH1FWS or static aircraft training period.

Figure 2-6. Training guide for additional aircraft NVG qualification

2-4. SERIES QUALIFICATION

a. To become qualified in a different series of the aircraft, an aviator qualified in the AH-1 must receive--

(1) Sufficient academic instruction to ensure that he has a thorough knowledge of the subjects shown in Figure 2-1 (page 2-2).

(2) The flight instruction shown in Figure 2-2 (page 2-3) and Figure 2-7.

AVIATORS				
QUALIFIED IN	SEEKING QUALIFICATION IN			
	AH-1S	AH-1P	AH-1E	AH-1F
AH-1G	Must complete initial aircraft qualification			
AH-1S	—	3.0 / 0.0	3.0 / 1.0	4.0 / 2.0
AH-1P	3.0 / 0.0	—	0.0 / 1.0	1.0 / 2.0
AH-1E	3.0 / 1.0	0.0 / 1.0	—	1.0 / 1.0
AH-1F	3.0 / 1.0	0.0 / 1.0	0.0 / 0.5	—

BASIC TASKS FLIGHT TIME (shaded) — GUNNERY TASKS FLIGHT TIME (unshaded)

Figure 2-7. Flight hours for aircraft series qualification

b. When qualifying between the AH-1S and other AH-1 aircraft in series, the aviator must complete a minimum one-hour flight at night in the aircraft series being flown. The training must include those tasks identified with an X in the night column, as shown in Chapter 5 (Figure 5-l).

c. An aviator qualified in all individual weapon systems but in a different series aircraft must still perform the required gunnery tasks (Tasks 1109 through 1119). He is only required to use live ammunition if he is not qualified in an individual weapon system.

d. During series qualification training, the aviator must be evaluated, at a minimum, in those tasks identified with an X in the standardization column, as shown in Chapter 5 (Figure 5-1). This requirement does not apply to within series qualification that does not require flight time allocated for base tasks.

2-5. INITIAL AND SUBSEQUENT AIRCRAFT MAINTENANCE TEST PILOT QUALIFICATION

a. Initial. Initial MP qualification will be per AR 95-1 and TC 1-210.

b. Subsequent. If the commander needs an aviator to perform MTFs in an AH-1 in which the aviator has not received formal resident training, the aviator may receive training in the field by an AH-1 ME. Field training procedures are described below.

(1) Prerequisites.

(a) The aviator must be qualified and current in the AH-1.

(b) The aviator must be qualified as an MP through initial qualification or the challenge program in the UH-1 or OH-58A/C.

(2) Qualification requirements. The aviator must receive MTF training from an ME in the AH-1. Figure 2-8 shows the recommended flight training requirements. Academic training will be conducted and documented showing that the prospective MP has adequate knowledge of all aircraft systems, including components and their control movements. Prior to the final evaluation, the unit will coordinate with DOES, Fort Eustis, Virginia, for approval to conduct the evaluation. Only DOES or a DOES-designated ME may administer the final evaluation. When the final evaluation is satisfactorily completed, the aviator will receive an initial MP qualification memorandum from DOES. The unit may use the recommendation for MP status on the final evaluation grade slip (DA Form 4507-R) as authorization to issue MP orders until it receives the memorandum from DOES.

(3) Grade slips. A copy of DA Form 4507-R for the final evaluation/initial designation of a field-trained MP in a subsequent aircraft will be sent to Assistant Commandant, USAALS, ATTN: ATZG-LES-M, Fort Eustis, VA 23604-5431.

Tasks	Hours
Flight planning[1]	1.0
Flight readiness inspection[1]	5.0
Before-starting-engine checks[1]	2.0
Systems and engine run-up checks[1]	2.0
Baseline and normal engine HIT[1]	0.5
Test flight hover maneuvers[2]	2.0
In-flight test flight maneuvers[2]	3.0
After-landing and engine-shutdown checks[1]	2.0
Postflight checks[1]	1.0
Forms and records completion[1]	2.0
Total hours	20.5

[1]The hours indicated for these tasks are not counted as flight time.

[2]The ME may increase the flying hours based on the MP's demonstrated proficiency.

Figure 2-8. Flight training guide for subsequent MP qualification

CHAPTER 3

REFRESHER TRAINING

The refresher training program is designed for an RL 3 aviator. It enables the aviator to regain proficiency in all base tasks. This chapter describes refresher training requirements and provides guidelines for developing refresher training programs.

3-1. TRAINING REQUIREMENTS

a. An aviator is designated RL 3 when he meets the criteria in TC 1-210. Figures 3-1 and 3-2 are furnished as guides for developing refresher training programs.

b. Applicable USAAVNC POIs, lesson plans, and exportable training packets may be used to conduct academic training. These materials may be obtained by writing Commander, US Army Aviation Center, ATTN: ATZQ-TDI-D, Fort Rucker, AL 36362-5035, or calling DSN 558-3283/5990 or commercial (205) 255-3283/5990.

Aircraft systems, structure, and airframe
Precautionary measures and critical conditions
Avionics/mission equipment
Weight and balance
Operational limitations and performance planning charts
Flight planning, to include DOD FLIP
Instrument departures, en route navigation, and reporting
Instrument approaches
Local SOPs and regulations
Airspace regulations
Night vision systems
Weapon systems
Ground and air safety
Aircraft operator's manual written examination

Figure 3-1. Refresher academic training guide

Flight Instruction	Hours
Local area orientation	2.0
Demonstration and practice of base tasks	6.0
Flight evaluation	2.0
Total hours	10.0

Instrument Instruction	Hours
Flight or simulator training	8.0
Instrument evaluation	2.0
Total hours	10.0

Gunnery Instruction

Flight or simulator training as outlined in TC 1-140

Figure 3-2. Refresher flight training guide

3-2. NIGHT TRAINING

a. Unaided Night Flight. Minimum task requirements are listed in Chapter 5 (Figure 5-l). Night considerations for maneuvers (when applicable) are in Chapter 6.

b. NW Flight. TC 1-210 discusses NVG refresher training. Figure 3-3 is an NVG refresher training guide.

Subject	Hours
Academic training[1]	-
AH1FWS or static aircraft training period[2]	1.0
Demonstration and practice of NVG tasks (Figure 2-3 on page 2-5) and any mission tasks designated by the commander	5.0
Flight evaluation[3]	2.0
Total hours[4]	8.0

[1]Academic training should include the subject areas shown in Figure 2-3 (page 2-4).

[2]If conducted in an aircraft, the training must be done at night.

[3]This may be a continual evaluation.

[4]The total time may be reduced to no less than 4.5 hours of actual flight time based on the IP's/SP's recommendation concerning the aviator's proficiency. It may include the NVG standardization flight evaluation but not the AH1FWS or static aircraft training period.

Figure 3-3. NVG refresher training guide

CHAPTER 4

MISSION TRAINING

Mission training develops the aviator's and aircrew's ability to perform specific tasks selected by the commander to support the unit's mission. This chapter lists mission training requirements and guidelines for developing a mission training program.

4-1. TRAINING REQUIREMENTS

An aviator is designated RL 2 and begins mission training when he meets the requirements in TC 1-210. The mission training (RL 2) guidelines shown in Figure 4-1 are based on FAC 1 requirements for mission tasks. Mission training should be done during mission support or collective training.

Flight Instruction	Hours
Local area orientation*	2.0
Mission tasks	16.0
Total hours	18.0

*Not required if accomplished during refresher training training (Figure 3-2).

Figure 4-1. Mission flight training guide

4-2. NIGHT TRAINING

a. Unaided Night Flight. Tasks which the commander may designate for unaided night flight are listed in Chapter 5. Night considerations for maneuvers (when applicable) are in Chapter 6.

b. <u>NVG Flight.</u> NVG mission training requirements are in TC 1-210, Chapter 4. Before undergoing NVG mission training, the aviator must have completed qualification or refresher training and must be NVG-current.

(1) NVG considerations for maneuvers (when applicable) are in Chapter 6. If the commander determines that the NVG are required in mission profiles, he will develop a mission training program and specify the mission tasks.

(2) For NVG progression to RL 1, an aviator must have completed an NVG evaluation given at night in the aircraft by an NVG IP/SP. However, the commander may designate an aviator RL 1 for NVG purposes if a records check indicates that the aviator was previously NVG mission-qualified. The aviator also must have demonstrated proficiency in those tasks designated by the commander of the gaining unit.

4-3. MAINTENANCE TEST PILOT TRAINING

Mission training increases the aviator's proficiency in performing maintenance test flights. Chapter 7 contains the mandatory mission tasks for aviators designated to perform maintenance test flights. The tasks will be included on the Commander's Task List in the aviator's Individual Aviation Training Folder. Commanders are not authorized to delete any MTF tasks. Personnel performing as MPs should be limited to duties in one primary and one alternate/additional aircraft and classified FAC 2. They should be required to complete only those additional mission tasks that the commander considers complementary to the MTF mission.

CHAPTER 5

CONTINUATION TRAINING

This chapter outlines the tasks, aircraft hours, and simulation device hours that an aviator must complete to support the unit's mission. TC 1-210 describes the requirements for maintaining RL 1. The required performance standards are in Chapters 6 and 7 of this ATM.

5-1. TRAINING REQUIREMENTS

a. Semiannual Flying-Hour Requirements--Aircraft. The minimum requirements are as follows:

(1) FAC 1 -- 55 hours.

(2) FAC 2 -- 30 hours.

(3) FAC 3 -- no flying-hour requirements.

(4) RL 1 aviators in NVG-designated positions and NVG PCs -- 9 hours, of which 3 hours of NVG flight in the AH1FWS may be credited toward this requirement.

NOTE: Unit trainers, evaluators, and maintenance test pilots may credit those hours they fly while performing assigned duties, regardless of their crew station, toward their semiannual flying-hour requirement.

b. Annual Flying-Hour Requirements--Simulation Device. Aviators may apply 12 hours of AH1FWS (device 2B33) time toward the semiannual flying-hour requirements specified in a(1) and (2) above. Annual AH1FWS requirements for FAC 1 and FAC 2 active duty aviators who are within 25 SM of an AH1FWS are 20 hours and 12 hours, respectively. FAC 1 and FAC 2 active duty aviators who are not within 25 SM of an AH1FWS must refer to AR 95-3. The AH1FWS requirements for FAC 1 and FAC 2 Reserve Component aviators will be per AR 95-3. All FAC 3 aviators, regardless of their distance from an AH1FWS, will fly 10 hours semiannually in the simulator.

c. <u>Annual Task and Iteration Requirements.</u> The minimum requirements are as follows:

(1) One iteration of base tasks as indicated in Figure 5-1. (Mandatory tasks to be performed are indicated by an X in the appropriate column of Figure 5-1 (pages 5-3 through 5-5.)

NOTE 1: During an evaluation, an iteration performed in a more demanding mode of flight may suffice for an iteration performed in a less demanding mode of flight. (The commander determines which mode of flight is more demanding.)

NOTE 2: The requirement to perform instrument tasks in additional aircraft, in category, will be at the commander's discretion.

(2) One iteration of tasks listed in Figure 5-1 under the NVG column is required for aviators who are maintaining NVG currency and are designated RL 1 for NVG purposes regardless of their TOE or TDA position.

(3) One iteration of those base tasks which are mandatory during NBC training as listed in paragraph 5-4.

(4) Any iterations of mission tasks listed in Figure 5-2 (page 5-6) as determined by the commander.

(5) Any iterations of additional tasks designated by the commander.

NOTE 1: An NVG standardization flight evaluation will cover, at a minimum, those mandatory N=VG tasks indicated in Figure 5-1, those tasks from Figure 5-2 determined by the commander, and any commander-designated additional tasks. This evaluation is required for aviators who are designated RL 1 for NVG purposes regardless of their TOE or TDA position. It is conducted in the aircraft at night by an NVG IP or SP.

NOTE 2: In addition to the required minimum annual tasks and iterations, aviators designated as MPs will perform a minimum of four iterations annually of the MTF tasks listed in Figure 5-3 (pages 5-6 and 5-7). Aviators performing ME duties will perform two iterations annually of the MTF tasks while occupying each crew station. Each MTF task listed is mandatory for an MP or ME standardization evaluation.

NOTE 3: Aviators who are required to perform MP or ME duties in an additional or alternate aircraft will perform four iterations of the required tasks in each additional or alternate aircraft.

Task	Title	S	I	N	NVG
1000	Conduct crew mission briefing	X	X	X	X
1001	Plan a VFR flight	X			
1002	Plan an IFR flight		X		
1003	Prepare DD Form 365-4 (Weight and Balance Clearance Form F-Tactical)				
1004	Prepare DA Form 4887-R (RW Performance Planning Card)	X	X	X	X
1005	Perform preflight inspection	X or	X	X	
1007	Perform engine-start through after-landing checks	X or	X	X or	X
1016	Perform hover power check	X or	X	X or	X
1017	Perform hovering flight	X		X or	X
1018	Perform a normal takeoff	X		X or	X
1020	Perform simulated maximum performance takeoff				
1021	Perform deceleration/acceleration				
1022	Perform traffic pattern flight	X			
1023	Perform fuel management procedures	X	X	X	X
1025	Navigate by pilotage and dead reckoning	X		X	
1026	Perform doppler navigation	X			
1028	Perform VMC approach	X		X	
1030	Perform a shallow approach to a running landing	X		X	
1031	Perform confined area operations	X		X or	X
1032	Perform slope operations	X		X	X
1033	Perform terrain flight mission planning	X			X
1034	Perform terrain flight takeoff	X			X

Legend:

S--tasks that are mandatory for standardization flight evaluation.
I--tasks that are mandatory for instrument flight evaluation.
N--tasks that must be performed during unaided night flight.
NVG--tasks that must be evaluated at night in the aircraft while the aviator is wearing the NVG.

Figure 5-1. Helicopter base task list

Task	Title	S	I	N	NVG
1035	Perform terrain flight	X			X
1036	Perform hover OGE check	X			X
1037	Perform NOE deceleration	X			X
1038	Perform terrain flight approach	X			X
1039	Perform high-speed flight				
1040	Perform evasive maneuvers	X			
1050	Perform hovering autorotation	X			
1052	Perform simulated engine failure at a hover	X			
1053	Perform simulated engine failure at altitude	X or	X		
1054	Perform simulated engine failure, high speed, at altitude	X			
1056	Perform manual throttle operation, emergency governor mode	X			
1059	Perform flight with the SCAS disengaged				
1064	Perform terrain flight navigation	X			X
1067	Perform aerial observation	X			
1068	Perform or describe emergency procedures for aircraft or armament system malfunction and/or NVG failure	X	X	X	X
1075	Perform instrument takeoff				
1076	Perform radio navigation		X		
1077	Perform holding procedures		X		
1078	Perform unusual attitude recovery	X or	X		
1079	Perform radio communication procedures	X			
1080	Perform procedures for two-way radio failure		X		
1081	Perform nonprecision approach		X		
1082	Perform precision approach		X		
1083	Perform or describe inadvertent IMC procedures/VHIRP	X or	X		X
1090	Perform masking and unmasking	X			X
1091	Perform tactical communication procedures and electronic counter-countermeasures	X			

Figure 5-1. Helicopter base task list (continued)

Task	Title	S	I	N	NVG
1093	Perform or describe techniques of movement	X			
1094	Identify major US or allied equipment and major threat equipment	X			
1095	Operate aircraft survivability equipment	X			
1096	Perform actions on contact	X			
1097	Negotiate wire obstacles	X			
1099	Operate Mark XII IFF System	X			
1109	Supervise loading of weapons	X			
1110	Perform a preflight inspection on weapon systems	X			
1111	Operate rocket management system	X			X
1112	Perform armament system checks	X			
1113	Operate M28/M197 turret system	X			X
1114	Operate rocket launchers				
1115	Operate TOW missile system	X			
1117	Safe and clear weapon systems	X			
1118	Perform firing techniques	X			X
1119	Perform firing position operations	X			X
1144	Perform target handover	X			X

Figure 5-1. Helicopter base task list (continued)

5-2. AH1FWS CONSIDERATIONS

The annual flying-hour requirements are specified in paragraph 5-lb. Figure 5-4 (pages 5-7 through 5-9) lists the tasks that the aviator may accomplish in the AH1FWS. The commander may designate additional tasks for the aviator to accomplish.

Task	Title
2004	Perform pinnacle or ridgeline operation
2005	Perform FM radio homing
2009	Perform formation flight
2020	Call for and adjust indirect fire
2069	Perform diving flight
2073*	Perform standard autorotation
2074*	Perform low-level autorotation
2077*	Perform simulated antitorque malfunction (fixed pedal setting)
2091	Transmit a tactical report
2092*	Perform standard autorotation with turn
2093*	Perform simulated hydraulic system malfunction
2114*	Perform low-level, high-airspeed autorotation
2115*	Perform low-level, low-airspeed autorotation

*The emergency procedures training criteria in AR 95-1 must be met before this maneuver is performed.

Figure 5-2. Helicopter mission task list

Task	Title
2500	Perform prior-to-maintenance-test-flight checks
2502	Perform interior checks
2504	Perform before-starting-engine checks
2506	Perform starting engine checks
2522	Perform engine run-up checks
2534	Perform baseline and normal engine health indicator test
2536	Perform before-takeoff check
2537	Perform takeoff-to-hover check
2538	Perform torquemeter/power check

Figure 5-3. Maintenance test pilot task list

Task	Title
2539	Perform pedal authority check
2540	Perform yaw channel response
2541	Perform sideward hovering flight
2542	Perform forward hovering flight
2543	Perform pylon mounts check (SCAS on and SCAS off)
2544	Perform engine response check
2545	Perform low RPM hover check
2546	Perform manual throttle operation, emergency governor mode
2547	Perform power cylinder check (dual- and single-system operations)
2548	Perform collective servo authority check (dual- and single-system operations)
2549	Perform takeoff and climb-out checks
2550	Perform instrument operation and correlation check
2551	Perform control rigging checks
2554	Perform autorotation RPM check
2561	Perform vibration analysis
2566	Perform communication and navigation equipment checks
2567	Perform engine topping check
2568	Perform after-landing and engine shutdown checks
2569	Perform special/detailed procedures

Figure 5-3. Maintenance test pilot task list (continued)

Task	Title
1000	Conduct crew mission briefing
1001	Plan a VFR flight
1002	Plan an IFR flight
1007	Perform engine-start through after-landing checks
1016	Perform hover power check
1017	Perform hovering flight
1018	Perform a normal takeoff
1020	Perform simulated maximum performance takeoff

Figure 5-4. AH1FWS task list

Task	Title
1021	Perform deceleration/acceleration
1022	Perform traffic pattern flight
1023	Perform fuel management procedures
1025	Navigate by pilotage and dead reckoning
1026	Perform doppler navigation
1028	Perform VMC approach
1030	Perform a shallow approach to a running landing
1031	Perform confined area operations
1033	Perform terrain flight mission planning
1034	Perform terrain flight takeoff
1035	Perform terrain flight
1036	Perform hover OGE check
1037	Perform NOE deceleration
1038	Perform terrain flight approach
1039	Perform high-speed flight
1040	Perform evasive maneuvers
1050	Perform hovering autorotation
1052	Perform simulated engine failure at a hover
1053	Perform simulated engine failure at altitude
1054	Perform simulated engine failure, high speed, at altitude
1056	Perform manual throttle operation, emergency governor mode
1059	Perform flight with the SCAS disengaged
1064	Perform terrain flight navigation
1067	Perform aerial observation
1068	Perform or describe emergency procedures for aircraft or armament system malfunction and/or NVG failure
1075	Perform instrument takeoff
1076	Perform radio navigation
1077	Perform holding procedures
1078	Perform unusual attitude recovery
1079	Perform radio communication procedures
1080	Perform procedures for two-way radio failure
1081	Perform nonprecision approach
1082	Perform precision approach
1083	Perform or describe inadvertent IMC procedures/VHIRP
1090	Perform masking and unmasking

Figure 5-4. AH1FWS task list (continued)

Task	Title
1091	Perform tactical communication procedures and electronic counter-countermeasures
1095	Operate aircraft survivability equipment
1096	Perform actions on contact
1097	Negotiate wire obstacles
1099	Operate Mark XII IFF System
1111	Operate rocket management system
1112	Perform armament system checks
1113	Operate M28/M197 turret system
1114	Operate rocket launchers
1115	Operate TOW missile system
1118	Perform firing techniques
1119	Perform firing position operations
1144	Perform target handover
2004	Perform pinnacle or ridgeline operation
2005	Perform FM radio homing
2020	Call for and adjust indirect fire
2069	Perform diving flight
2073	Perform standard autorotation
2074	Perform low-level autorotation
2077	Perform simulated antitorque malfunction (fixed pedal setting)
2091	Transmit a tactical report
2092	Perform standard autorotation with turn
2093	Perform simulated hydraulic system malfunction
2114	Perform low-level, high-airspeed autorotation
2115	Perform low-level, low-airspeed autorotation

Figure 5-4. AH1FWS task list (continued)

5-3. NVG CURRENCY REQUIREMENTS

a. To be considered NVG current, the aviator must--

(1) Participate, at least once every 45 consecutive days, in a one-hour flight in an AH1FWS or at night in the aircraft while wearing the NVG.

(2) Participate, at least once every 90 consecutive days, in a one-hour flight at night in the aircraft while wearing the NVG.

b. An aviator whose currency has lapsed must complete, at a minimum, a one-hour NVG proficiency evaluation given at night in the aircraft by an NVG IP or SP. Minimum tasks to be evaluated are listed below. The commander may designate other mission and/or additional tasks.

(1) Task 1017, Perform hovering flight.

(2) Task 1018, Perform a normal takeoff.

(3) Task 1028, Perform VMC approach.

(4) Task 1032, Perform slope operations.

(5) Task 1068, Perform or describe emergency procedures for aircraft or armament system malfunction and/or NVG failure.

(6) Task 1083, Perform or describe inadvertent IMC procedures/VHIRP.

5-4. ANNUAL NBC TRAINING REQUIREMENTS

Annual NBC training is mandatory for all FAC 1 positions and those FAC 2 positions selected by the commander. NBC training is not required for FAC 3 positions. Aviators must wear MOPP4 gear during NBC training.

a. Aviators will receive NBC training in the base tasks listed below and will perform at least one iteration annually. The commander may select mission/additional tasks based on the unit's mission.

(1) Task 1005, Perform preflight inspection.

(2) Task 1007, Perform engine-start through after-landing checks.

(3) Task 1016, Perform hover power check.

(4) Task 1034, Perform terrain flight takeoff.

(5) Task 1035, Perform terrain flight.

(6) Task 1037, Perform NOE deceleration.

(7) Task 1038, Perform terrain flight approach.

(8) Task 1111, Operate rocket management system.

(9) Task 1112, Perform armament system checks.

(10) Task 1113, Operate M28/M197 turret system.

(11) Task 1114, Operate rocket launchers.

b. While conducting NBC training, the commander will ensure that--

(1) Aircrews use extra care when performing flight duties or training in aircraft when the wet bulb globe temperature is above 75°F.

(2) A qualified and current aviator, not wearing a protective mask, NBC boots, and NBC gloves, is at one set of the flight controls at all times.

(3) Emergency procedures training is not accomplished in flight while aircrews are wearing MOPP gear. (This training will be accomplished in simulation devices or static aircraft.)

(4) NBC training is coordinated closely with the local flight surgeon.

CHAPTER 6

AVIATOR AND AIRCREW TASKS

This chapter implements portions of STANAG 3114/Air Std 60/16.

This chapter describes those maneuvers and procedures that are essential for maintaining aviator and aircrew skills. It does not contain all the maneuvers that can be performed in the aircraft. Some tasks that must be done during required training flights may not be mandatory for other flights. For example, Task 1004 is not mandatory for all flights. However, aviators must complete the performance planning card when their training involves this task or when the instructor or evaluator requires it.

6-1. TASK CONTENTS

a. Task Number and Title. Each task is identified by a number and a title which correspond to those for the tasks listed in Chapter 5 (Figures 5-1 and 5-2). For ease of identification, base tasks that are to be performed by all aviators are assigned 1000-series numbers. Mission tasks that may be selected by the commander for training are assigned 2000-series numbers. Those tasks that the commander determines are essential to mission accomplishment that are not in this ATM will be designated as additional tasks and listed separately. The commander will develop conditions, standards, and descriptions for these tasks. Additional tasks will be assigned 3000-series numbers.

b. Conditions. The conditions specify the situation in which the task is to be performed. They describe the important aspects of the performance environment. All conditions must be met before task iterations can be credited.

c. Standards. The standards describe the minimum degree of proficiency or standard of performance to which the task must be accomplished.

d. **Description.** The description explains how the task should be done to meet the standards. It includes individual and crew-coordinated actions that are to be performed as indicated by the P* (pilot on the controls), p (pilot not on the controls), PC (pilot in command), PI (pilot), and CPG (copilot-gunner). These actions apply in all modes of flight during day, night, or NVG operations. The indications P*, P, PI, and CPG do not imply PC duties. When required, PC responsibilities are specified.

(1) **Individual actions.** These actions are the portions of a crew task that an individual must accomplish.

(2) **Crew-coordinated actions.** These portions of a task require the interaction of the entire crew to ensure safe, efficient, and effective task execution.

e. **Night or NVG Considerations.** Where applicable, night or NVG considerations are included.

f. **References.** The references listed for each task are sources of information about that particular task.

6-2. TASK CONSIDERATIONS

a. References to the IP in the task conditions include the SP.

b. When a UT, an IP, or an IE is cited as a condition, that individual will be at one set of the flight controls.

c. Unless otherwise specified in the conditions, all in-flight training and evaluations will be conducted under VMC. Simulated instrument meteorological conditions denote flight solely by reference to flight instruments while the aviator is wearing a hood or similar device that restricts outside visual references.

d. Tasks requiring specialized equipment are not mandatory in aircraft models in which that equipment is not part of the normal aircraft configuration.

e. Single-pilot NVG flight is prohibited. During NVG continuation training, both aviators must be qualified and current in the aircraft and NVG. They also must wear the same type of NVG.

f. Mandatory NVG evaluation tasks are listed in Chapter 5 (Figure 5-l). The standards for these tasks are the same as those for task performance unless stated otherwise in TC 1-210.

g. For the purpose of NVG training, NVG terrain flight is defined as flight less than 200 feet AHO in the flight path.

h. Airspeed and altitude limitations are as follows:

(1) Skids above trees and vegetation in the flight path up to 25 feet AHO -- 40 KIAS (maximum).

(2) Skids between 25 feet and 80 feet AHO -- 70 KIAS (maximum).

(3) Skids above 80 feet AHO -- whatever the airspeed operational requirements dictate and aircraft limitations allow.

NOTE: The airspeeds listed above must be decreased if inclement weather or ambient light levels restrict visibility.

i. Formation requirements for NVG or night operations are as follows:

(1) Above 80 feet AHO -- straight-trail, free-cruse, staggered, and echelon formations.

(2) At 80 feet AHO and below -- free-cruise formations with techniques of movement.

j. A lead change will not be initiated by accelerating to overtake the lead aircraft. Only the lead aircraft will give the signal to initiate lead changes, which will be conducted as prescribed in the mission briefing. Chalk 2 will acknowledge the lead's signal. The lead will make a heading change of 30 to 90 degrees, depart the formation, and maneuver his aircraft a minimum of eight rotor disks to the cleared side. Chalk 2, who becomes the new lead, determines and announces when the former lead is clear of the formation; the former lead will visually confirm when each aircraft passes. After the last aircraft in the formation has passed, the former lead aircraft will assume the trail aircraft position with the appropriate rotor blade separation and aircraft lighting configuration.

k. During NVG or night tactical operations, aircraft will maintain a minimum separation of three rotor disks. This separation does not apply to terminal and tactical landing areas.

l. An infrared band-pass filter or a pink-light-modified searchlight or landing light must be installed and operational before the crew conducts NVG operations. If the light becomes inoperative during a mission, the PC will evaluate the impact on mission accomplishment. PC actions may vary from a minor mission adjustment to termination of the flight.

m. The crew will not attempt the tasks listed below if performance planning or the hover power check indicates that OGE power is not available.

(1) Task 1020, Perform simulated maximum performance takeoff.

(2) Task 1031, Perform confined area operations.

(3) Task 1034, Perform terrain flight takeoff.

(4) Task 1035, Perform terrain flight.

(5) Task 1037, Perform NOE deceleration.

(6) Task 1038, Perform terrain flight approach.

(7) Task 1040, Perform evasive maneuvers.

(8) Task 1075, Perform instrument takeoff.

(9) Task 1090, Perform masking and unmasking.

(10) Task 1119, Perform firing position operations.

(11) Task 2004, Perform pinnacle or ridgeline operation.

6-3. CREW COORDINATION

a. Most ATM tasks contain elements that require crew coordination. The importance of crew coordination has been reinforced by research and studies conducted by the US Army Aviation Center, US Army Safety Center, and US Army Research Institute. An analysis of rotary-wing aircraft accidents showed that a significant percentage resulted from a total lack of crew coordination in the cockpit or from crew coordination errors. Examples of crew coordination errors identified are listed below.

(1) Failure of the P* to properly **direct assistance** from the other crew member.

(2) Failure of a crew member to **announce a decision or an action** that affected the ability of the other crew members to perform their duties properly.

(3) Failure of crew members to **communicate positively** (verbally and nonverbally).

(4) Failure of the PC to **assign crew responsibilities** properly before and during the mission.

(5) Failure of the P or other crew members to **offer assistance or information** that was needed or had been requested previously by the P*.

(6) Failure of the P* to execute flight actions in **proper sequence** with the actions of other crew members.

b. As a result of the analysis, crew coordination is defined as the crew member interaction **(communication)** and actions **(sequencing and timing)** necessary for the efficient, effective, and safe performance of tasks. The essential elements of crew coordination are explained below.

(1) Communicate Positively. Good teamwork requires positive communication among crew members. Communication is positive when the sender directs, announces, requests, or offers; the receiver acknowledges; and the sender confirms, based on the receiver's acknowledgment and/or action. Crew members must use positive communication procedures for the essential crew coordination actions identified in the description of each task. They should remain aware of the potential for misunderstandings and make positive communication a habit in the cockpit. Positive communication--

(a) Is quickly and clearly understood.

(b) Permits timely actions.

(c) Makes use of a limited vocabulary of explicit terms and phrases to improve understanding in a high-ambient-noise environment.

(2) Direct assistance. A crew member will direct assistance when he cannot maintain aircraft control, position, or clearance. He also will direct assistance when he cannot properly operate or troubleshoot aircraft systems without help from the other crew member. Directives are necessary when one crew member cannot reasonably be expected to know what or when assistance is needed by the other crew member. Examples are emergencies; the P*'s decision to change the sequence, timing, or priority of the P's assistance; and a P who is relatively inexperienced in the mission being flown or the flight environment. Directives normally are not needed when the assistance required is part of a crew member's assigned responsibility in the task description.

(3) Announce actions. To ensure effective and well-coordinated actions in the cockpit, crew members must be aware of expected aircraft movements and unexpected individual actions.

Each crew member will announce any action that affects the actions of the other crew member. Such announcements are essential when the decision or action is unexpected and calls for supporting action from the other crew member to avoid a potentially hazardous situation.

(4) **Offer assistance.** A crew member will provide the assistance or information that has been requested. He also will offer assistance when he sees that the other crew member needs help. All crew members must be aware of the flight situation and recognize when the P* deviates from normal or expected actions. They must never assume that the P* recognizes a hazard or the need for assistance.

(5) **Acknowledge actions.** Communications in the cockpit must include supportive feedback to ensure that crew members correctly understand announcements and directives. Acknowledgments need to be short and need to positively indicate that the message was received and understood. “Roger” or "Okay" may not be sufficient. The preferred method is to repeat critical parts of the message in the acknowledgment. Figure 6-l shows an example of positive communication.

P*:	**"Gunner target."**
CPG:	**"Tally, T72."**
CPG:	**"One missile, right side."**
P*:	**"Roger, one missile, right side."**
CPG:	**"Slide right, losing target."**
P*:	**"Sliding right."**
CPG:	**"Hold."**
P*:	**"Holding."**
CPG:	**"Firing missile."**
CPG:	**"Come up, losing target."**
P*:	**"Coming up."**
CPG:	**"Target killed; mission completed."**

Figure 6-1. Example of positive communication in the cockpit

(6) **Be explicit.**

(a) Crew members must avoid using terms that have multiple meanings; misinterpretations can cause confusion, delays, or accidents. Examples are "Right," “Back up," and "I have it." Crew members also must avoid using indefinite modifiers such as “DO you see that tree?" or “YOU are coming in a little fast." In such cases, one crew member may mistakenly assume that the other crew member's attention is focused on the same object or event. More confusion arises when each crew member interprets the terms differently.

(b) Crew members should use clear terms and phrases and positively acknowledge critical information. During terrain flight, for example, the P must give enough information to permit the P* to fly the aircraft efficiently and safely over the intended route. He must provide navigation directions and information so that the P* does not have to concentrate on reading the instruments. Examples of acceptable navigation statements are in Figure 6-2.

Orientation to terrain feature relative to the aircraft's current heading: "Directly ahead," "Out your right door," or "On your right side."

Terrain locator information: "The hill at your 2 o'clock position" or "Straight ahead to the pond."

Initial turning command: "Turn left" or "Turn right." When the aircraft is above NOE altitudes, a heading may be given; for example, "Turn right to 320 degrees."

Command that is always given when the P has verified that the desired heading has been achieved: "Stop turn."

Clock position associated with a specific terrain feature to prevent the P* from misinterpreting the exact heading described: "Along the tree line at 2 o'clock."

Figure 6-2. Examples of acceptable navigation statements

(7) <u>**Provide aircraft control and obstacle advisories.**</u>

(a) Although the P* is responsible for aircraft control during terrain flight, the P may-need to provide aircraft control information regarding airspeed, altitude, or obstacle avoidance. Because wires are difficult to see, they are a major hazard to helicopters at NOE altitudes. Aircrews must anticipate wires along roadways; near buildings, antennas, and towers; or in combat areas where wire-guided missiles have been launched. Obstacles are even more difficult to see with the NVG. Therefore, crew members wearing NVG must consider obstacle clearance a primary task directive.

(b) Crew members should precede aircraft control and obstacle advisories by a positive command that immediately conveys the required action to the P*. A brief explanation of why the change is necessary should follow; for example, "Slow down, wires, 12 o'clock, 100 meters" or "Stop now, wires." In some instances, the P may notice that the P* has let the aircraft move behind an obstacle that obstructs the line of sight to a target. The P should precede the advisory by a positive directive; for example, "Come up, losing target" or "Slide right, losing target." When the P* reaches the desired altitude or position, the P should announce "Hold."

(8) **Coordinate sequencing and timing** Proper sequencing and timing ensures that the actions of one crew member mesh with the actions of the other crew member. An example of properly sequenced and timed actions is in Figure 6-3.

P*	Announces his intention to slide right before doing so.
P	Focuses his attention outside the cockpit in the direction of movement to provide adequate warning of obstacles and announces "Clear right."
P*	Initiates the lateral hover.

Figure 6-3. Example of properly sequenced and timed actions

c. Crew coordination begins with battle rostering and training, proceeds through mission planning, and culminates in the effective execution of aircrew tasks. Research has shown that crew coordination is related to mission performance. That research defined specific aspects of crew coordination, which include the following:

(1) Involvement of the entire crew in mission planning and rehearsal of critical mission events and contingencies.

(2) Development of standardized communication techniques, including the use of confirmation and acknowledgment.

(3) Assignment of specific task priorities and responsibilities to each crew member and individual acknowledgment of those responsibilities during the preflight crew briefing.

(4) Involvement of each crew member in monitoring the need for assistance in coping with difficult aspects of the mission.

(5) Development of positive team relationships to preclude overconfidence or subconscious intimidation because of rank or experience differences.

6-4. GENERAL CONSIDERATIONS

a. Aircrews must use the crew coordination procedures in the task descriptions during day operations so that they develop good habits that will transfer to more critical night and NVG operations.

b. When operations are conducted close to the ground or under conditions of restricted or reduced visibility, crew coordination becomes more critical.

c. The P must warn the P* anytime he detects an unexpected deviation from the intended airspeed or altitude. These deviations include aircraft drift, excessive attitude, excessive change in rate of closure, and any other unsafe condition.

d. The P must warn the P* when ground reference is marginal or is lost.

e. If the P* experiences a visual illusion or disorientation, he will inform the P and transfer the flight controls.

f. Aviators will follow the practice of “see and avoid” at all times. When used to describe a task condition, the term "clearing" or "aircraft cleared" applies to both aviators. It means that they will visually clear the immediate area in all directions during hovering and taxi operations; left, right, and overhead before and during takeoff; and before climbing or descending.

g. During NVG operations, crew members will clear within the field of view. The P* will reposition the aircraft if necessary.

h. Good crew coordination requires that both crew members have a complete mental picture of the mission. This includes critical map features, flight segments and events, tactical options, emergency procedures, and operational risks. Crew members must actively participate in mission planning and rehearsal. No crew member should merely brief the other crew member on the results of an individually planned effort.

6-5. STANDARD CREW TERMINOLOGY

Crew members should use standard words and phrases to communicate with each other in the cockpit. words to a minimum and use clear, concise terms that can be easily understood and complied with in an environment full of distractions. Figure 6-4 is a list of standard words and phrases with their meaning which all crew members in the unit should understand.

Abort--terminate a preplanned aircraft maneuver.
Affirmative--yes.
Bandit--an identified enemy aircraft.
Blocking--announcement made by the crew member who intends to block the tail rotor pedals.
Bogey--an unidentified aircraft assumed to be enemy.
Break--immediate action command to perform an emergency maneuver to deviate from the present ground track; will be followed by the word "right," "left," "up," or "down."
Cease fire--command to stop firing but continue to track.
Clear--no obstacle present to impede aircraft movement along the intended ground track. Will be preceded by the word "nose," "tail," or "aircraft" and be followed by a direction; for example, "left" or "right" or "slide left" or "slide right." Also indicates that ground personnel are authorized to approach the aircraft.
Come up/down--command to change the altitude up or down; normally used to control masking and unmasking operations.
Contact--establish communication with . . . (followed by the name of the element).
Controls--refers to the aircraft flight controls.
Drifting--an alert of the unintentional or undirected movement of the aircraft; will be followed by the word "right," "left," "backward," or "forward."
Execute--initiate an action.
Expect--anticipate further instructions or guidance.
Firing--announcement that a specific weapon is to be fired.
Fly heading--command to fly an assigned compass heading. (This term generally is used in low-level or contour flight operations.)
Get out--command to make an emergency exit from the aircraft; will be repeated three times in a row.
Go ahead--proceed with your message.

Figure 6-4. Examples of standard words and phrases

Go green--directive to activate secure communications.
Go red--directive to discontinue secure operations.
Hold--command to maintain present position.
Inside--primary focus of attention is inside the cockpit for longer than two to three seconds.
Jettison--command for the emergency or unexpected release of an external load or stores; when followed by the word "canopy," will indicate the requirement to perform emergency canopy removal.
Maintain--command to continue or keep the same.
Mickey--a Have Quick time-synchronized signal.
Monitor--command to maintain constant watch or observation.
Negative--incorrect or permission not granted.
Negative contact--unable to establish communication with . . . (followed by the name of the element).
No joy--target, traffic, or obstacle not positively seen or identified.
Now--indicates that an immediate action is required.
Outside--primary focus of attention is outside the cockpit.
Put me up--tells the other crew member to place a frequency in a specific radio.
Report--command to notify.
Roger--message received and understood.
Say again--repeat your transmission.
Slide--intentional horizontal movement of an aircraft perpendicular to its heading; will be followed by the word "right" or "left."
Slow down--command to decrease ground speed.
Speed up--command to increase ground speed.
Spot--when used in the Air Force connotation, means that laser energy is being received.
Spot off--laser target designation energy off.
Spot on--laser target designation energy on.
Stand by--wait; duties of a higher priority are being performed and the request cannot be complied with at this time.
Stop--command to go no further; halt present action.
Strobe--indicates that the aircraft AN/APR-39 has detected a radar threat; will be followed by a clock direction given by the pilot.

Figure 6-4. Examples of standard words and phrases (continued)

Tally--target, traffic, or obstacle positively seen or identified; will be followed by a repeat of the word "target," "traffic," or "obstacle" and the clock position.
Target--an alert that a ground target has been spotted.
Traffic--refers to friendly aircraft that present a potential hazard to your current route of flight; will be followed by an approximate clock position and the distance from your aircraft with a reference to altitude (high or low).
Transfer of controls--positive three-way transfer of the flight controls between the aviators; for example, "I have the controls," "You have the controls," and "I have the controls."
Turn--command to deviate from the present ground track; will be followed by the word "right," or "left," a specific heading in degrees, a bearing ("Turn right 30 degrees"), or instructions to follow a well-defined contour ("Follow the draw at 2 o'clock").
Unable--indicates the inability to comply with a specific instruction or request.
Up on--indicates primary radio selected; will be followed by radio position numbers on the intercommunication panels ("up on 1, up on 3").
Weapons hot/cold/off--weapon switches are in the ARMED, SAFE, or OFF position.
Winchester--no ordnance remaining.

Figure 6-4. Examples of standard words and phrases (continued)

TASK 1000

TASK: Conduct crew mission briefing.

CONDITIONS: Prior to flight in an AH-1 helicopter or an AH1FWS, by the PC with the other crew member present, and given a crew briefing checklist.

STANDARDS:

1. Assign crew member mission duties and responsibilities per the crew briefing checklist.

2. Assign crew member cockpit duties and responsibilities per the crew briefing checklist.

3. Have the other crew member acknowledge that he fully understands the assignment of duties and responsibilities.

DESCRIPTION: The PC must brief the appropriate items from the crew briefing checklist. He will use a checklist similar to the one in Figure 6-5 to conduct the briefing. He also must ensure that the aircrew collectively visualizes and rehearses expected and potential unexpected events from takeoff to tiedown. The PC should include in the rehearsal all aspects of the flight; these include the actions, duties, and responsibilities of each crew member. The crew members will discuss and acknowledge their understanding of critical map features, flight segments and events, tactical options, emergency procedures, and operational risks associated with the planned mission. The PC will then identify mission and flight requirements that will demand effective communication and proper sequencing and timing of actions by the crew. The PC must realize that added caution may be necessary if the crew members have not flown together as a battle-rostered crew. The other crew member will acknowledge that he understands assigned actions, duties, and responsibilities. The overall goal is to reduce uncertainty by preplanning a margin of error to compensate for unexpected events.

REFERENCES:

Aircraft logbook
AR 95-1
DA Pamphlet 738-751
FM 1-400
TC 1-204
TM 55-1520-234-10
TM 55-1520-236-10
Unit SOP

CREW BRIEFING CHECKLIST

1. Mission.
2. Weather.
3. Flight route.
4. Performance data.
5. Crew actions, duties, and responsibilities.
    a. Transfer of controls.
    b. Emergency actions.
        (1) Immediate action steps.
        (2) Egress procedures and rendezvous point.
    c. General crew duties.
        (1) Pilot on the controls.
            (a) Fly the aircraft (primary focus outside the aircraft).
            (b) Avoid traffic or obstacles.
            (c) Cross-check instruments and systems.
            (d) Monitor and transmit on assigned radios.
        (2) Pilot not on the controls.
            (a) Avoid traffic or obstacles.
            (b) Tune radios and operate doppler.
            (c) Navigate.
            (d) Copy clearances and other information.
            (e) Cross-check instruments and systems.
            (f) Monitor and transmit on assigned radios.
            (g) Perform other duties assigned by the P*.
            (h) Inform the P* when attention is focused inside the cockpit for an extended period.
6. Armament procedures.
7. NVG considerations.

Figure 6-5. Suggested format of a crew briefing checklist

TASK 1001

TASK: Plan a VFR flight.

CONDITIONS: Prior to VFR flight in an AH-1 helicopter or an AH1FWS and given access to weather information; NOTAMs; flight planning aids; necessary charts, forms, and publications: and weight and balance information.

STANDARDS:

1. Determine if the aircrew and aircraft are capable of completing the assigned mission.

2. Determine if the flight can be performed according to AR 95-1 and/or applicable host-country regulations.

3. Check applicable publications and determine, without error, if any restrictions will exist on departure, en route, and at destination.

4. Select course(s) and altitude(s) that will facilitate mission completion, and correctly compute magnetic heading(s) within ±5 degrees.

5. Determine distance ±1 nautical mile, ground speed ±5 knots, and ETE ±3 minutes for each leg of the flight.

6. Determine the fuel required from takeoff to destination, plus fuel reserve, ±50 pounds.

7. Without error, verify that the aircraft will remain within weight and CG limitations for the duration of the flight.

8. Complete and file the flight plan according to AR 95-1, the DOD FLIP, and/or applicable host-country regulations.

9. Correctly perform crew coordination actions.

DESCRIPTION:

1. **<u>Crew Actions.</u>**

a. The PC may direct the other crew member to complete some elements of the VFR flight planning.

b. The other crew member will complete the assigned elements and report the results to the PC.

c. Based on information provided by the other crew member, the PC will ensure that both aviators are current and qualifed. He also will determine whether the aircraft is properly equipped to accomplish the assigned mission.

2. **Procedure.** Using USAF, FAA, or host-country weather facilities, obtain weather information. After determining that the flight can be completed under VFR, check NOTAMs and the Army Aviation Flight Information Bulletin for any restrictions that apply to the flight. Obtain charts that cover the entire flight route, and allow for changes in routing that may be required because of the weather or terrain. Select course(s) and altitude(s) that will facilitate mission accomplishment. Use a CPU-26A/P computer/Weems plotter (or equivalent) to plot the flight, and determine magnetic heading, ground speed, and ETE for each leg. Compute the total distance and flight time, and calculate the required fuel using the appropriate charts in TM 55-1520-234-10 or TM 55-1520-236-10. Ensure that the weight and balance forms kept in the aircraft logbook apply to the aircraft load and CG limitations per AR 95-3. Verify that the aircraft weight and CG will remain within allowable limits for the entire flight. Complete DD Form 175 (Military Flight Plan) or an equivalent form, and file the flight plan with the appropriate agency.

REFERENCES:

AR 95-1
AR 95-2
AR 95-3
AR 95-10
DOD FLIP
FAR/host-country regulations
FM 1-230
FM 1-240
FM 1-300
Local SOPS and regulations
TC 1-204
TM 55-1500-342-23
TM 55-1520-234-10
TM 55-1520-236-10

TASK 1002

TASK: Plan an IFR flight.

CONDITIONS: Prior to IFR flight in an AH-1 helicopter or an AH1FWS and given access to weather information: NOTAMs; flight planning aids; necessary charts, forms, and publications; and weight and balance information.

STANDARDS:

1. Determine if the aircrew and aircraft are capable of completing the assigned mission.

2. Determine if the flight can be performed according to AR 95-1 and/or applicable host-country regulations.

3. Check applicable publications and determine, without error, if any restrictions will exist on departure, en route, and at destination.

4. Select route(s) that avoid severe weather hazards, conform to known preferred routing, and are within the capability of aircraft equipment. If flying off published airways, determine the course(s) within ±5 degrees.

5. Select altitude(s) that avoid icing and turbulence, are above minimum altitudes, conform to the semicircular rule (when applicable) , and do not exceed aircraft or equipment limitations.

6. Select an approach that is compatible with the weather, approach facilities, and aircraft equipment and determine if an alternate airfield is required.

7. Determine distance ±1 nautical mile, true airspeed ±3 knots, ground speed ±5 knots, and ETE ±3 minutes for each leg of the flight.

8. Determine the fuel required from takeoff to destination and to the alternate airfield (if required) , plus fuel reserve, ±50 pounds.

9. Without error, verify that the aircraft will remain within weight and CG limitations for the duration of the flight.

10. Complete and file the flight plan according to AR 95-1, the DOD FLIP, and/or applicable host-country regulations.

11. Correctly perform crew coordination actions.

DESCRIPTION:

1. **Crew Actions.**

a. The PC may direct the other crew member to complete some elements of the IFR flight planning.

b. The other crew member will complete the assigned elements and report the results to the PC.

c. Based on information provided by the other crew member, the PC will ensure that both aviators are current and qualified. He also will determine whether the aircraft is properly equipped to accomplish the assigned mission.

2. **Procedure.** Using USAF, FAA, or host-country weather facilities, obtain weather information. Compare destination forecast and approach minimums, and determine if an alternate airfield is required. Ensure that the flight can be completed according to AR 95-1. Check NOTAMs and the Army Aviation Flight Information Bulletin for any restrictions that apply to the flight. Obtain charts that cover the entire flight route, and allow for changes in routing or destination that may be required because of the weather. Select route(s) or course(s) and altitude(s) that will facilitate mission accomplishment. When possible, select preferred routing. Use a CPU-26A/P computer/ Weems plotter (or equivalent) to plot the flight. Determine the magnetic heading, ground speed, and ETE for each leg, to include flight to the alternate airfield if required. Compute the total distance and flight time, and calculate the required fuel using the appropriate charts in TM 55-1520-234-10 or TM 55-1520-236-10. Ensure that the weight and balance forms kept in the aircraft logbook apply to the aircraft load and CG limitations per AR 95-3. Verify that the aircraft weight and CG will remain within allowable limits for the entire flight. Complete a DD Form 175 (Military Flight Plan) or an equivalent form, and file the flight plan with the appropriate agency.

NOTE: Use of the doppler as an IFR navigational system is not authorized; however, the crew should consider and plan for its use as an emergency backup system.

REFERENCES:

AR 95-1
AR 95-2
AR 95-3
AR 95-10
DOD FLIP
FAR/host-country regulations

FM 1-230
FM 1-240
FM 1-300
Local SOPS and regulations
TC 1-204
TM 55-1500-342-23
TM 55-1520-234-10
TM 55-1520-236-10

TASK 1003

TASK: Prepare DD Form 365-4 (Weight and Balance Clearance Form F-Tactical).

CONDITIONS: Given crew weights, aircraft configuration, aircraft weight and balance information, TM 55-1520-234-10 or TM 55-1520-236-10, and a blank copy of the appropriate DD Form 365-4.

STANDARDS:

1. Correctly compute the takeoff gross weight and CG.

2. Correctly compute the landing gross weight and CG.

3. Determine if aircraft takeoff or landing CG or aircraft gross weight imposes limitations on the proposed flight.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. The PC will compute or direct the other crew member to compute the data for completing DD Form 365-4 according to the references listed below. The PC will verify that the aircraft will remain within the allowable limits for the entire flight.

2. The PC and the other crew member will confirm and acknowledge the accuracy of the completed DD Form 365-4.

REFERENCES:

AR 95-3
TM 55-1500-342-23
TM 55-1520-234-10
TM 55-1520-236-10

TASK 1004

TASK: Prepare DA Form 4887-R (RW Performance Planning Card).

CONDITIONS: Given a completed DD Form 365-4 (Weight and Balance Clearance Form F-Tactical); TM 55-1520-234-10 or TM 55-1520-236-10; environmental conditions at takeoff, en route, and at designation; and a blank DA Form 4887-R.

NOTE: A blank copy of DA Form 4887-R is at the back of this training circular. Reproduce it locally on 5 1/2- by 8-inch paper or card stock.

STANDARDS:

1. Correctly compute performance planning data according to TM 55-1520-234-10 or TM 55-1520-236-10 and the description below.

2. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew Actions.

a. The PC will compute or direct the other crew member to compute the aircraft performance data.

b. The PC will verify that the aircraft meets the performance requirements for the mission and will brief the other crew member on performance planning data.

c. The PC will ensure that aircraft limitations and capabilities are not exceeded.

2. Procedure.

a. DA Form 4887-R is an aid for organizing performance planning data or for handling emergency procedures that may arise during the mission. The form will be used during the APART standardization evaluation. Use the front of the form to organize departure and arrival information. Use the back of the form for fuel management, cruise, and optional data.

b. Use existing conditions to obtain the most accurate performance data. If mission or time constraints preclude using these conditions, use the highest PA and temperature forecast during the mission to establish maximum torque available and go/no-go torque. Use the anticipated takeoff conditions for the time of departure to determine the predicted hover torque. Small variations in planned takeoff conditions, such as a change in fuel or armament load or a change in wind velocity or direction, require a change in the predicted torque value. In these instances, a rule of thumb is that 1 percent or 1/2 psi of torque equals 100 pounds of weight or 5 knots of wind.

c. Complete the items indicated by the circled numbers in Figures 6-6 and 6-7 (pages 6-28 and 6-29) according to instructions in TM 55-1520-234-10 or TM 55-1520-236-10 and, where necessary, as supplemented below. Items not indicated by circled numbers do not pertain to the AH-1. Because DA Form 4887-R is used for several types of rotary-wing aircraft in the Army's inventory, some circled numbers may not be in sequence.

3. Supplemental Instructions.

a. Departure.

(1) Items 1 and 2--PA.

(a) Departure PA. Record the PA forecast for the time of departure (current PA).

(b) Highest PA. Record the highest PA forecast during the mission profile.

(2) Items 3 and 4--FAT.

(a) Departure FAT. Record the FAT forecast for the time of departure (current FAT).

(b) Highest FAT. Record the highest FAT forecast during the mission profile.

(3) Item 5--Takeoff GWT. Record the takeoff gross weight from DD Form 365-4 or the anticipated takeoff gross weight.

(4) Item 6--Load. Record the maximum anticipated gross weight during the mission profile (not to exceed the IGE/OGE maximum allowable gross weight).

(5) Item 7--Calibration Factor. Record the calibration factor (if applicable).

(6) Item 8--Fuel. Record the takeoff fuel weight, and compare it with the total fuel required for the mission.

(7) **Item 9--Max Torque Avail.** Using the maximum torque available (30-minute operation) chart, record the calibrated maximum torque available. (Use maximum forecast conditions.)

(8) **Item 10--Cont Torque Avail.** Using the applicable torque available (continuous operation) chart(s) , record the calibrated continuous torque available. (Use maximum forecast conditions.)

(9) **Item 11 and 12--Max Allowable GWT (OGE/IGE).**

(a) **OGE.** Using the hover chart, the maximum torque available obtained in (7) above, and a 50-foot skid height, record the maximum allowable gross weight OGE.

(b) **IGE.** Using the hover chart, the maximum torque available obtained in (7) above, and a 5-foot skid height, record the maximum allowable gross weight IGE.

NOTE: The weights obtained in (9) (a) and (b) above are the maximum allowable gross weights based on predicted engine performance.

(10) **Item 13 and 14--Go/No-Go Torque (OGE/IGE).**

(a) **OGE.** Using the hover chart and the maximum torque available obtained in (7) above, record the go/no-go torque OGE.

(b) **IGE.** Record the maximum torque available obtained in (7) above as the go/no-go torque IGE.

(11) **Item 15--Predicted Hover Torque.** Using the hover chart, record the calibrated torque (indicated for AH-lS) required to hover at a 5-foot skid height (IGE) for anticipated takeoff conditions.

(12) **Item 16--Hover OGE Torque.** Using the hover chart, record the calibrated torque (indicated for AH-lS) required to hover at a 50-foot skid height (OGE).

NOTE: A change in gross weight of about 100 pounds or a change in wind of 5 knots equates to a change in torque of 1 percent or 1/2 psi.

(13) **Item 17--Max R/c or Endurance IAS.** Using the applicable cruise chart, record the maximum rate of climb or maximum endurance indicated airspeed. Record the torque value that corresponds to the maximum endurance indicated airspeed.

(14) **Item 18--Max Range IAS.** Using the applicable cruise chart, record the maximum range indicated airspeed. Record the torque value that corresponds to the maximum range indicated airspeed.

(15) **Item 19--Validation Factor.** If (9)(b) above results in a gross weight equal to or less than 10,000 pounds, a validation factor is not necessary. If (9) (b) results in a gross weight greater than 10,000 pounds, obtain the validation factor; that is, the torque required to hover at a 5-foot skid height at 10,000 pounds. Use the maximum torque available (30-minute operation) chart and convert the data (if applicable) to indicated torque. Record this data in the validation factor block.

(16) **Item 20--Safe Pedal Margin.**

(a) **Calm wind (tail rotor limited).** Using sheet 1 of the directional control margin chart, determine the maximum gross weight that will allow a 10 percent directional control margin. Compare this weight with the known gross weight shown in (3) above. If the weight is equal to or greater than the known gross weight, place an X beside the "yes" in the safe pedal margin block.

(b) **Steady winds or gusts.** Using sheet 1 of the directional control margin chart, determine the tail rotor control margin zone for existing conditions. Refer to sheet 2 of the chart to determine wind directions and maximum velocities where a 10 percent directional control margin may still be maintained. If the predicted winds (steady winds or highest gusts) are below this figure, place an X beside the "yes" in the safe pedal margin block.

NOTE: Placing an X beside the "no" in the safe pedal margin block will not preclude flight. To ensure safe pedal margin, adjust the aircraft gross weight or maneuver the aircraft so that the wind effect does not decay the directional control margin below 10 percent. Those azimuths where less than a 10 percent directional control margin may exist should be annotated in the space next to the “no” block. This information is valid at any altitude when the aircraft is at a stabilized hover at 100 percent RPM or 6600 RPM.

b. Arrival.

NOTE: When computing arrival data, consider the directional control margin as well as engine performance data to ensure safe mission accomplishment. In the mission operational area, the directional control margin rather than engine performance may be the determining factor for safe mission completion.

The PC must be aware that a significant increase in gross weight or environmental conditions (250 pounds, 5°C, or 500 feet PA) may decrease aircraft performance and require a change in the planned mission.

(1) **Item 21--PA.** Record the forecast PA at destination and/or operational area at ETA.

(2) **Item 22--FAT.** Record the forecast FAT at destination and/or operational area at ETA.

(3) **Item 23--Landing GWT.** Record the estimated landing gross weight.

(4) **Item 24--Max Allowable GWT (OGE/IGE).**

(a) **OGE.** Using arrival environmental conditions, compute maximum allowable gross weight OGE as described in a(9) (a) above.

(b) **IGE.** Using arrival environmental conditions, compute maximum allowable gross weight IGE as described in a(9) (b) above.

(c) **Maximum allowable gross weight.** Using arrival environmental conditions and the directional control margin chart, determine the maximum gross weight where the control margin is at least 10 percent. Compare this weight with the weights obtained in (a) and (b) above, and record the lesser of the three figures as the maximum allowable gross weight.

NOTE: If the planned gross weight exceeds the lesser of the figures obtained in (a) , (b) , or (c) above, a change in mission planning is necessary. If operating near aircraft maximum gross weight or power limits or when the directional control margin is close to 10 percent, the aircrew must use caution and plan the approach or maneuver so that large changes in power application are not required.

(5) **Item 25--Max Torque Avail.** Using arrival environmental conditions, compute the calibrated maximum torque available as described in a(7) above.

(6) **Item 26--Hover IGE** Torque. Using arrival environmental conditions, compute hover IGE torque as described in a(n) above.

(7) **Item 27--Hover OGE Torque.** Using arrival environmental conditions, compute hover OGE torque as described in a(12) above.

(8) **Item 28--Safe Pedal Margin.** Using arrival environmental conditions, compute safe pedal margin as described in a(16) above.

(9) **Items 29 through 37--Indicated Torque.** Using the maximum torque available (30-minute operation) chart, convert calibrated torque values to indicated torque values (if applicable) and record them in the appropriate blocks.

c. **Fuel Management (Item 38).** Use this space to record the in-flight fuel consumption check, to include fuel burnout and required reserve. (Task 1023 describes fuel management procedures.)

d. **Cruise Data.**

(1) **Item 39--PA.** Record the planned cruise PA.

(2) **Item 40--FAT.** Record the forecast FAT at cruise altitude.

(3) **Item 41--Vne.** Using the airspeed operating limits chart, record the maximum indicated airspeed for anticipated environmental conditions.

(4) **Items 42 and 43--Cruise Speed (IAS and TAS).** Using the applicable cruise chart, record the indicated and true airspeeds based on gross weight and cruise data.

NOTE: If flight into turbulence is anticipated, record the torque required to maintain 100 KIAS in the Remarks block.

(5) **Item 44--Cruise Torque.** Using the applicable cruise chart, record the torque required to maintain the airspeeds listed in (4) above.

(6) **Item 45--Cruise Fuel Flow.** Using the appropriate cruise chart, record the predicted fuel flow. (Use the torque listed in (5) above.)

e. **Weight Computation--Item 46.** Use this area to record any additional information appropriate for the mission.

f. **Remarks (Item 47).** Use this space to record any additional information appropriate for the mission. Examples are the minimum fuel required to complete the mission or the torque required to maintain the turbulence penetration airspeed.

NOTE 1: The same PPC data will suffice for consecutive takeoffs and landings when the gross weight or environmental conditions have not increased significantly; that is, 250 pounds, 5°C, or 500 feet PA. The PC will determine the need to recompute data based on lesser changes.

NOTE 2: Crew members may use approved computer programs to derive the required information during flights other than for readiness level progression and evaluation.

REFERENCES:

AR 95-1
AR 95-3
FM 1-203
Task 1023
TM 55-1520-234-10
TM 55-1520-236-10

RW PERFORMANCE PLANNING CARD

For use of this form, see TCs 1-209, 1-213, 1-215, and 1-216; the proponent agency is TRADOC.

DEPARTURE

PA 1 2	FAT 3 4
TAKEOFF GWT 5	LOAD 6
CALIBRATION FACTOR 7	FUEL 8

	DUAL ENG	SINGLE ENG CAL	SINGLE ENG IND
MAX TORQUE AVAIL		9	29
CONT TORQUE AVAIL		10	30
GO/NO-GO TORQUE (OGE/IGE)		13 / 14	31 / 32
PREDICTED HOVER TORQUE		15	33
HOVER OGE TORQUE		16	34
MAX ALLOWABLE GWT (OGE/IGE)		11 / 12	
MAX R/C OR ENDURANCE IAS 17			
MAX RANGE IAS 18			
SINGLE-ENG CAPABILITY IAS (MIN/MAX)			

VALIDATION FACTOR ____________ 19 ____________

SAFE PEDAL MARGIN 20 YES_____ NO_____

ARRIVAL

PA 21	FAT 22
LANDING GWT 23	

	DUAL ENG	SINGLE ENG CAL	SINGLE ENG IND
MAX ALLOWABLE GWT (OGE/IGE)		24	
MAX TORQUE AVAIL		25	35
HOVER IGE TORQUE		26	36
HOVER OGE TORQUE		27	37

SAFE PEDAL MARGIN 28 YES_____ NO_____

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Figure 6-6. Sample DA Form 4887-R (front)

38 **FUEL MANAGEMENT**

FUEL/TIME	BURNOUT ____ Z
START ____ / ____	RESERVE ____ Z
STOP ____ / ____	CONSUMPTION RATE ____ LB PER HR

LONGITUDINAL CYCLIC TRIM

RET VNE KIAS	PROG VNE KIAS

CRUISE DATA

PA 39	FAT 40	VNE 41 KIAS

	DUAL ENG	SINGLE ENG
CRUISE SPEED	____ IAS ____ TAS	42 IAS 43 TAS
CRUISE TORQUE		44
CRUISE FUEL FLOW		45

OPTIONAL DATA

46 WEIGHT COMPUTATION

BASIC WT (OIL INCL)	
CREW AND FLT EQUIP	
EMERG OR OTHER EQUIP	
OPERATING WT	
FUEL WT	
PAX-BAGGAGE-CARGO-AMMO	
TAKEOFF WT (MINUS RUN-UP FUEL)	

REMARKS: 47

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Figure 6-7. Sample DA Form 4887-R (back)

TASK 1005

TASK: Perform preflight inspection.

CONDITIONS: Given an AH-1 helicopter, TM 55-1520-234-10 or TM 55-1520-236-10, and TM 55-1520-234-CL or TM 55-1520-236-CL.

STANDARDS:

1. Without error, perform the preflight inspection according to TM 55-1520-234-CL or TM 55-1520-236-CL.

2. Correctly enter appropriate information on DA Form 2408-12 (Army Aviator's Flight Record) and DA Form 2408-13 (Aircraft Status Information Record).

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. The PC will ensure that the preflight inspection is conducted according to TM 55-1520-234-CL or TM 55-1520-236-CL. He may direct that the other crew member(s) inspect all or designated sections of the aircraft. The PC will verify that all preflight checks have been completed. He will ensure that the appropriate information is entered on DA Forms 2408-12 and 2408-13.

2. The other crew member(s) will complete the preflight inspection as directed and report to the PC whether the aircraft or assigned sections meet required preflight inspection criteria.

3. The PC will ensure that a walk-around inspection is completed prior to flight.

NIGHT OR NVG CONSIDERATIONS: If time permits, accomplish the preflight inspection during daylight hours. During the hours of darkness, use a flashlight with an unfiltered lens to supplement available lighting. Hydraulic leaks, oil leaks, and other defects are difficult to see using a flashlight with a colored lens. Ensure that all internal and external lights are operational. TC 1-204 contains details on preflight inspection at night.

REFERENCES:

Aircraft logbook
AR 95-1
DA Pamphlet 738-751
TC 1-204

TM 5-1520-234-10
TM 55-1520-234-CL
TM 55-1520-236-10
TM 55-1520-236-CL

TASK 1007

TASK: Perform engine-start through after-landing checks.

CONDITIONS: In an AH-1 helicopter or an AH1FWS and given TM 55-1520-234-CL or TM 55-1520-236-CL.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-234-CL or TM 55-1520-236-CL.

2. Correctly perform crew coordination actions.

DESCRIPTION:

1. The crew will accomplish all checks in the correct sequence according to TM 55-1520-234-CL or TM 55-1520-236-CL. The P will record appropriate data on the aircraft logbook forms.

2. Crew members will use the call and response method to complete the required checks.

3. The aircrew and the ground crew, if available, will clear the area around the aircraft prior to the engine start.

4. The P* will announce when he initiates the engine start.

NOTE 1: The call and response method is defined as the P reading the required check and the response. The P* will answer with the appropriate response.

NOTE 2: The PC is responsible for ensuring that all checks are accomplished according to TM 55-1520-234-CL or TM 55-1520-236-CL.

NIGHT OR NVG CONSIDERATIONS: Before starting the engine or performing the run-up check, the aircrew will ensure that all appropriate internal and external lights are operational and properly set. Aircraft lighting levels must be high enough so that the P* can see the instruments easily and start the engine without exceeding aircraft operating limitations.

REFERENCES:

AR 95-1
AR 385-95
Engine HIT log
TM 55-1520-234-CL
TM 55-1520-236-CL
Unit SOP

TASK 1016

TASK: Perform hover power check.

CONDITIONS: In an AH-1 helicopter or an AH1FWS, with performance planning information available, at an appropriate hover height.

STANDARDS:

1. Perform the check near the takeoff point and in the direction of takeoff.

2. Maintain a stationary hover ±1 foot, and determine, without error, that sufficient power is available to complete the mission.

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* will announce his intent to bring the aircraft to a stationary hover. He will remain focused outside the aircraft and will announce when the aircraft is stabilized at the desired hover altitude.

2. The P* should use a 5-foot stationary hover when performing this task unless the mission or terrain dictates otherwise. If another hover height is required, he should use that height to compute go/no-go torque and predicted hover torque.

3. The P will announce when he is ready for the takeoff and will remain focused outside the aircraft. He will announce when his attention is directed inside the cockpit: for example, when monitoring aircraft instruments and verifying the power check. The P will compare the actual performance data to that computed and announce the results to the P*.

NOTE 1: If the torque required to maintain a stationary hover exceeds the go/no-go torque (OGE) but does not exceed the go/no-go torque (IGE), the P* may attempt only IGE maneuvers. If the torque required to maintain a stationary hover does not exceed the go/no-go torque (OGE), he may attempt any maneuver requiring OGE/IGE power or less.

NOTE 2: Anytime the gross weight or environmental conditions increase significantly, the aircrew should perform additional hover power checks and, if necessary, recompute all values. Significant increases are defined as 250 pounds gross weight, 5°C, or 500 feet PA.

4. The PC will determine whether the aircraft is capable of completing the assigned mission. He will ensure that aircraft limitations will not be exceeded.

5. The P will announce when the hover power check is completed.

NIGHT OR NVG CONSIDERATIONS: The crew must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation. If artificial lighting is deemed necessary, the crew should turn it on prior to starting the maneuver.

REFERENCES:

TC 1-204
TM 55-1520-234-10
TM 55-1520-236-10

TASK 1017

TASK: Perform hovering flight.

CONDITIONS: In an AH-1 helicopter or an AH1FWS with the before-takeoff check completed and the aircraft cleared.

STANDARDS:

1. **Takeoff to a Hover.**

a. Establish a vertical ascent to a hover altitude of 3 feet, ±1 foot.

b. Maintain heading ±10 degrees.

c. Do not allow drift to exceed 1 foot.

2. **Hovering Flight.**

a. **Stationary.**

(1) Maintain altitude 3 feet, ±1 foot.

(2) Maintain heading ±10 degrees.

(3) Do not allow drift to exceed 2 feet.

b. **Forward, sideward, or rearward.**

(1) Maintain altitude 3 feet, ±l foot.

(2) Maintain heading ±10 degrees.

(3) Maintain a constant hover speed.

(4) Maintain ground track.

(5) Do not allow drift to exceed 2 feet.

3. **Hovering Turns.**

a. Maintain altitude 3 feet, ±1 foot.

b. Do not allow drift to exceed 2 feet from the pivot point.

c. Maintain a constant rate of turn.

4. Landing From a Hover.

a. Execute a smooth, controlled descent with minimum drift at touchdown.

b. Maintain heading ±10 degrees.

5. Crew Coordination. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew Actions.

a. The P* will announce his intent to perform a specific hovering flight maneuver. He will focus his attention primarily outside the aircraft. The P* will announce when he terminates the maneuver.

b. The P will assist the P* in clearing the aircraft and provide adequate warning of obstacles, excessive drift, or excessive altitude changes. He will announce when his attention is focused inside the cockpit; for example, when initializing the doppler.

2. Procedures.

a. Takeoff to a hover. With the collective fully down, place the cyclic in a neutral position. Increase collective pitch with a smooth, positive pressure. Apply pressure and counterpressure on the pedals to maintain heading, and coordinate the cyclic for a vertical ascent. As the aircraft leaves the ground, check for proper control response and aircraft CG. On reaching the desired hover altitude, perform a power check according to TM 55-1520-234-CL or TM 55-1520-236-CL.

b. Hovering flight. Adjust the cyclic to maintain a stationary hover or to hover in the desired direction. Control heading with the pedals, and maintain altitude with the collective. Maintain a constant hover speed. To return to a stationary hover, apply cyclic in the opposite direction while maintaining altitude with the collective and heading with the pedals.

c. Hovering turns. Apply pressure to the desired pedal to begin the turn. Use pressure and counterpressure on the pedals to maintain a constant rate of turn. (Do not exceed 90 degrees in four seconds.) Coordinate cyclic control to maintain position over the pivot point while maintaining altitude with the collective. (Hovering turns can be made around the vertical axis, nose, or tail of the aircraft.)

d. <u>Landing from a hover.</u> From a stationary hover, lower the collective to effect a smooth descent to touchdown. Make necessary corrections with the pedals and cyclic to maintain a constant heading and position. On ground contact, ensure that the aircraft remains stable. Continue decreasing the collective smoothly and steadily until the entire weight of the aircraft rests on the ground. Neutralize the pedals and cyclic, and reduce the collective to the fully down position.

NIGHT OR NVG CONSIDERATIONS: Movement over areas of limited contrast, such as tall grass, water, or desert, tends to cause spatial disorientation. To prevent spatial disorientation, seek hover areas that provide adequate contrast and use proper scanning techniques. If disorientation occurs, apply sufficient power and execute a takeoff. If a takeoff is not feasible, try to maneuver the aircraft forward and down to the ground to limit the probability of touchdown with sideward or rearward movement. Use artificial lighting as deemed necessary. Treat visual obstacles, such as shadows, the same as physical obstacles.

REFERENCES:

FM 1-203
TC 1-204
TM 55-1520-234-10
TM 55-1520-234-CL
TM 55-1520-236-10
TM 55-1520-236-CL

TASK 1018

TASK: Perform a normal takeoff.

CONDITIONS: In an AH-1 helicopter or an AH1FWS with the hover power and before-takeoff checks completed and the aircraft cleared.

STANDARDS:

1. Initiate the takeoff from an appropriate hover altitude ±1 foot or from the ground.

2. Maintain takeoff heading ±10 degrees.

3. Maintain ground track alignment with the takeoff direction with minimum drift.

4. Maintain the aircraft in trim above 50 feet AGL.

5. Accelerate to the desired airspeed ±10 knots.

6. Maintain the desired rate of climb ±100 FPM.

7. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew Actions.

a. The P* will remain focused outside the aircraft during the maneuver. He will announce whether he will initiate the takeoff from the ground or from a hover and his intent to abort or alter the takeoff.

b. The P will announce when he is ready for the takeoff and will remain focused outside the aircraft to assist in clearing and to provide adequate warning of traffic and obstacles. He will announce when his attention is focused inside the cockpit; for example, when monitoring caution lights.

2. Procedures.

a. From the ground. Select reference points to maintain ground track. With the cyclic in neutral position, increase collective pitch until the aircraft becomes "light on the skids." Maintain heading with the pedals. Continue increasing collective pitch until the aircraft leaves the ground. As the aircraft leaves the ground, apply forward cyclic as required to accelerate through ETL at the minimum altitude that is appropriate for the terrain and obstacles. As the aircraft reaches ETL, adjust the cyclic to obtain the desired climb attitude and adjust the collective to establish the desired rate of climb. Maintain ground track and keep the aircraft aligned with the takeoff direction below 50 feet; then maintain the aircraft in trim above 50 feet AGL.

b. **From a hover.** Select reference points to maintain ground track. Apply forward cyclic to accelerate the aircraft while maintaining heading with the pedals and rate of climb with the collective. Continue to apply forward cyclic as required to accelerate through ETL at an altitude that is appropriate for the terrain and obstacles. Perform the rest of the maneuver as for a takeoff from the ground.

NOTE 1: The P* must avoid nose-low accelerative attitudes in excess of 10 degrees.

NOTE 2: During training, a climb airspeed of 80 KIAS and a rate of climb of 500 FPM are recommended.

NIGHT OR NVG CONSIDERATIONS:

1. If sufficient illumination or NVG resolution exists to view obstacles, the P* can accomplish the takeoff in the same way as he does a normal takeoff during the day. If sufficient illumination or NVG resolution does not exist, he should perform an altitude-over-airspeed takeoff to ensure obstacle clearance. The P* may perform the takeoff from a hover or from the ground.

NOTE: The aircrew should treat visual obstacles, such as shadows, the same as physical obstacles.

2. Reduced visual references during the takeoff and throughout the ascent at night may make it difficult to maintain the desired ground track. The aircrew should know the surface wind direction and velocity. This will assist the P* in estimating the appropriate crab angle required to maintain the desired ground track.

3. The crew must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation.

4. If more than hover power is used for the takeoff, the P* should maintain that power setting until approximately 10 knots prior to reaching climb airspeed. Then he should adjust power as required to establish the desired rate of climb and airspeed. The P should constantly cross-check the aircraft instruments and assist with obstacle avoidance.

5. The crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection.

REFERENCES:

FM 1-202
FM 1-203
TC 1-204
TM 55-1520-234-10
TM 55-1520-234-CL
TM 55-1520-236-10
TM 55-1520-236-CL

TASK 1020

TASK: Perform simulated maximum performance takeoff.

CONDITIONS: In an AH-1 helicopter or an AH1FWS with the hover power and before-takeoff checks completed and the aircraft cleared.

STANDARDS:

1. Prior to 100 feet AGL--

a. Maintain takeoff heading ±10 degrees.

b. Maintain ground track alignment with the takeoff direction with minimum drift.

c. Maintain power as required ±2 percent or ±1 psi torque.

d. Maintain a 40-knot attitude until clear of the obstacles.

2. When above 100 feet AGL--

a. Maintain the aircraft in trim.

b. Maintain climb airspeed ±10 KIAS.

c. Maintain rate of climb ±100 FPM.

d. Maintain ground track alignment with the takeoff direction with minimum drift.

e. Maintain takeoff power until 10 knots prior to reaching climb airspeed.

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. **Crew Actions.**

a. The P* will remain focused outside the aircraft during the maneuver. He will announce when he initiates the maneuver and his intent to abort or alter the takeoff.

b. The P will announce when he is ready for the takeoff and will remain focused outside the aircraft to assist in clearing and to provide adequate warning of traffic and obstacles. He will announce when his attention is focused inside the cockpit; for example, when monitoring and calling out torque.

2. Procedure. Align the helicopter with the desired takeoff direction. Select reference points to maintain ground track. Place the cyclic in the neutral position, increase collective pitch, and maintain heading with the pedals. As the aircraft leaves the ground, continue to increase collective pitch to obtain the power necessary to clear obstacles safely (10 percent or 5 psi above hover torque for training) . Maintain takeoff heading with the pedals and a 40-knot attitude and ground track with the cyclic. At 100 feet AGL or after the obstacles are cleared, place the aircraft in trim and apply cyclic to establish an attitude that will result in the desired climb airspeed. Maintain takeoff power until 10 knots prior to reaching climb airspeed. Then adjust power to establish the desired rate of climb.

NOTE 1: This is a training maneuver only. It simulates aircraft operations at or near maximum allowable gross weight or at a density altitude where maximum power available represents just enough power to take off and clear obstacles. This maneuver should not be confused with a confined area or terrain flight takeoff.

NOTE 2: Hover OGE power is required for this task.

NOTE 3: During training, a climb airspeed of 80 KIAS and a rate of climb of 500 FPM are recommended.

NIGHT OR NVG CONSIDERATIONS:

1. Reduced visual references during the takeoff and throughout the ascent at night may make it difficult to maintain the desired ground track. The aircrew should know the surface wind direction and velocity. This will assist the P* in estimating the appropriate crab angle required to maintain the desired ground track.

2. The crew must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation.

3. The crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection.

REFERENCES:

FM 1-202
FM 1-203
TC 1-204

TM 55-1520-234-10
TM 55-1520-234-CL
TM 55-1520-236-10
TM 55-1520-236-CL

TASK 1021

TASK: Perform deceleration/acceleration.

CONDITIONS: In an AH-1 helicopter or an AH1FWS, given an altitude, with the aircraft cleared.

STANDARDS:

1. Maintain entry airspeed 100 KIAS, ±10 KIAS, and deceleration airspeed 60 KIAS, ±10 KIAS.

2. Maintain altitude ±100 feet.

3. Maintain heading ±10 degrees.

4. Maintain the aircraft in trim.

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew Actions.

a. The P* will announce when he initiates the maneuver, his intent to abort or alter the maneuver, and when he completes the maneuver. He will remain focused outside the aircraft throughout the maneuver.

b. The P will remain focused outside the aircraft to assist in clearing and to provide adequate warning of traffic and obstacles. He will announce when his attention is focused inside the cockpit; for example, when announcing airspeed, altitude, or heading changes.

2. Procedure. To initiate the maneuver, simultaneously reduce collective pitch and apply aft cyclic to obtain the minimum deceleration airspeed. Maintain entry altitude with the collective, airspeed with the cyclic, and heading with the pedals. As the aircraft approaches the minimum deceleration airspeed, simultaneously increase the collective to maintain altitude and apply forward cyclic to accelerate to the entry airspeed. Adjust the pedals to maintain trim, and cross-check attitude by looking at the horizon and the flight instruments.

NIGHT OR NVG CONSIDERATIONS:

1. The crew may use the VSI as an altitude reference aid.

2. The crew must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation.

REFERENCES:

FM 1-203
TC 1-204
TM 55-1520-234-10
TM 55-1520-236-10

TASK 1022

TASK: Perform traffic pattern flight.

CONDITIONS: In an AH-1 helicopter or an AH1FWS; given altitudes, airspeeds, and traffic pattern headings; with the aircraft cleared.

STANDARDS:

1. Maintain rate of climb or descent ±100 FPM.

2. Roll out on desired heading within ±10 degrees.

3. Maintain the aircraft in trim.

4. Maintain airspeed ±10 KIAS (NVG 100 KIAS maximum).

5. Maintain altitude ±100 feet.

6. Maintain ground track alignment with minimum drift.

7. Without error, complete the before-landing check according to TM 55-1520-234-CL or TM 55-1520-236-CL.

8. Correctly perform crew coordination actions.

DESCRIPTION:

1. <u>Crew Actions.</u>

a. The P* will remain focused outside the aircraft while in the traffic pattern. He will announce and clear each turn in the pattern. The P* also will announce the type of approach planned.

b. The P will assist the P* in clearing the aircraft in the traffic pattern and will provide adequate warning of traffic and obstacles. He will announce when his attention is focused inside the cockpit; for example, when calling out the before-landing check.

2. <u>Procedures.</u>

a. Maneuver the aircraft into position to enter the downwind leg midfield at a 45-degree angle (or as locally prescribed), at traffic pattern altitude, and at the proper airspeed. (A straight-in or base-leg entry may be used if approved by ATC.) On downwind, complete the before-landing check. Prior to turning base, reduce power and airspeed as required and initiate a descent. Turn base and final legs, as appropriate, to maintain the desired ground track. If performing a straight-in or base-leg entry, reduce airspeed at a point comparable to that for a normal approach. Then execute the desired approach.

b. For a closed traffic pattern after takeoff, climb straight ahead at climb airspeed to the appropriate altitude, turn to crosswind, and continue the climb. Initiate the turn to downwind, as required, to maintain the desired ground track. Adjust power and attitude, as required, to maintain traffic pattern altitude and airspeed.

NOTE: During training, the recommended airspeed is 80 KIAS on crosswind and base legs and 100 KIAS on the downwind leg.

NIGHT OR NVG CONSIDERATIONS: The P* should maintain orientation regarding the location of the landing area and concentrate on obstacle avoidance. The P should make all internal checks possible from his crew position. For identification purposes, the crew should turn on the landing light when entering the traffic pattern and then extinguish it until needed for the approach.

NOTE 1: During training, the maximum recommended airspeed on the downwind leg is 70 KIAS and the maximum recommended bank angle is 30 degrees.

NOTE 2: The crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection.

REFERENCES:

DOD FLIP
FM 1-203
TC 1-204
TM 55-1520-234-10
TM 55-1520-234-CL
TM 55-1520-236-10
TM 55-1520-236-CL
Unit SOP

TASK 1023

TASK: Perform fuel management procedures.

CONDITIONS: In an AH-1 helicopter or an AH1FWS.

STANDARDS:

1. Verify that the required amount of fuel is on board at the time of takeoff.

2. Correctly perform an in-flight fuel consumption check 15 to 30 minutes after leveling off or upon entering into the mission profile.

3. Initiate an appropriate course of action if the actual fuel consumption varies from the planned value and the mission cannot be completed with the required reserve.

4. Frequently monitor the fuel quantity and consumption rate during the flight.

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. **<u>Crew Actions.</u>**

a. The P will record initial fuel figures, fuel flow computation, and burnout and reserve times. He will announce when he initiates the fuel check and when he completes the fuel check.

b. The P will announce the results of the fuel check, and the P* will acknowledge.

2. **<u>Procedures.</u>**

a. **<u>Before-takeoff fuel check.</u>** Determine the total fuel on board, and compare it with mission fuel requirements determined during premission planning. If the fuel on board is inadequate, have the aircraft refueled or abort or revise the mission.

b. **<u>Initial airborne fuel reading.</u>** After leveling off or entering into the mission profile and setting the appropriate power, record the total fuel quantity and time of the reading.

c. Fuel consumption check. With the aircraft in mission or cruise profile and 15 to 30 minutes after taking the initial airborne fuel reading, record the remaining fuel and time of the reading. Compute and record the consumption rate, burnout time, and reserve time. Determine if the remaining fuel is sufficient to complete the flight with the required reserve. If the amount of fuel is inadequate, initiate an appropriate course of action.

d. Fuel quantity and consumption. Periodically monitor the fuel quantity and consumption rate. If the fuel quantity or flow indicates a deviation from computed values, repeat the fuel consumption check to determine if the amount of fuel is adequate to complete the mission.

NIGHT OR NVG CONSIDERATIONS: The P should complete all duties associated with fuel management procedures.

AR 95-1
FM 1-240
TC 1-204
TM 55-1520-234-10
TM 55-1520-236-10
Unit SOP

TASK 1025

TASK: Navigate by pilotage and dead reckoning.

CONDITIONS: In an AH-1 helicopter or an AH1FWS and given appropriate maps, plotter, computer, and flight log.

STANDARDS:

1. Maintain orientation within 500 meters.

2. Arrive at checkpoints within ±3 minutes of the ETA or adjusted ETA.

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* will remain focused outside the aircraft and will respond to navigation instructions or cues given by the P. The P* will acknowledge instructions given by the P for heading and airspeed changes necessary to navigate the desired course. The P* will announce significant terrain features to assist in navigation.

2. The P will direct the P* to change aircraft heading and airspeed as appropriate to navigate the desired course. The P will use rally terms, specific headings, relative bearings, or key terrain features in accomplishing this task. He will announce all plotted wires prior to approaching their location. The P will divide his attention between the map and flight instruments inside the cockpit and the terrain features outside the aircraft. As his workload permits, the P will assist in clearing the aircraft and will provide adequate warning to avoid traffic and obstacles.

3. During the flight, the P will use pilotage and dead reckoning to determine the position of the aircraft. He will perform a ground speed check as soon as possible by computing the actual time required to fly a known distance. The P will adjust estimated times for subsequent legs of the flight route using actual ground speed. He will advise the P* to adjust headings to reflect wind drift corrections for the remaining legs of the flight. The P* will make heading corrections to maintain the desired course (ground track).

NIGHT OR NVG CONSIDERATIONS: More detailed flight planning is required when the flight is conducted at terrain flight altitudes, when visibility is reduced, or during low-ambient-light conditions. TC 1-204 contains details on night navigation and mission planning.

NOTE: The crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection.

REFERENCES:

Aeronautical charts
FM 1-240
TC 1-201
TC 1-204

TASK 1026

TASK: Perform doppler navigation.

CONDITIONS: In an AH-1 helicopter or an AH1FWS with equipment installed.

STANDARDS:

1. Correctly operate the doppler according to TM 55-1520-234-10 or TM 55-1520-236-10.

2. Maintain the desired track.

3. Correctly determine the position of the aircraft along the flight route.

4. Correctly use the HSI while using doppler inputs.

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. The CPG will announce all doppler destination changes and verify the heading. The P* will acknowledge and verify the new doppler heading.

NOTE: The CPG will not program the doppler in flight if he is performing P* duties.

2. The CPG will perform doppler turn-on, test, and programming procedures. The P* will use the HSI with the doppler when flying the selected course. The CPG will perform doppler update and target store procedures. He also will perform the shutdown procedure.

NOTE: Use of the doppler as an IFR navigational system is not authorized; however, the crew should consider and plan for its use as an emergency backup system.

REFERENCES:

FM 1-203
FM 1-240
TC 1-201
TC 1-204
TM 11-5841-281-12
TM 55-1520-234-10
TM 55-1520-236-10

TASK 1028

TASK: Perform VMC approach.

CONDITIONS: In an AH-1 helicopter or an AH1FWS with the before-landing check completed.

STANDARDS:

1. Select a suitable landing area.

2. Establish the proper altitude to clear obstacles on final approach, and maintain altitude ±100 feet.

3. Establish entry airspeed ±10 KIAS.

4. Maintain a constant approach angle to clear obstacles.

5. Maintain ground track alignment with the landing direction with minimum drift.

6. Maintain an apparent rate of closure, not to exceed the speed of a brisk walk.

7. Execute a smooth, controlled termination to a hover or to the ground.

8. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew Actions.

a. The P* will focus his attention primarily outside the aircraft to ensure obstacle clearance throughout the approach and landing. He will announce when he begins the approach and whether he will terminate the approach to a hover or to the ground. The P* also will announce the intended point of landing and any deviation from the approach.

b. The P will confirm the suitability of the landing area. He will assist the P* in clearing the aircraft and provide adequate warning of traffic and obstacles. The P will acknowledge the P*'s intent to deviate from the planned approach. He will announce when his attention is focused inside the cockpit.

2. Procedures.

a. To a hover. Determine an approach angle that allows the safe clearance of obstacles while descending to the intended point of landing. Once the approach angle is intercepted, adjust the collective as necessary to establish and maintain the angle. Maintain entry airspeed until the apparent ground speed and rate of closure appear to be increasing. Progressively decrease the rate of descent and rate of closure until an appropriate hover is established over the intended termination point. Maintain ground track alignment with the landing direction while maintaining the aircraft in trim above 50 feet AGL. Align the aircraft with the landing direction below 50 feet AGL.

b. To the ground. Proceed as for an approach to a hover, except continue the descent to the ground. Make the touchdown with minimum forward or lateral movement. After ground contact, ensure that the aircraft remains stable with all movement stopped. Smoothly lower the collective to the fully down position, and neutralize the pedals and cyclic.

NOTE 1: During training, the recommended entry airspeed is 80 KIAS.

NOTE 2: Steep approaches can place the aircraft in potential settling-with-power conditions. The crew must be familiar with diagnosing and correcting these situations.

NOTE 3: The crew should make the decision to go around if visual contact with the touchdown point is lost or if it becomes apparent that it will be lost. They must make the decision to go around before descending below obstacles or decelerating below ETL.

NOTE 4: FM 1-202 contains procedures for reducing the hazards associated with the loss of visual references during the landing because of blowing sand or snow.

NIGHT OR NVG CONSIDERATIONS:

1. Altitude, apparent ground speed, and rate of closure are difficult to estimate at night. Therefore, the rate of descent during the final 100 feet should be slightly slower than during the day to avoid abrupt attitude changes at low altitudes.

2. The crew should be aware that surrounding terrain or vegetation may decrease contrast and degrade depth perception during the approach to the landing area. Before descending below obstacles, the crew should determine the need for artificial lighting. Crew members must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation.

3. The P* may terminate the NVG approach to a hover or to the ground with zero forward speed. He also may terminate with a running landing at a touchdown speed below, at, or slightly above ETL.

4. The P* should focus his attention on the location of the landing area and the avoidance of obstacles. The P should make all internal checks.

REFERENCES:

FM 1-202
FM 1-203
TC 1-204
TM 55-1520-234-10
TM 55-1520-234-CL
TM 55-1520-236-10
TM 55-1520-236-CL

TASK 1030

TASK: Perform a shallow approach to a running landing.

CONDITIONS: In an AH-1 helicopter or an AH1FWS with a suitable landing area selected and the before-landing check completed.

STANDARDS:

1. Establish entry altitude ±100 feet.

2. Establish entry airspeed ±10 knots.

3. Maintain ground track alignment with landing direction with minimum drift and heading control ±10 degrees.

4. Maintain a constant approach angle.

5. Execute a smooth, controlled termination with landing area alignment ±5 degrees, at or slightly above ETL, at the intended point of landing.

6. Correctly perform crew coordination actions.

DESCRIPTION:

1. **Crew Actions.**

a. The P* will remain focused outside the aircraft to clear the aircraft throughout the approach and landing. He will announce his intent to perform a running landing, the intended point of landing, and any deviation from the planned approach.

b. The P will confirm the suitability of the area, assist the P* in clearing the aircraft, and provide adequate warning of traffic and obstacles. He will acknowledge the P*'s intent to deviate from the planned approach. The P will announce when his attention is focused inside the cockpit.

2. **Procedure.** When the desired approach angle is intercepted (on base or final), reduce collective pitch to establish and maintain the descent. Maintain entry airspeed until the apparent ground speed and rate of closure appear to be increasing. Maintain ground track alignment with the landing direction by keeping the aircraft in trim above 50 feet AGL and aligning the aircraft with the landing direction below 50 feet AGL. Maintain aircraft attitude and landing alignment with the cyclic and heading with the pedals. Execute a smooth touchdown at or slightly above ETL. After landing, lower the collective to reduce ground run. Maintain heading with the pedals and position with the cyclic. When the aircraft comes to a complete stop, neutralize the cyclic and pedals and lower the collective fully down.

NOTE 1: During training, 80 KIAS on crosswind and base legs and 100 KIAS on the downwind leg are recommended.

NOTE 2: FM 1-202 contains procedures for reducing the hazards associated with the loss of visual references during the landing because of blowing snow or dust.

NIGHT OR NVG CONSIDERATIONS: Altitude, apparent ground speed, and rate of closure are difficult to estimate at night. Therefore, the rate of descent during the final 100 feet should be slightly slower than during the day to avoid abrupt attitude changes at low altitudes. After establishing the descent, the P* should reduce airspeed to approximately 50 KIAS until intercepting the desired approach angle. He should maintain this angle until the apparent ground speed and rate of closure appear to be increasing. Then the P* should progressively decrease the rate of descent and forward speed until he terminates the maneuver.

NOTE 1: The rate of descent at touchdown must not exceed 300 FPM.

NOTE 2: The crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection.

REFERENCES:

FM 1-202
FM 1-203
TC 1-204
TM 55-1520-234-10
TM 55-1520-234-CL
TM 55-1520-236-10
TM 55-1520-236-CL

TASK 1031

TASK: Perform confined area operations.

CONDITIONS: In an AH-1 helicopter or an AH1FWS with the before-landing check completed.

STANDARDS:

1. Prior to the approach--

a. Establish entry altitude ±100 feet.

b. Establish entry airspeed ±10 KIAS.

c. Properly perform a landing area reconnaissance.

2. During the approach--

a. Maintain ground track alignment with the selected approach path with minimum drift.

b. Maintain a constant approach angle.

c. Maintain the appropriate rate of closure.

d. Properly perform a low reconnaissance.

e. Execute a smooth, controlled termination in the forward one-third of the landing area.

3. Prior to takeoff--

a. Properly complete the ground reconnaissance and select a suitable takeoff path.

b. Without error, perform a hover power check as required and complete the before-takeoff check.

c. Properly clear the aircraft.

4. Prior to clearing obstacles--

a. Maintain heading ±10 degrees.

b. Maintain ground track with minimum drift.

c. Use power as required to clear obstacles safely while not exceeding aircraft limitations.

5. After clearing obstacles--

a. Establish climb airspeed ±10 KIAS.

b. Maintain rate of climb ±100 FPM.

c. Maintain the aircraft in trim.

d. Maintain ground track alignment with the selected takeoff path with minimum drift.

6. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* will select a flight path, an airspeed, and an altitude that afford best observation of the landing area. He will remain focused outside the aircraft to evaluate the suitability of the area, evaluate the effects of the wind, and clear the aircraft throughout the approach and landing. The P* will select a touchdown point in the forward one-third of the landing area and announce whether he will terminate the approach to a hover or to the ground. He also will announce any deviation from the planned approach and a tentative flight path for the departure.

2. The P will confirm the suitability of the area, assist in clearing the aircraft, and provide adequate warning of traffic and obstacles. He will acknowledge the P*'s intent to deviate from the planned approach. The P will announce when his attention is focused inside the cockpit.

3. On final approach, the crew will perform a low reconnaissance and confirm the suitability of the selected landing area. They will evaluate obstacles that constitute a possible hazard and will confirm the suitability of the departure path selected during the landing area reconnaissance. If a successful landing is doubtful or if visual reference with the touchdown point is lost, the P* will announce initiation of a go-around. He will do this before reducing airspeed below ETL or descending below obstacles. The P* will maintain the aircraft in trim above the obstacles and maintain landing area alignment below the obstacles. If the P* detects instability during the touchdown, he will reposition the aircraft.

4. After landing in the confined area, the crew will perform a ground reconnaissance. The P* will announce his intent to conduct specific hovering maneuvers and the termination of each maneuver. He also will announce his intent to take off and the direction and type of the takeoff.

5. The crew will formulate the takeoff plan by evaluating the wind, obstacles, and shape of the area. They will select the takeoff point and ensure adequate main and tail rotor clearance while maneuvering. The P will read the before-takeoff check and will verify a hover power check if required. The crew will clear the aircraft during the takeoff.

6. The P* will remain focused outside the aircraft during the maneuver. He will announce whether he will take off from the ground or from a hover and his intent to abort or alter the takeoff. The P* will coordinate the cyclic and collective as necessary to attain a constant angle of climb that will ensure obstacle clearance. He will maintain heading with the pedals.

7. The P will announce when he is ready for takeoff and will remain focused outside the aircraft to assist the P* in clearing and to provide adequate warning of traffic and obstacles. He will announce when his attention is focused inside the cockpit; for example, when monitoring torque or performing map navigation.

NOTE 1: Hover OGE power is required for this task.

NOTE 2: Depending on the simulated threat or type of terrain flight being conducted, the crew may initiate this maneuver from either a straight-in or a circling pattern.

NIGHT OR NVG CONSIDERATIONS:

1. **<u>Night.</u>**

a. Confined areas are more difficult to evaluate at night because of low contrast. To perform successful confined area operations, the crew must know the various methods of determining the height of obstacles.

b. Before conducting confined area operations at night, the crew must ensure that the searchlight is in the desired position. If they use the searchlight, their night vision will be impaired for several minutes. Therefore, crew members must exercise extra caution if they resume flight before reaching full dark adaptation.

c. Altitude, apparent ground speed, and rate of closure are difficult to estimate at night. Therefore, the rate of descent during the final 100 feet should be slightly slower than during the day to avoid abrupt attitude changes at low altitudes.

2. NVG.

a. The P* should initiate the approach upon intercepting an angle that will ensure obstacle clearance. He will maintain ground track alignment with the selected approach path. The P* should adjust the collective to establish and maintain a constant approach angle and adjust the cyclic as necessary to maintain the appropriate rate of closure. When small objects on the ground are distinguishable, the crew can confirm the landing area reconnaissance. At this point, the P* should progressively decrease the rate of descent and forward speed until he terminates the maneuver. He may terminate the maneuver to a hover or to the ground. If a successful landing is doubtful, the P* should initiate a go-around before reducing airspeed below ETL or before descending below obstacles.

b. The crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection.

c. The crew must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation.

REFERENCES:

FM 1-203
TC 1-201
TC 1-204
TM 55-1520-234-10
TM 55-1520-236-10
Unit SOP

TASK 1032

TASK: Perform slope operations.

CONDITIONS: In an AH-1 helicopter with the aircraft cleared.

STANDARDS:

1. Maintain heading ±5 degrees.

2. Do not exceed a l-foot drift before and allow no drift after skid contact with the ground.

3. Execute a smooth, controlled descent and touchdown.

4. Execute a smooth, controlled ascent.

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. **Crew Actions.**

a. The P* will announce his intent to perform a slope operation and will establish the aircraft over the slope. (The degree of slope chosen should not be so great as to require large cyclic inputs to accomplish the landing.) The P* will request the P's assistance in determining the suitability of the slope and will announce any deviation from the landing or takeoff.

b. The P will assist in clearing the aircraft and will provide adequate warning of obstacles, excessive drift, or excessive altitude changes. He will confirm the suitability of the intended landing area. The P will announce when his attention is focused inside the cockpit.

2. **Procedures.**

a. **Landing.** Announce initiation of the slope landing. Reduce the collective to execute a smooth, controlled descent until the upslope skid contacts the ground. Adjust the cyclic to maintain the aircraft in a level attitude while maintaining heading with the pedals. Continue to lower the collective; simultaneously apply lateral cyclic into the slope to maintain the position of the upslope skid until both skids are firmly on the ground. When the collective is fully down, neutralize the pedals and cyclic. If cyclic limits or aircraft slope limits are reached before the aircraft is firmly on the ground, return the aircraft to a hover. Select a new area before attempting another slope landing.

b. Takeoff. Announce initiation of the takeoff. Execute a smooth, controlled ascent by applying lateral cyclic into the slope to maintain the position of the upslope skid. Increase collective pitch to raise the downslope skid. Maintain heading with the pedals and coordinate the cyclic until the aircraft is level. As the aircraft leaves the ground, adjust the cyclic to accomplish a vertical ascent to a hover while minimizing drift.

NOTE 1: Before conducting slope operations, the crew must understand dynamic rollover characteristics.

NOTE 2: The P* should be aware of the common tendency to become tense and, as a result, to overcontrol the aircraft while performing slope operations.

NOTE 3: If possible, the P* should orient the aircraft into the wind.

NIGHT OR NVG CONSIDERATIONS: When conducting slope operations, the crew should select reference points to determine slope angles. (References will probably be limited and difficult to ascertain.) If at any time successful completion of the landing is doubtful, the P* must abort the maneuver.

NOTE 1: The crew must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation.

NOTE 2: The crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection.

REFERENCES:

FM 1-203
TC 1-204
TM 55-1520-234-10
TM 55-1520-236-10

TASK 1033

TASK: Perform terrain flight mission planning.

CONDITIONS: Prior to flight in an AH-1 helicopter or an AH1FWS and given a mission briefing, navigational computer, navigational maps, and other materials as required.

STANDARDS:

1. Correctly analyze the mission.

2. Perform a map or photo reconnaissance, and ensure that obstacles to terrain flight are plotted.

3. Select appropriate terrain flight modes.

4. Select appropriate primary and alternate routes.

5. Obtain and correctly evaluate the weather briefing.

6. Correctly perform crew coordination actions.

DESCRIPTION:

1. The PC will direct the other crew member to complete some elements of the terrain flight mission planning.

2. The crew will analyze the mission in terms of the METT-T. They will plan the flight by conducting a map or an aerial photo reconnaissance. The crew will determine primary and alternate routes, terrain flight modes, and movement techniques. They will compute and determine time, distance, and fuel requirements and annotate the map or overlay with sufficient information to complete the mission. Items to consider include obstacles, checkpoints, observation posts, and enemy and friendly positions. The crew also will review contingency procedures.

3. The crew will obtain a thorough weather briefing which covers the entire mission. This briefing should include sunrise and sunset times, density altitudes, winds, and visibility restrictions. If the mission is to be conducted at night, the briefing also should include moonrise and moonset times, ambient light levels, and an electro-optical forecast, if available.

4. The PC will ensure that the other crew member is thoroughly briefed on all aspects of the mission.

NIGHT OR NVG CONSIDERATIONS: More detailed flight planning is required when the crew conducts the flight in reduced visibility or at night (aided or unaided). TC 1-204 contains details on night navigation.

NOTE: Paragraph 6-2h (page 6-3) contains additional information on night and NVG flight considerations.

REFERENCES:

FM 1-112
FM 1-116
FM 1-203
TC 1-201
TC 1-204
TM 55-1520-234-10
TM 55-1520-236-10
Unit SOP

TASK 1034

TASK: Perform terrain flight takeoff.

CONDITIONS: In an AH-1 helicopter or an AH1FWS with the hover power and before-takeoff checks completed and the aircraft cleared.

STANDARDS:

1. Maintain takeoff heading ±10 degrees.

2. Maintain the takeoff flight path until clear of obstacles.

3. Maintain power as required to clear obstacles safely while not exceeding aircraft limitations.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. The crew will determine the direction of the takeoff by analyzing the tactical situation, the wind, the long axis of the takeoff area, and the lowest obstacles. They will select reference points to assist in maintaining the takeoff flight path.

2. The P* will remain focused outside the aircraft during the maneuver. He will announce when he initiates the takeoff, whether he will take off from the ground or from a hover, and his intent to abort or alter the takeoff. The P* will coordinate the cyclic and collective as necessary to attain a constant angle of climb that will ensure obstacle clearance. He will maintain heading with the pedals.

3. The P will announce when he is ready for the takeoff and will remain focused outside the aircraft to assist in clearing and to provide adequate warning of traffic and obstacles. He will announce when his attention is focused inside the cockpit; for example, when monitoring torque or performing map navigation.

4. Once obstacles are cleared, the P* will smoothly adjust the flight controls to make the transition to the desired terrain flight mode (NOE, contour, or low level).

NOTE: Hover OGE power is required for this task.

NIGHT OR NVG CONSIDERATIONS:

1. Before leaving the ground, the crew must determine if artificial lighting is required.

2. The crew should treat visual obstacles the same as physical obstacles.

3. The crew must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation.

4. In the absence of obstacles (physical or visual), the P* may perform a normal takeoff, as described in Task 1018.

REFERENCES:

FM 1-203
Task 1018
TC 1-204
TM 55-1520-234-10
TM 55-1520-236-10

TASK 1035

TASK: Perform terrain flight.

CONDITIONS: In an AH-1 helicopter or an AH1FWS and given a mission briefing and required maps and materials.

STANDARDS:

1. <u>NOE Flight.</u>

a. Fly as close to the earth's surface as obstacles and visibility will permit.

b. Maintain airspeed appropriate for the terrain, enemy situation, weather, and visibility.

2. <u>Contour Flight.</u>

a. Maintain a safe obstacle clearance altitude while generally conforming to the contours of the earth.

b. Maintain airspeed appropriate for the terrain, enemy situation, weather, and visibility.

c. Maintain the aircraft in trim.

3. <u>Low-Level Flight.</u>

a. Maintain altitude ±50 feet.

b. Maintain airspeed ±10 KIAS.

c. Maintain the aircraft in trim.

4. <u>Crew Coordination Actions.</u> Correctly perform crew coordination actions.

DESCRIPTION:

1. <u>Crew Actions.</u>

a. The P* will remain focused outside the aircraft and will acknowledge all navigation instructions given by the P. He will announce the intended direction of flight or any deviation from instructions given by the P.

b. The P will warn the P* of any obstacles detected in the flight path or identified on the map. He will tell the P* when his attention is focused inside the cockpit: for example, when navigating or monitoring aircraft systems.

2. **Procedures.** Terrain flying involves flight close to the earth's surface. The modes of terrain flight are NOE, contour, and low-level. The crew will seldom perform pure NOE or contour flight. They are more likely to go from one technique to another while maneuvering over the desired route. During terrain flight, the crew is primarily concerned with the enemy and obstacle avoidance.

a. **NOE flight.** NOE flight is conducted at varying airspeeds and altitudes as close to the earth's surface as vegetation, obstacles, and ambient light will permit. NOE flight masks the aircraft from visual or electronic detection by the enemy and is usually used when enemy activity is high.

b. **Contour flight.** Contour flight is characterized by varying altitude and relatively constant airspeed, depending on vegetation, obstacles, and ambient light. It generally follows the contours of the earth. Contour flight is usually used when speed is important but not critical and moderate enemy activity is reported.

c. **Low-level flight.** Low-level flight is usually performed at a constant airspeed and altitude. It generally is conducted at an altitude which prevents or reduces the chance of detection by enemy forces. Low-level flight is usually used when speed is essential and enemy activity is minimal.

NOTE: Hover OGE power is required only for NOE and contour flight.

NIGHT OR NVG CONSIDERATIONS:

1. Wires are difficult to detect with the NVG.

2. The crew must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation.

3. The crew must observe airspeed and altitude limitations and ambient light criteria described in paragraph 6-2h (page 6-3) during NVG terrain flight training.

4. The crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection.

TC 1-213

REFERENCES:

FM 1-203
FM 1-240
FM 1-400
FM 21-26
TC 1-201
TC 1-204

TASK 1036

TASK: Perform hover OGE check.

CONDITIONS: In an AH-1 helicopter or an AH1FWS with hover OGE power available and the aircraft heading into the wind and cleared.

STANDARDS:

1. Maintain position not to exceed 10 feet of drift during the ascent or descent or while at a hover.

2. Maintain heading ±10 degrees.

3. Establish a hover altitude of 50 feet or above surrounding obstacles, whichever is higher, ±5 feet (±10 feet NVG).

4. Maintain a constant rate of turn while performing a 360-degree left pedal turn.

5. Correctly determine if aircraft power and controllability are sufficient for maneuvers that require OGE hover power.

6. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* will remain focused outside the aircraft to clear the aircraft throughout the maneuver. He will request the P's assistance in monitoring the flight instruments and hover parameters. The P* will announce initiation of the maneuver and vertically ascend to 50 feet or above surrounding obstacles, whichever is higher. Once the aircraft is stabilized at hover altitude, the P* will begin a 360-degree left pedal turn while constantly checking aircraft controllability. He will announce when he completes the turn and starts the descent and whether he will terminate the maneuver at a hover or to the ground.

2. The P will focus his attention primarily inside the cockpit. He will monitor the flight instruments to ensure that aircraft limitations are not exceeded and will note the highest TGT and torque values attained during the maneuver. The P will assist the P* in obstacle avoidance and will inform him of any excessive drift and/or altitude changes.

NOTE 1: The crew should conduct an OGE check anytime aircraft controllability or available power is in doubt.

NOTE 2: Hover OGE power is required for this task.

NIGHT OR NVG CONSIDERATIONS:

1. When hovering above 25 feet without aircraft lights, the P* may have difficulty maintaining altitude and position. To maintain position, the P* should use references such as lights, tops of trees, or man-made objects above and to the front and sides of the aircraft. By establishing a reference angle to these objects, the P* can detect altitude changes by changes in his viewing perspective. Hovering near ground features, such as roads, provides ideal references for judging lateral movement. The P* may become spatially disoriented when changing his viewing perspective back and forth between high and low references. Therefore, he should rely on the P for assistance in maintaining orientation.

2. When wearing the NVG, the crew must select an area with good ground contrast and several reference points at the same height as or at a greater height than the OGE hover. This will aid the P* in maintaining a constant altitude and position over the ground while making the required turns.

NOTE 1: The crew must use proper scanning techniques to ensure obstacle avoidance and tail rotor clearance and to prevent spatial disorientation.

NOTE 2: The crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection.

NOTE 3: If available, the HUD is a good reference for torque, altitude, and heading.

REFERENCES:

FM 1-203
TC 1-204
TM 55-1520-234-10
TM 55-1520-236-10

TASK 1037

TASK: Perform NOE deceleration.

CONDITIONS: In an AH-1 helicopter or an AH1FWS.

STANDARDS:

1. Maintain heading alignment with the selected flight path ±10 degrees.

2. Maintain the tail rotor clear of all obstacles.

3. Decelerate to the desired airspeed or come to a full stop at the selected location ±50 feet.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew Actions.

a. The P* will remain focused outside the aircraft. He will announce his intent to decelerate or to come to a full stop, any deviation from the maneuver, and completion of the maneuver.

b. The P will provide adequate warning of obstacles detected in the flight path. He will announce when his attention is focused inside the cockpit.

2. Procedure. Initially increase the collective to maintain the altitude of the tail rotor. (Initially increasing the collective may not be necessary when the maneuver is initiated at higher airspeeds.) Consider variations in terrain and obstacles when determining tail rotor clearance. Apply aft cyclic to slow the aircraft or to come to a full stop while adjusting the collective to maintain the altitude of the tail rotor. Maintain heading with the pedals. Make all control movements smoothly. Abrupt and excessive changes in aircraft attitude may result in overcontrolling when returning the aircraft to a level attitude.

NOTE: Hover OGE power is required for this task.

NIGHT OR NVG CONSIDERATIONS: Because of the limited field of view of the NVG, the P* must avoid making abrupt changes in aircraft attitude. An extreme nose-high attitude limits the forward field of view. The crew must use proper scanning techniques to ensure obstacle avoidance and tail rotor clearance and to prevent spatial disorientation.

NOTE: The crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection.

REFERENCES:

FM 1-203
TC 1-204
TM 55-1520-234-10
TM 55-1520-236-10

TASK 1038

TASK: Perform terrain flight approach.

CONDITIONS: In an AH-1 helicopter or an AH1FWS with the before-landing check completed.

STANDARDS:

1. Maintain a safe approach angle to clear obstacles in the flight path.

2. Maintain ground track alignment with the selected approach path with minimum drift.

3. Maintain an appropriate rate of closure.

4. Make a smooth, controlled termination at the intended approach point.

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* may initiate the approach from a straight-in or modified pattern. The type of approach selected will depend on the tactical situation, wind, long axis of the landing area, lowest obstacles, and arrival path.

2. The P* will remain focused outside the aircraft to clear the aircraft throughout the approach and landing. He will maneuver the aircraft as required (straight-in or circle) to intercept the desired approach path. The P* will adjust airspeed as necessary and keep the landing area in sight at all times. He will begin the approach upon intercepting an angle that ensures obstacle clearance. If a successful landing is doubtful or visual reference with the touchdown point is lost, the P* will announce initiation of a go-around before reducing airspeed below ETL or descending below obstacles. He will announce whether he will terminate the approach to a hover or to the ground, the intended point of landing, and any deviation from the planned approach. The P* also may terminate the maneuver with a touchdown speed below, at, or slightly above ETL.

3. The P will remain focused outside the aircraft. He will confirm suitability of the area, assist the P* in clearing the aircraft, and provide adequate warning of obstacles. The P will acknowledge the P*'s intent to deviate from the planned approach. The P will announce when his attention is focused inside the cockpit; for example, when performing the before-landing check.

NOTE: Hover OGE power is required for this task.

NIGHT OR NVG CONSIDERATIONS: Upon approaching the landing area, the P* should reduce airspeed as necessary until he sees the intended landing area or touchdown point. The P* will continue to decelerate until he intercepts an approach angle that ensures an approach path clear of obstacles. He will reduce collective pitch to begin the descent. The P* will maintain the approach angle and adjust the rate of closure with the collective and cyclic as necessary. He will terminate the maneuver to a hover or to the ground. The P* also may terminate the maneuver with a touchdown speed below, at, or slightly above ETL.

NOTE 1: Movement over areas of limited contrast, such as tall grass, water, or desert, tends to cause spatial disorientation. To prevent spatial disorientation, the crew should seek hover areas that provide adequate contrast. If the P* becomes disoriented, he should apply sufficient power and execute a takeoff. If a takeoff is not feasible, the P* should attempt to maneuver the aircraft forward and down to the ground to reduce the probability of touchdown with sideward or rearward movement.

NOTE 2: The crew must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation.

NOTE 3: The crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection.

REFERENCES:

FM 1-202
FM 1-203
TC 1-201
TC 1-204
TM 55-1520-234-10
TM 55-1520-236-10

TASK 1039

TASK: Perform high-speed flight.

CONDITIONS: In an AH-1 helicopter or an AH1FWS.

STANDARDS:

1. Maintain airspeed at maximum range +10 KIAS.
2. Maintain altitude ±100 feet.
3. Maintain the aircraft in trim.
4. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* will remain focused outside the aircraft and announce his intent to initiate the maneuver. He will smoothly increase collective pitch until maximum range torque is achieved. The P* will maintain altitude and ground track with the cyclic and maintain the aircraft in trim with the pedals. He will stabilize the aircraft in trim at maximum range airspeed.

2. The P will provide adequate warning of traffic or obstacles detected in the flight path. He will announce when his attention is focused inside the aircraft: for example, when checking torque and turbine gas temperature.

NIGHT OR NVG CONSIDERATIONS: Because of the difficulty in detecting traffic and obstacles at night, it is recommended that this maneuver not be performed. However, the final determination will be based on the PC's evaluation of the overall situation and the experience level of the crew.

REFERENCES:

FM 1-203
TM 55-1520-234-10
TM 55-1520-236-10

TASK 1040

TASK: Perform evasive maneuvers.

CONDITIONS: In an AH-1 helicopter or an AH1FWS, in a simulated tactical environment with a tactical map, or orally in a classroom environment.

STANDARDS:

1. Use the correct evasive maneuver consistent with the type of hostile fire encountered.

2. Correctly perform crew coordination actions.

DESCRIPTION:

1. When engaged by the enemy, the crew will announce the nature of the threat (hostile fire or radar detection) and the direction of the threat.

2. The P* will announce the direction of flight to deploy to cover. He will remain focused outside the aircraft during the evasive maneuver and clearing.

3. The P will remain focused outside the aircraft and give adequate warning to avoid obstacles detected during the evasive maneuver. He will announce when his attention is focused inside the cockpit; for example, when operating weapon systems.

4. The specific evasive maneuver required will depend on the type of hostile fire encountered.

a. **<u>Tanks and small arms.</u>** Immediately turn away from the fire toward an area of concealment. If concealment is unavailable, sharp turns of unequal magnitude and at unequal intervals and small changes in altitude offer the best protection until you are beyond the effective range of hostile weapons. If the situation permits, employ immediate suppressive fire.

b. **<u>Large caliber antiaircraft fire (radar-controlled).</u>** If the helicopter is equipped with a radar jammer, maintain aircraft orientation toward the threat radar, deploy chaff, and mask the helicopter. If the helicopter is not equipped with a radar jammer, execute an immediate 90-degree turn. After turning, do not maintain a straight line of flight or the same altitude for more than ten seconds before initiating a second 90-degree turn. An immediate descent to NOE altitude will reduce the danger.

c. **Fighters.** When in an area where enemy fighters are known or suspected to be operating, fly the helicopter at NOE altitude as much as possible. Upon sighting a fighter, try to mask the helicopter. If the fighter is alone and executes a dive, turn the helicopter toward the attacker and descend. This maneuver will cause the fighter pilot to increase his attack angle. Depending on the fighter's dive angle, it may be advantageous to turn sharply and maneuver away once the attacker is committed. The fighter pilot will then have to break off his attack to recover from the maneuver. Once the fighter breaks off his attack, maneuver the helicopter to take advantage of terrain, vegetation, and shadow for concealment. The USAAVNC Air Combat Maneuvers ETP describes these maneuvers in detail.

NOTE: The USAAVNC Air Combat Maneuvers ETP can be obtained by writing Commander, US Army Aviation Center, ATTN: ATZQ-DPT-P, Fort Rucker, AL 36362-5152.

d. **Helicopters.** Use the appropriate air combat maneuvers to break contact with or to evade enemy helicopters.

e. **Heat-seeking missiles.** Try to keep helicopter heat sources away from the enemy. If a missile is sighted, turn the tail of the helicopter away from the missile and mask the helicopter. (Use of the infrared jammer is recommended.)

f. **Antitank guided missiles.** Some missiles fly slowly and can be avoided by rapidly repositioning the helicopter. If terrain or vegetation is not available for masking, remain oriented on the missile as it approaches. As the missile is about to impact, rapidly change the flight path or altitude to evade it.

g. **Artillery.** Depart the impact area and determine NBC requirements.

h. **Radar-guided missiles.** If the helicopter is equipped with a radar jammer, maintain aircraft orientation toward the enemy radar. Maneuver the helicopter to break the line of sight to the radar source while simultaneously activating chaff (if available).

2. If hit by hostile fire, rapidly assess the situation and determine an appropriate course of action. The most important consideration in an emergency is aircraft control. Therefore, the first step is to assess aircraft controllability. Then check all instruments and warning/caution lights. If a malfunction is indicated, initiate the appropriate emergency procedure. If continued flight is possible, take evasive action. Make a radio call (Mayday or Pan) to report your situation, location, and action. Also request assistance if desired. Continue to be alert for unusual control responses, noises, and vibrations. Monitor all instruments for an indication of a malfunction. Fly the helicopter to the nearest secure location. Then land and inspect the helicopter to determine the extent of damage and whether flight can be continued to a medical or maintenance facility per the unit SOP.

NOTE: Hover OGE power is required for this task.

NIGHT OR NVG CONSIDERATIONS: To reduce the likelihood of spatial disorientation, the P* should avoid making unnecessary abrupt control inputs.

NOTE: The crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection.

REFERENCES:

ASET I Program
FM 1-107
FM 1-112
FM 1-116
FM 1-203
FM 17-95
TM 55-1520-234-10
TM 55-1520-236-10
Unit SOP

TASK 1050

TASK: Perform hovering autorotation.

CONDITIONS: In an AH-1 helicopter with an IP, aircraft heading into the wind, in a locally approved touchdown area, with the aircraft cleared and with all SCAS channels engaged or in an AH1FWS.

STANDARDS:

1. Prior to entry, establish a stationary 3-foot hover, ±1 foot.

2. After entry--

a. Maintain heading ±10 degrees.

b. Maintain position over the ground ±1 foot.

c. Execute a smooth, controlled descent and touchdown with no lateral or rearward drift.

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. The IP will remain focused outside the aircraft to assist in clearing and to provide adequate warning of traffic or obstacles. He will ensure that the touchdown area is suitable and tell the P* to position the aircraft and, when ready, to perform a hovering autorotation.

2. The P* will acknowledge the IP's instructions and position the aircraft at a stabilized 3-foot hover facing into the wind. When ready, he will retard the throttle to engine idle stop while simultaneously adjusting the pedals to maintain heading and the cyclic to maintain position over the ground. The P* must not raise or lower collective pitch while he is retarding the throttle. As the helicopter settles, he will apply sufficient collective pitch to make a smooth descent and touchdown. The P* must not stop the descent early by applying too much collective pitch, and he must be alert for lateral or rearward drift. When the helicopter is resting firmly on the ground, the P* will smoothly lower the collective to the fully down position while neutralizing the pedals and cyclic.

NIGHT OR NVG CONSIDERATIONS: Crew members must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation.

NOTE 1: The crew should consider using artificial lighting if the ambient light level is insufficient for them to properly determine aircraft drift.

NOTE 2: If performed in the aircraft, this training task is prohibited while crew members are wearing NVG.

REFERENCES:

FM 1-203
TM 55-1520-234-10
TM 55-1520-236-10

TASK 1052

TASK: Perform simulated engine failure at a hover.

CONDITIONS: In an AH-1 helicopter with an IP, in a locally approved touchdown area, with the aircraft cleared, at hover altitude and with all SCAS channels engaged or in an AH1FWS.

STANDARDS:

1. Recognize the emergency, determine the appropriate corrective action, and perform, from memory, all immediate action procedures described in TM 55-1520-234-10 or TM 55-1520-236-10.

2. Maintain heading +10 degrees.

3. Do not allow lateral drift to exceed 1 foot.

4. Execute a smooth, controlled descent and touchdown.

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. Upon detecting engine failure, the P* will maintain heading with the pedals and correct any lateral or rearward drift with the cyclic. If the IP initiates the maneuver while the aircraft is moving forward, the P* will adjust the cyclic to establish a landing attitude while avoiding an excessive tail-low condition. On a smooth or prepared surface, the P* may make ground contact with some forward speed. If over a rough area, he should attempt to slow the aircraft slightly prior to the touch-down. After touchdown, the P* will smoothly lower the collective to the fully down position and neutralize the pedals and cyclic.

2. The IP will assist as necessary.

NOTE: All simulated engine failures will be initiated by the IP using throttle reduction. In those situations where AR 95-1 requires the maneuver to be announced by the IP, the IP will announce “Hovering auto“ as he reduces the throttle.

NIGHT OR NVG CONSIDERATIONS: Aircraft attitude and rate of movement cues are difficult to detect at night especially without the use of artificial lighting. The P* must use care when adjusting the cyclic. A common tendency is to apply cushioning pitch too high.

NOTE 1: The crew must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation.

NOTE 2: If performed in the aircraft, this training task is prohibited while crew members are wearing NVG.

REFERENCES:

AR 95-1
FM 1-203
TC 1-204
TM 55-1520-234-10
TM 55-1520-234-CL
TM 55-1520-236-10
TM 55-1520-236-CL

TASK 1053

TASK: Perform simulated engine failure at altitude.

CONDITIONS: In an AH-1 helicopter with an IP or IE, given the type of termination, or in an AH1FWS.

STANDARDS:

1. Recognize the emergency, determine the appropriate corrective action, and perform, from memory, all immediate action procedures described in TM 55-1520-234-10 or TM 55-1520-236-10.

2. Select a suitable landing area.

3. Correctly terminate the maneuver as directed by the IP or IE.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. <u>Crew Actions.</u>

a. The IP or IE will announce "Simulated engine failure” and retard the throttle to the engine idle position.

b. Upon detecting a loss of engine power, the P* will reduce collective pitch to maintain the RRPM within limits while adjusting the pedals to trim the aircraft. He will select a suitable landing area and use turns and varying airspeeds (between minimum rate of descent and maximum glide) as necessary to ensure touchdown in the intended landing area. (The final approach course should be generally into the wind.) The P* will call out RRPM, N1, and trim. He will simulate setting the transponder to EMER and transmitting a Mayday call on a GUARD frequency. The P* will simulate the completion of the immediate action steps in TM 55-1520-234-10 or TM 55-1520-236-10 and, if time permits, will direct the IP or IE to verify the procedures. Until power is completely restored, he should plan each forced landing as if continuing to the ground.

c. Before reaching 400 feet AGL with the aircraft in a safe autorotative profile, the IP or IE will state one of two commands: “Power recovery” or “Terminate with power.”

2. Procedures.

a. **Power recovery.** Upon receiving the command "Power recovery," the P* will immediately establish normal operating RPM by smoothly applying the throttle to the fully open position. He will adjust the collective as necessary while simultaneously maintaining trim with the pedals. When normal operating RPM has been regained, the P* will apply sufficient collective to establish a normal climb. He will complete the recovery prior to reaching 200 feet AGL. The crew will ensure that the aircraft is cleared.

b. **Terminate with power.** Upon receiving the command "Terminate with power," the P* will continue the autorotative descent. Before reaching 100 feet AGL, he will establish normal operating RPM, adjust the collective as necessary, trim the aircraft with the pedals, and maintain autorotation. At approximately 100 feet AGL, the P* will apply aft cyclic to initiate a smooth and progressive deceleration. He will maintain aircraft alignment with the touchdown area by properly applying pedals and cyclic. The P* will adjust the collective, if required, to prevent excessive RRPM. At approximately 12 feet AGL, he should apply sufficient collective to control the rate of descent and ground speed so that they are zero at 3 to 5 feet AGL with the aircraft in a landing attitude.

NOTE: Normal engine RPM must be established before the aircraft descends through 100 feet AGL.

NIGHT OR NVG CONSIDERATIONS: Attitude control is critical during night autorotations. The lack of visual references at night reduces the P*'s ability to estimate airspeed and altitude. To compensate for the lack of visual references, the P* should establish a steady-state autorotation by 200 feet AGL. If the landing light is used, the crew should turn it on prior to descending through 100 feet AGL.

NOTE: If performed in the aircraft, this training task is prohibited while crew members are wearing NVG.

REFERENCES:

AR 95-1
FM 1-203
TM 55-1520-234-10
TM 55-1520-234-CL
TM 55-1520-236-10
TM 55-1520-236-CL

TASK 1054

TASK: Perform simulated engine failure, high speed, at altitude.

CONDITIONS: In an AH-1 helicopter with an IP, given the type of termination, or in an AH1FWS.

STANDARDS:

1. Recognize the emergency, determine the appropriate corrective action, and perform, from memory, all immediate action procedures described in TM 55-1520-234-10 or TM 55-1520-236-10.

2. Select a suitable landing area.

3. Correctly terminate the maneuver as directed by the IP.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew Actions.

a. The IP will announce "Simulated engine failure" and retard the throttle to the engine idle position.

b. Upon detecting a loss of engine power, the P* will immediately apply aft cyclic for SCAS control. He will reduce collective pitch to maintain the RRPM within limits while adjusting the pedals to trim the aircraft. The P* will select a suitable landing area and use turns and varying airspeeds (between minimum rate of descent and maximum glide) as necessary to ensure touchdown in the intended landing area. (The final approach course should be generally into the wind.) The P* will call out RRPM, N1, and trim. He will simulate setting the transponder to EMER and transmitting a Mayday call on a GUARD frequency. The P* will simulate the completion of the immediate action steps in TM 55-1520-234-10 or TM 55-1520-236-10 and, if time permits, will direct the IP to verify the procedures. Until power is completely restored, he should plan each forced landing as if continuing to the ground.

c. Before reaching 400 feet AGL with the aircraft in a safe autorotative profile, the IP will state one of two commands: "Power recovery" or "Terminate with power."

NOTE: During training, the maneuver is performed above 400 feet AGL and at a minimum of 120 KIAS or maximum range airspeed.

2. Procedures.

a. Power recovery Upon receiving the command "Power recovery," the P* will immediately establish normal operating RPM by smoothly applying the throttle to the fully open position. He will adjust the collective as necessary while simultaneously maintaining trim with the pedals. When normal operating RPM has been regained, the P* will apply sufficient collective to establish a normal climb. He will complete the recovery prior to reaching 200 feet AGL. The crew will ensure that the aircraft is cleared.

b. Terminate with power. Upon receiving the command "Terminate with power," the P* will continue the autorotative descent. Before reaching 100 feet AGL, he will establish normal operating RPM, adjust the collective as necessary, trim the aircraft with the pedals, and maintain autorotation. At approximately 100 feet AGL, the P* will apply aft cyclic to initiate a smooth and progressive deceleration. He will maintain aircraft alignment with the touchdown area by properly applying pedals and cyclic. The P* will' adjust the collective, if required, to prevent excessive RRPM. At approximately 12 feet AGL, he should apply sufficient collective to control the rate of descent and ground speed so that they are zero at 3 to 5 feet AGL with the aircraft in a landing attitude.

NOTE: Normal engine RPM must be established before the aircraft descends through 100 feet AGL.

NIGHT OR NVG CONSIDERATIONS: Attitude control is critical during night autorotations. The lack of visual references at night reduces the P*'s ability to estimate airspeed and altitude. To compensate for the lack of visual references, the P* should establish a steady-state autorotation by 200 feet AGL. If the landing light is used, the crew should turn it on prior to descending through 100 feet AGL.

NOTE: If performed in the aircraft, this training task is prohibited while crew members are wearing NVG.

REFERENCES:

AR 95-1
FM 1-203
TM 55-1520-234-10
TM 55-1520-234-CL
TM 55-1520-236-10
TM 55-1520-236-CL

TASK 1056

TASK: Perform manual throttle operation, emergency governor mode.

CONDITIONS: In an AH-1 helicopter with an IP and the aircraft cleared or in an AH1FWS.

STANDARDS:

1. Without error, perform the procedure to change the governor to the emergency mode according to the description below.

2. Maintain 6400 RPM, ±200 RPM, or 97 percent, ±3 percent.

3. Smoothly coordinate the throttle and collective controls.

4. Maintain altitude +1 foot.

5. Maintain a constant rate of turn, not to exceed 90 degrees in four seconds.

6. Without error, perform the procedure to change the governor to the automatic mode according to the description below.

7. Correctly perform crew coordination actions.

> **CAUTION**
>
> To prevent engine overspeed, overtemperature, compressor stall, or failure, make smooth throttle and collective adjustments. Closely monitor the N1, N2, and TGT.

DESCRIPTION:

1. The P* will remain focused outside the aircraft to clear the aircraft throughout the maneuver. The aircraft will be on the ground with RPM stabilized at 6600 RPM or 100 percent and the collective fully down. The P* will announce when he initiates the maneuver and will retard the throttle to engine idle stop. After noting a reduction in engine RPM, the P* will move or instruct the IP/P to move the governor switch to the emergency position. Then he will check for illumination of the segment caution light and master caution light and will smoothly adjust the throttle to 6400 RPM or 97 percent. Once the RPM has stabilized, the P* will reset the master caution light.

2. The P* will announce his intent to continue the maneuver. He will begin by increasing collective pitch and manipulating the throttle carefully to maintain 6400 RPM or 97 percent until the aircraft is stabilized at a 3-foot hover. The crew will clear the aircraft, and the P* will perform a left hovering turn and then a right hovering turn. Upon completion of both turns, he will reposition the aircraft over the starting point, if required, and bring it to a stabilized hover. The P* will adjust the collective and throttle as necessary to maintain 6400 RPM or 97 percent and land the aircraft. With the collective fully down and the cyclic and pedals neutralized, he will reduce the throttle to engine idle stop. After noting a decrease in engine RPM, the P* will move or direct the IP/P to move the governor switch to the automatic position. He will increase the throttle to the fully open position and adjust RPM to 6600 RPM or 100 percent as necessary. The P* will then ensure that the fuel control is operating properly.

3. The IP/P will remain focused outside the aircraft to assist in clearing and to provide adequate warning of traffic or obstacles. He will provide adequate warning for corrective action if maximum engine operating limits may be exceeded. He will manipulate the emergency governor switch if directed by the P* and acknowledge any intent to deviate from the planned maneuver. The IP/P will announce when his attention is focused inside the cockpit.

NOTE 1: The crew can expect a maximum torque of 78 percent or 42 psi in the emergency governor mode.

NOTE 2: In case of an actual in-flight emergency that requires emergency governor operations, the crew must use the procedures in TM 55-1520-234-10 or TM 55-1500-236-10.

NOTE 3: After placing the governor switch back to the automatic position, the P* can check the proper operation of the fuel control (overspeed governor) by ensuring that the N1 stabilizes at 68 to 72 percent RPM. He also can check it by advancing the throttle slowly to ensure that a maximum of 6600 RPM or 100 percent N2 is reached at full throttle.

NOTE 4: For initial qualification training, it is recommended that the P* start and end the maneuver with the aircraft facing into the wind.

NIGHT OR NVG CONSIDERATIONS: The lack of visual references at night reduces the P*'s ability to estimate hover altitudes and detect aircraft drift. The crew should select a hover area that is free of blowing dust or snow and has good ground contrast and several reference points. The crew must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation. The use of artificial lighting is recommended.

NOTE: If performed in the aircraft, this training task is prohibited while crew members are wearing NVG.

REFERENCES:

TM 55-1520-234-10
TM 55-1520-234-CL
TM 55-1520-236-10
TM 55-1520-236-CL

TASK 1059

TASK: Perform flight with the SCAS disengaged.

CONDITIONS: In an AH-1 helicopter or an AH1FWS; during hover, takeoff, cruise, or VMC approach; with the SCAS disengaged.

STANDARDS:

1. Maintain standards required for the maneuver being performed.

2. Correctly perform crew coordination actions.

DESCRIPTION:

1. At the discretion of the PC, the P* may practice hovering, takeoffs, cruise flight, turns, and landings with the SCAS partially or totally disengaged. The P* will remain focused outside the aircraft.

2. The P will assist in clearing the aircraft and provide adequate warning of obstacles and excessive attitude changes. He will advise the P* if flight limitations associated with the inoperative SCAS channel(s) may be exceeded.

3. Upon completion of the task, the P* will stabilize the system and engage each SCAS channel, one at a time, once the no-go lights are extinguished.

NOTE: The P* may deactivate the SCAS channels individually or as a group.

NIGHT OR NVG CONSIDERATIONS:

1. The crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection and the task is being performed at other than cruise flight.

2. Crew members must use proper scanning techniques and avoid large or abrupt attitude changes to prevent spatial disorientation.

3. Because visual acuity is reduced at night, it is recommended that the crew reengage the SCAS channel(s) while the aircraft is on the ground.

NOTE: If performed in the aircraft, this training task is prohibited while crew members are wearing NVG.

REFERENCES:

TM 55-1520-234-10
TM 55-1520-234-CL
TM 55-1520-236-10
TM 55-1520-236-CL

TASK 1064

TASK: Perform terrain flight navigation.

CONDITIONS: In an AH-1 helicopter or an AHIFWS and given a mission briefing and required maps and materials.

STANDARDS:

1. During NOE flight--

a. Know the en route location within 200 meters (500 meters NVG) .

b. Locate the final objective within 100 meters.

2. During low-level or contour flight--

a. Know the en route location within 500 meters (1,000 meters NVG).

b. Locate the final objective within 100 meters.

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* will remain focused outside the aircraft and will respond to navigation instructions and cues given by the P. The P* will acknowledge commands issued by the P for heading and airspeed changes necessary to navigate the desired course.

2. The P will direct the P* to adjust aircraft heading and airspeed as appropriate to navigate the desired course. The P will use rally terms, specific headings, relative bearings, or key terrain features to accomplish this task. Examples are "Turn left," "Stop turn," and "Turn down the valley to the left." If using the HUD during contour and low-level flight, the P may include headings. The use of standard terms helps prevent misinterpretation of information and reduces unnecessary cockpit conversation. The P* will announce significant terrain features to assist the P with navigation. The P will announce all plotted wires and other obstacles prior to approaching their location. The crew should use the doppler to help them arrive at a specific checkpoint or turning point. Crew members must look far enough ahead of the aircraft at all times to avoid obstacles.

a. During NOE flight, crew members may use several navigational techniques. One technique is to identify prominent terrain features that are located some distance ahead of the aircraft and that lie along or near the course. Using these points to key on, the P* can maneuver the aircraft to take advantage of the best terrain and vegetation for concealment. If general navigational techniques do not apply, the crew must navigate by identifying a series of successive checkpoints. To remain continuously oriented, the P must compare actual terrain features with those on the map.

b. Contour navigation is less precise than NOE navigation because the contour route is more direct. An effective technique is for the P to combine the use of terrain features and rally terms when giving directions to the P*. This will allow the P* to focus his attention outside the aircraft.

c. For low-level navigation, the P can effectively compute time and distance. This means that he can tell the P* to fly specific headings and airspeeds. The crew also can use radio navigation, depending on the terrain and enemy situation.

NOTE 1: The crew should navigate at least 20 kilometers during NOE flight training or 40 kilometers during low-level or contour flight training.

NOTE 2: Each of the methods for stating heading information is appropriate under specific conditions. When a number of terrain features are visible and prominent enough for the P* to recognize them, the most appropriate method is navigation instruction toward the terrain feature in view. Navigation instructions toward a distant, unseen terrain feature are appropriate when few changes are anticipated. When forward visibility is restricted and frequent changes are necessary, controlled turning instructions are more appropriate. As a general rule, clock headings by themselves should be avoided. However, clock headings are recommended when associated with a terrain feature and with controlled turning instructions.

NIGHT OR NVG CONSIDERATIONS:

1. More detailed flight planning and map preparation are required when the flight is conducted in reduced visibility or at night (aided or unaided). TC 1-204 contains details on night navigation. NVG navigation with standard maps can be difficult because of map colors and symbology.

2. The crew must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation.

3. The crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection.

4. The crew must observe airspeed and altitude limitations and ambient light criteria described in paragraph 6-2h (page 6-3) during NVG terrain flight training.

REFERENCES:

FM 1-203
FM 1-240
FM 21-26
TC 1-201
TC 1-204

TASK 1067

TASK: Perform aerial observation.

CONDITIONS: In an AH-1 helicopter, in an AHIFWS, or orally in a classroom environment.

STANDARDS:

1. Use the correct visual search techniques.
2. Accurately locate the position of the target.
3. Accurately identify the target.
4. Without error, make appropriate spot reports.
5. Correctly perform crew coordination actions.

DESCRIPTION:

1. During missions involving direct observation, the aircrew is concerned with detection, identification, location, and reporting.

a. **Detection.** Detection requires the verification that an object or activity exists.

b. **Identification.** Major factors in identifying a target are size, shape, and type of armament. Targets are classified as friendly or enemy.

c. **Location.** The exact location of targets is the objective of the mission. Depending on the nature of the targets, the observer may be required to locate the center of mass or boundaries of the targets.

d. **Reporting.** Spot reports provide commanders with critical information during the conduct of missions. The method of spot reporting is specified by the requesting agency. Reports of no enemy sightings are frequently just as important as actual enemy sightings. (Task 2091 shows the standard format for a spot report.)

2. Visual search is the systematic visual coverage of a given area so that all parts of the area are observed. The purpose of a visual search is to detect objects or activities on the ground. The crew's primary focus will be outside the aircraft. Both the P* and P will divide their attention between aerial observation and obstacle avoidance. In addition, the P will be concerned with the location of the aircraft and will announce when his attention is focused inside the cockpit. The ability of the crew to search a given area effectively depends on several factors. In addition to the limitations of the human eye itself, the most important of these factors are altitude, air-speed, terrain and meteorological conditions, and visual cues.

a. Altitude. Higher altitudes offer greater visibility with less detail. Lower altitudes increase survivability considerations.

b. Airspeed. Selection of the airspeed is determined by the altitude, terrain, enemy situation, and meteorological conditions.

c. Terrain and meteorological conditions. The type of terrain can vary from dense jungle to barren wasteland and will affect the size and details of the area that can be effectively covered. The prevailing terrain and meteorological conditions often mask objects and allow only a brief exposure period, especially at NOE altitudes.

d. Visual cues. In areas where natural cover and concealment make detection difficult, visual cues may indicate enemy activity. Some of these cues are as follows:

(1) Color. Foliage used for camouflage may differ from the color of natural foliage.

(2) Texture. Smooth surfaces, such as glass windows or canopies, will shine and reflect light. Rough surfaces do not reflect light.

(3) Shadows/shapes. Man-made objects cast distinctive shadows that are characterized by regular shapes and contours as opposed to random patterns that occur naturally.

(4) Trails. Trails leading into an area should be observed for cues as to type, quantity, and recentness of traffic.

(5) Smoke or dust. Smoke should be observed for color, smell, and volume. Dust from moving vehicles can be effectively observed at great distances.

(6) Movement and light. Movement during daylight and light at night are the most easily detectable signs of enemy activity. Movement may include disturbance of foliage, snow, soil, or birds.

(7) **Obvious sightings.** The aircrew must be aware that obvious sightings may be intentional because of high concentrations of enemy antiaircraft weapons.

3. The techniques for conducting aerial observation are side scan, motive, and stationary. The specific method used depends on the terrain and the altitude flown. The PC will assign the actual search sectors. The primary concern of the P* is aircraft control and obstacle avoidance. Therefore, the P should be responsible for as much of the search area as possible based on the technique used.

a. Side-scan technique. This technique normally is used when the aircraft is operating at an altitude of 100 feet AGL or higher at cruise airspeed. Over most terrain, the observer systematically--

(1) Looks out approximately 1,000 meters and searches in toward the aircraft.

(2) Looks out one-half the distance (500 meters) and searches in toward the aircraft.

(3) Looks out one-fourth the distance (250 meters) and searches in toward the aircraft.

b. Motive technique. This technique is used when the aircraft is operating at terrain flight altitudes and at airspeeds of 10 KIAS or faster. The entire area on either side of the aircraft is divided into two major sectors: the non-observation sector and the observation work sector. The non-observation sector is the area where the aircrew's field of vision is restricted by the physical configuration of the aircraft. The observation work sector is that portion of the field of vision to which search activity is confined. The observation work sector is subdivided into two smaller sectors.

(1) The acquisition sector is the forward 45-degree area of the observation work sector. This is the primary area of search.

(2) The recognition sector is the remainder of the observation work sector. In using the motive technique, the observer looks forward of the aircraft and through the center of the acquisition sector for obvious sightings. He then scans through the acquisition sector, gradually working back toward the aircraft.

c. __Stationary technique.__ This technique is used at NOE altitudes with the aircraft hovering in a concealed position. When using the stationary technique, the observer makes a quick, overall search for sightings, unnatural colors, outlines, or movements. He starts scanning to the immediate front, searching an area approximately 50 meters in depth. The observer continues to scan outward from the aircraft, increasing the depth of the search area by overlapping 50-meter intervals until he has covered the entire search area.

NIGHT OR NVG CONSIDERATIONS:

1. Aerial observation is difficult at night in the AH-1. The use of the NVG with the C-NITE TSU greatly enhances the night observation capability, but some loss of search detail can be expected because of the operating limitations of the equipment. This will be true even with high illumination levels.

2. The crew must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation.

3. If the aircraft is equipped with the C-NITE TSU, the stationary technique is recommended.

REFERENCES:

FM 1-203
FM 1-402
FM 17-95
Task 2091
TC 1-204
TM 55-1520-234-10
TM 55-1520-236-10
Unit SOP

TASK 1068

TASK: Perform or describe emergency procedures for aircraft or armament system malfunction and/or NVG failure.

CONDITIONS: In an AH-1 helicopter with an 1P or an IE, in an AHIFWS, or orally in a classroom environment and given a specific emergency condition.

STANDARDS:

1. Without error, perform or describe the appropriate emergency procedures for an aircraft or armament system malfunction according to TM 55-1520-234-10 or TM 55-1520-236-10.

2. Correctly perform or describe emergency procedures for NVG failure.

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. **Aircraft or Armament System Malfunction.**

a. The P*/P will tell the other crew member when he detects an emergency situation. The PC will include in the crew briefing the general approach to all emergency procedures that require immediate action.

b. The P* will remain focused outside the aircraft to maintain aircraft control and to avoid traffic or obstacles. The P* will perform or direct the P to perform the underlined steps in TM 55-1520-234-10 or TM 55-1520-236-10, as briefed, and will initiate the appropriate type of landing for the emergency.

c. The P will perform as directed or briefed. If time permits, he will verify all emergency checks with TM 55-1520-234-CL or TM 55-1520-236-CL. He will request emergency assistance as described in the FIH.

2. **NVG Failure.** Upon indication of NVG failure, the crew will perform the following procedure when using the AN/PVS-5 (dual battery) or the AN/AVS-6 (ANVIS):

a. The P*/P will immediately announce “Goggle failure.”

b. If conducting NOE or contour flight, the P* will begin a climb at a rate which will ensure obstacle avoidance.

c. The P* will transfer the flight controls. He will then switch to the second battery and advise the other aviator of restored vision or of continued failure. If his vision is not restored, he will remove the NVG and abort or modify the mission.

NOTE 1: Those emergency procedures that are prohibited from practice in the aircraft will be performed in the AHIFWS or discussed orally.

NOTE 2: The requirement to perform or describe NVG emergency procedures applies only to those aviators who perform NVG flight duties.

REFERENCES:

FIH
FM 1-400
TC 1-201
TC 1-204
TM 11-5855-238-10
TM 11-5855-263-10
TM 55-1520-234-10
TM 55-1520-234-CL
TM 55-1520-236-10
TM 55-1520-236-CL

TASK 1075

TASK: Perform instrument takeoff.

CONDITIONS: In an AH-1 helicopter under IMC or simulated IMC or in an AHIFWS with the hover power and before-takeoff checks completed and the aircraft cleared.

STANDARDS:

1. Correctly set the attitude indicator.

2. Maintain required takeoff power ±2 percent or ±1 psi torque.

3. Maintain accelerative climb attitude ±1 bar width.

4. Maintain takeoff heading ±10 degrees.

5. Maintain the aircraft in trim after ETL.

6. Maintain an appropriate rate of climb ±100 FPM.

7. Correctly perform crew coordination actions.

DESCRIPTION:

1. **Crew Actions.**

a. The P* will remain focused outside the aircraft during the VMC portion of the maneuver. He will announce when he initiates the maneuver and his intent to abort or alter the takeoff. After establishing the aircraft in a climb and prior to entering simulated or actual IMC, the P* will make the transition to the flight instruments.

b. The P will announce when ready for takeoff. He will remain focused outside the aircraft to assist in clearing during the VMC portion of the maneuver and to provide adequate warning of traffic and obstacles. The P will announce when his attention is focused inside the cockpit; for example, when monitoring and calling out torque. As the aircraft enters actual IMC, the P will monitor the flight instruments and assist the P* as necessary.

2. **Procedures.**

a. From the ground. Align the aircraft with the desired takeoff heading. Set the attitude indicator for takeoff.

Smoothly increase collective pitch until the aircraft becomes "light on the skids." Using outside visual references, prevent movement of the aircraft. Check the controls for proper response. While referring to the flight instruments, smoothly increase collective pitch to obtain takeoff power (10 percent or 5 psi torque above hover power for training). While increasing collective pitch, cross-check the attitude and heading indicators to ensure proper aircraft attitude and constant heading. When takeoff power is established and the altimeter and VSI show a positive climb, adjust pitch attitude one to two bar widths below the horizon for the initial acceleration. Maintain heading with the pedals prior to reaching ETL. After reaching ETL, make the transition to coordinated flight. Upon approaching climb airspeed, adjust the controls as required to maintain the desired climb airspeed.

b. **From a hover.** On the runway or takeoff pad, align the aircraft with the desired takeoff heading. Set the attitude indicator for takeoff. Establish the aircraft at a 3-foot hover, and check the controls for proper response. Initiate the takeoff by smoothly and steadily increasing collective pitch until takeoff power is reached. Adjust the pitch attitude one to two bar widths below the horizon to establish an initial accelerative climb attitude. Visually maintain runway clearance and alignment on takeoff until the aircraft accelerates through ETL. At that time, refer to the flight instruments and establish an instrument cross-check.

NOTE: Hover OGE power is required for this task.

NIGHT OR NVG CONSIDERATIONS:

1. Reduced visual references during the takeoff and the VFR portion of the ascent may make it difficult to maintain the desired ground track. The crew should know the surface wind direction and velocity. This will assist the P* in estimating the appropriate crab angle required to maintain the desired ground track.

2. If the P* makes an instrument takeoff from a hover and uses more than hover power, he should maintain that power setting until approximately 10 KIAS prior to reaching climb airspeed. Then he should adjust power as required to establish the desired rate of climb and airspeed.

3. The crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection.

REFERENCES:

AR 95-1
FM 1-203
FM 1-240
TC 1-204
TM 55-1520-234-CL
TM 55-1520-236-CL

TASK 1076

TASK: Perform radio navigation.

CONDITIONS: In an AH-1 helicopter under IMC or simulated IMC or in an AHIFWS and given appropriate navigational publications.

STANDARDS:

1. Maintain altitude ±100 feet,

2. Maintain airspeed ±10 KIAS.

3. Correctly tune and identify appropriate NAVAIDS.

4. Correctly determine the position of the aircraft.

5. Correctly intercept and maintain the desired course.

6. Correctly identify station passage.

7. Correctly perform crew coordination actions.

DESCRIPTION:

1. **__Crew Actions.__** The P will select and announce radio frequencies. He also will monitor radios and ATC information not monitored by the P*. During simulated IMC only, the P will remain focused outside the aircraft to provide adequate warning of traffic or obstacles. He will announce when his attention is focused inside the cockpit.

2. **__Procedures.__**

a. **__Equipment check.__** Check all radio navigation equipment to be used during the mission. Equipment must be operable and within accuracy tolerances, if applicable, as specified in FM 1-240 and TM 55-1520-234-10 or TM 55-1520-236-10.

b. **__Station identification.__** Obtain the correct frequency for the desired NAVAID, tune the radio, and identify the station.

c. **__Aircraft Position.__** Determine the position of the aircraft with respect to a specified NAVAID per FM 1-240.

d. **__Course interception.__** After identifying the desired NAVAID, determine the location of the aircraft in relation to the desired course. Turn 45 degrees toward the course (90 degrees to expedite). Maintain the intercept heading until approaching an on-course indication. Depending on the rate of closure, start a turn that will intercept the desired track on course.

e. **Course tracking.** Maintain the desired heading until navigational instruments show an off-course condition. If fore-cast wind drift correction does not maintain the aircraft on track, turn 20 degrees toward the course to reintercept it. If navigational instruments do not indicate movement toward the course within a reasonable time, increase the intercept angle. When the course is reintercepted, turn toward it and apply the appropriate drift correction (normally one-half of the intercept angle). Continue to bracket the course by decreasing corrections until a heading is obtained that will maintain the aircraft on course.

f. **Intersection arrival.** Determine arrival at a radio intersection per FM 1-240.

g. **Station passage.** Identify station passage by observ-ing the first complete reversal of the indicator needle or the TO-FROM indicator.

NOTE: Use of the doppler as an IFR navigational system is not authorized; however, the crew should consider and plan for its use as an emergency backup system.

NIGHT OR NVG CONSIDERATIONS: To compensate for restricted visibility at night, the crew must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation.

REFERENCES:

AIM
AR 95-1
DOD FLIP
FM 1-240
TM 55-1520-234-10
TM 55-1520-236-10

TASK 1077

TASK: Perform holding procedures.

CONDITIONS: In an AH-1 helicopter under IMC or simulated IMC or in an AHIFWS and given an altitude, holding instructions, and appropriate navigational publications.

STANDARDS:

1. Maintain altitude ±100 feet.

2. Maintain airspeed ±10 KIAS.

3. Correctly tune and identify the appropriate NAVAIDs.

4. Correctly enter the holding pattern.

5. Correctly time and track holding-pattern legs.

6. Correctly perform crew coordination actions.

DESCRIPTION:

1. Before arrival at the holding fix, the PC will analyze the holding instructions and determine the proper holding pattern and entry procedures. He will brief the other crew member(s) on the proposed entry, outbound heading, and inbound course.

2. The P will select and announce radio frequencies. He also will monitor radios and ATC information not monitored by the P*.

3. Upon arrival at the holding fix, the P* will turn (if required) to the predetermined outbound heading. He will maintain the outbound heading per the DOD FLIP or as directed by ATC. After the appropriate time outbound, the P* will turn to the inbound heading.

4. The P* will note the time required to fly the inbound leg. He will adjust the elapsed time for the subsequent outbound leg to obtain the desired inbound leg time. When holding at a NAVAID, the P* will begin timing the outbound leg when abeam the station. When holding at an intersection, he will begin timing the outbound leg upon establishing the outbound heading.

5. During simulated IMC only, the P will remain focused outside the aircraft to provide adequate warning of traffic or obstacles. He will announce when his attention is focused inside the cockpit.

NIGHT OR NVG CONSIDERATIONS: Crew members must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation.

REFERENCES:

AIM
DOD FLIP
FM 1-240

TASK 1078

TASK: Perform unusual attitude recovery.

CONDITIONS: In an AH-1 helicopter with a UT, an 1P, or an IE; simulated IMC with the aircraft cleared; or in an AHIFWS.

STANDARDS:

1. Correctly analyze the attitude of the aircraft.

2. Without delay, use correct recovery procedures in the proper sequence.

3. Recover without exceeding aircraft operating limitations and with a minimum loss of altitude.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. The UT, IP, or IE will place the aircraft in an unusual attitude or direct the P* so that an unusual attitude is obtained without exceeding aircraft operating limitations. He will then positively transfer the flight controls to the P* if required. The UT, IP, or IE will divide his attention between the outside of the aircraft to warn of traffic or obstacles and the inside to provide corrective action if aircraft operating limitations may be exceeded.

2. The P* will acknowledge the unusual attitude recovery and the positive transfer of the flight controls if required. He will immediately initiate a recovery to straight and level flight by--

a. Establishing a level bank and pitch attitude.

b. Establishing and maintaining a heading.

c. Adjusting to cruise or climb power setting.

d. Establishing and maintaining the aircraft in trim.

NIGHT OR NVG CONSIDERATIONS:

1. Crew members must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation.

2. The crew must adjust cockpit lighting properly so that they can easily read the aircraft instruments to avoid exceeding aircraft operating limitations.

REFERENCES:

AR 95-1
FM 1-240
TM 55-1520-234-10
TM 55-1520-236-10

TASK 1079

TASK: Perform radio communication procedures.

CONDITIONS: In an AH-1 helicopter or an AHIFWS with two-way radio communications established.

STANDARDS:

1. Without error, adjust radios to the proper frequencies.

2. Establish radio contact with the appropriate ATC facility.

3. When communicating with ATC facilities, use correct radio communication procedures and phraseology per the AIM and DOD FLIP.

4. Acknowledge each radio communication with ATC by using the correct aircraft call sign.

5. Acknowledge and comply with ATC instructions to change frequencies.

6. Correctly perform crew coordination actions.

DESCRIPTION:

1. During the crew briefing, the PC will assign radio responsibilities. He will indicate which crew member will establish and maintain primary communication.

2. The P* will announce ATC information not monitored by the P.

3. Within his capability, the P will adjust radios to the required frequencies. He will copy pertinent information and announce information not monitored by the P*.

4. The crew member assigned responsibility for communication procedures will perform the following actions: Adjust radios to the required frequencies. Continuously monitor the radios. When required, establish communication with the appropriate ATC facility. Monitor the frequency before transmitting. Transmit pilot reports, position reports, and flight plan changes. Use the correct radio call sign when acknowledging each communication. When advised to change frequencies, acknowledge the instruction.

Select the new frequency as soon as possible unless instructed to do so at a specific time, fix, or altitude. Use radio communication procedures and phraseology appropriate for the area of operations.

NIGHT OR NVG CONSIDERATIONS:

1. Crew members must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation.

2. The crew must adjust cockpit lighting properly so that they can easily confirm that frequencies are set in the appropriate radios.

REFERENCES:

AIM
DOD FLIP
Unit SOP

TASK 1080

TASK: Perform procedures for two-way radio failure.

CONDITIONS: In an AH-1 helicopter, in an AHIFWS, or orally in a classroom environment.

STANDARDS:

1. Implement correct procedures for two-way radio failure.

2. Correctly perform crew coordination actions.

DESCRIPTION:

1. **Crew Actions.**

a. The P*/P will announce two-way radio failure. The PC will direct the efforts to identify and correct radio malfunctions.

b. The P* will remain focused outside the aircraft or inside the cockpit on the instruments as appropriate. He will not participate in troubleshooting the malfunction.

c. The PC will troubleshoot the malfunction and announce the results. If required, the crew members will transfer the flight controls to continue the troubleshooting procedure.

2. **Procedures.**

a. **VFR.** If two-way radio failure occurs while operating under VFR or if VMC are encountered after the failure, continue the flight under VFR. Land as soon as practicable.

b. **IFR.**

(1) If two-way radio failure occurs while operating in the NAS, adjust the transponder and continue the flight according to instructions in the FIH.

(2) If two-way radio failure occurs while operating outside CONUS, comply with ICAO rules or applicable host-country regulations.

NIGHT OR NVG CONSIDERATIONS: If two-way radio failure occurs at night, the crew should use the same procedures as during the day.

Because of the possibility of increased stress, the crew must be especially cognizant to maintain good cockpit communication procedures.

REFERENCES:

DOD FLIP
FIH
Unit SOP

TASK 1081

TASK: Perform nonprecision approach.

CONDITIONS: In an AH-1 helicopter under simulated IMC or in an AHIFWS, with the approach clearance received and the before-landing check completed, and given the appropriate DOD FLIP.

STANDARDS:

1. Execute the approach according to AR 95-3, FM 1-240, and the DOD FLIP.

2. Maintain an appropriate airspeed ±10 KIAS.

3. Maintain altitude as directed by ATC ±100 feet.

4. Maintain the prescribed courses as follows:

a. NDB courses--within ±5 degrees.

b. VOR courses--within a one-half scale deflection of the CDB or CDI or ±5 degrees using the HSI or RMI.

c. LOC courses--within a full-scale deflection of the CDB, CDI, or HSI.

5. During ASR approaches, make immediate heading and altitude changes issued by ATC and maintain heading ±5 degrees.

6. Correctly perform crew coordination actions.

DESCRIPTION:

1. The PC will review the approach with the other crew member prior to initiating the procedure.

2. The P* will remain focused inside the cockpit on the instruments. He will follow the heading, altitude, and missed approach procedures for the approach being flown. The P* will request from the P whatever navigational assistance is required and will acknowledge all navigation directives given by the P. He will announce any deviation from the approach not directed by ATC or the P.

3. The P will read the approach procedure to the P* as requested. He will announce changes to ATC communication frequencies and ATC information not monitored by the P*. The P will complete the approach when the crew encounters VMC.

4. During simulated IMC only, the P will remain focused outside the aircraft to provide adequate warning of obstacles detected. He will announce when his attention is focused inside the cockpit.

NOTE 1: FM 1-240 and the AIM describe approach procedures.

NOTE 2: Use of the doppler as an IFR navigational system is not authorized; however, the crew should consider and plan for its use as an emergency backup system.

NIGHT OR NVG CONSIDERATIONS:

1. The crew must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation, especially when making the transition from IMC to VMC.

2. Once established in VMC, the crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection.

REFERENCES:

AIM
AR 95-1
AR 95-3
DOD FLIP
FM 1-240
TM 55-1520-234-10
TM 55-1520-236-10

TASK 1082

TASK: Perform precision approach.

CONDITIONS: In an AH-1 helicopter under simulated IMC or in an AHIFWS, with the before-landing check completed, and given the appropriate DOD FLIP.

STANDARDS:

1. Execute the approach according to AR 95-3, FM 1-240, and the DOD FLIP.

2. Maintain an appropriate airspeed ±10 KIAS.

3. Maintain altitude as directed by ATC ±100 feet.

4. Maintain heading ±5 degrees.

5. Make immediate heading and altitude corrections issued by ATC.

6. During ILS approaches, remain within a full-scale deflection of the CDI or HSI; on final approach, maintain glide slope indicator within a full-scale deflection.

7. Correctly perform crew coordination actions.

DESCRIPTION:

1. The PC will review the approach with the other crew member prior to initiating the procedure.

2. The P* will remain focused inside the cockpit on the instruments. He will follow the heading, altitude, and missed approach procedures for the approach being flown. The P* will request from the P whatever navigational assistance is required and will acknowledge all navigation directives given by the P. He will announce any deviation from the approach not directed by ATC or the P.

3. The P will read the approach procedure to the P* as requested. He will announce changes to ATC communication frequencies and ATC information not monitored by the P*. The P will complete the approach when the crew encounters VMC.

4. During simulated IMC only, the P will remain focused outside the aircraft to provide adequate warning of obstacles detected. He will announce when his attention is focused inside the cockpit.

NOTE 1: FM 1-240 and the AIM describe approach procedures.

NOTE 2: Use of the doppler as an IFR navigational system is not authorized; however, the crew should consider and plan for its use as an emergency backup system.

NIGHT OR NVG CONSIDERATIONS:

1. The crew must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation, especially when making the transition from IMC to VMC.

2. Once established in VMC, the crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection. They also should consider using artificial lighting if it is needed for identification.

REFERENCES:

AIM
AR 95-1
AR 95-3
DOD FLIP
FM 1-240
TM 55-1520-234-10
TM 55-1520-236-10

TASK 1083

TASK: Perform or describe inadvertent IMC procedures/VHIRP.

CONDITIONS: In an AH-1 helicopter under VMC or simulated IMC, in an AHIFWS, or orally in a classroom environment.

STANDARDS:

1. Maintain proper aircraft control, and make the transition to instrument flight immediately.

2. Initiate a climb immediately.

3. Without error, comply with local vertical helicopter instrument recovery procedures.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P and/or the P* will announce "Inadvertent IMC."

2. The P* will announce when he initiates inadvertent IMC procedures or VHIRP.

3. The P will monitor the aircraft instruments to assist in establishing coordinated flight within aircraft operating limitations. He also will make the appropriate radio calls.

4. If inadvertent IMC are encountered, the P* will proceed as follows:

a. Level the wings on the attitude indicator.

b. Maintain heading; turn only to avoid known obstacles.

c. Adjust the torque to climb power.

d. Adjust the airspeed to climb airspeed.

e. Complete the procedure per local regulations and policies.

NOTE: Use of the doppler as an IFR navigational system is not authorized; however, the crew should consider and plan for its use as an emergency backup system.

NIGHT OR NVG CONSIDERATIONS:

1. When wearing NVG, crew members may be able to see through thin obscurations, such as fog and drizzle, with little or no degradation.

2. If crew members enter IMC with the pink light or landing light on, they may become spatially disorientated.

3. The decision to remove or flip up the NVG or to remain aided will be made by the PC once the P* establishes cruise flight.

REFERENCES:

AR 95-1
AR 95-2
AR 95-3
AR 95-10
FM 1-203
FM 1-240
TC 1-204
Unit SOP

TASK 1090

TASK: Perform masking and unmasking.

CONDITIONS: In an AH-1 helicopter or an AH1FWS with OGE hover power available.

STANDARDS:

1. Perform a thorough map reconnaissance of the desired observation area.

2. Correctly mask the aircraft fromenemy visual observation and/or electronic detection.

3. Maintain a sufficient distance behind an obstacle to allow for safe maneuvering.

4. Move to a new location, if available, before subsequent unmasking.

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* will remain focused outside the aircraft to clear the aircraft throughout the maneuver. He will announce the type of masking and unmasking before executing the maneuver and any deviations from the maneuver. The P* will acknowledge any instructions from the P.

2. The P will focus his attention primarily inside the cockpit. He will perform a thorough map reconnaissance to identify natural and man-made features prior to the unmasking. The P will acknowledge when he is ready to execute the maneuver. As the aircraft becomes unmasked, the P's primary focus will shift to the outside of the aircraft. He will assist with aircraft clearance, announce excessive drift or altitude changes, and participate in search activities. The P will announce when his attention is focused inside the cockpit; for example, when plotting a possible target on the map or when viewing through the TSU.

NOTE: Task 1067 describes visual search techniques.

3. The crew must clear directly below the aircraft if descending vertically or the flight path if moving laterally.

a. **Masking in flight.** With the aid of the map, the crew will fly to the objective. The P* will take advantage of terrain and vegetation to prevent exposure of the aircraft to enemy visual observation or electronic detection. The P will maintain orientation at all times and look ahead on the map for obstacles.

b. **Unmasking in flight.** The P* will keep aircraft exposure time to a minimum to prevent enemy visual observation or electronic detection. The crew must be aware that gun dish radar can lock onto a target within two to nine seconds.

c. **Unmasking at a hover (vertically).** The crew will ensure that sufficient power is available to unmask. The P* will apply collective pitch until he obtains sufficient altitude to see over the mask while not exceeding aircraft operating limitations. He will maintain horizontal main rotor blade clearance from the mask in case of a power loss or a tactical need to mask the aircraft quickly. When possible, the P* will unmask at a safe distance from the mask to permit a rapid descent to a masked condition if the aircraft is detected, fired on, or loses power. He must be aware of a common tendency to move forward or rearward while unmasking and remasking vertically. The P* must keep aircraft exposure time to a minimum.

d. **Unmasking at a hover (laterally).** Sometimes, the P* may unmask the aircraft by moving laterally from the mask. He should hover the aircraft sideward to provide the smallest silhouette possible to enemy observation or fire. The P* must keep aircraft exposure time to a minimum.

NOTE 1: When unmasking the aircraft, the crew should select a new location that is a significant distance from the previous location and from where they can still observe the target area. If the target area is a long distance (2,000 to 3,000 meters) away, moving only 100 meters will still keep the aircraft in the same field of view from the target. However, if the target area is close to the unmasking position, a drift of 100 meters will make a significant difference.

NOTE 2: Before unmasking, the crew should select weapon systems and divide the areas of observation.

NIGHT OR NVG CONSIDERATIONS: When hovering above 25 feet without aircraft lights, the P* may have difficulty maintaining altitude and position. To maintain position, the P* should use references such as lights, tops of trees, or man-made objects above and to the front and sides of the aircraft. By establishing a reference angle to these objects, the P* can detect altitude changes by changes in his viewing perspective. Hovering near ground features, such as roads, provides ideal references for judging lateral movement. The P* may become spatially disoriented when changing his viewing perspective back and forth between high and low references. Therefore, he should rely on the P for assistance in maintaining orientation.

NOTE 1: The crew must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation.

NOTE 2: The crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection.

REFERENCES:

ASET I Program
FM 1-203
Task 1067
TC 1-204
TM 55-1520-234-10
TM 55-1520-236-10

TASK 1091

TASK: Perform tactical communication procedures and electronic counter-countermeasures.

CONDITIONS: In an AH-1 helicopter, an AH1FWS, or orally in a classroom environment and given signal operation instructions.

STANDARDS:

1. Properly operate aircraft radios.

2. Maintain radio discipline at all times.

3. Properly operate voice security equipment.

4. Correctly use signal operation instructions.

5. Correctly recognize and respond to enemy electronic warfare actions.

6. Properly operate electronic sensing equipment.

7. Correctly perform crew coordination actions.

DESCRIPTION:

1. The PC will assign radio frequencies during the crew briefing. He will indicate which crew member will establish and maintain primary communications.

2. The P* will announce mission information not monitored by the P and any deviation from directives. The P* will remain focused outside the aircraft for clearing and keeping track of traffic or obstacles.

3. The P will operate the radios and announce radio frequencies. He will copy and decode pertinent information and announce information not monitored by the P*. The P will focus his attention primarily inside the cockpit. However, as his workload permits, he will assist in clearing the aircraft and provide adequate warning of traffic or obstacles.

4. The crew should use electronic communications in a tactical environment only when absolutely necessary. (Radios which are not needed should be turned off.) If electronic communication is required, the best method is to operate in the secure voice mode. To eliminate confusion and reduce transmission time, the crew should use approved communication words, phrases, and

codes. Crew members must plan what to say before keying the transmitter. They should transmit information clearly, concisely, and slowly enough to be understood by the receiving station. Ideally, transmissions should be kept under ten seconds. Crew members must not identify a unit or an individual by name during nonsecure radio transmissions.

a. **Authentication.** The crew must use proper SOI procedures to authenticate all in-flight mission changes and artillery advisories when entering or departing a radio net or when challenged.

b. **MIJI Procedures.** The crew must keep accurate and detailed records of any MIJI incidents. Crew members must report the incident as soon as possible when a secure communications capability exists. (Task 2091 discusses tactical reports.)

c. **SIF/IFF usage.** During radio checks, the crew will select the appropriate transponder mode on the selector and test the system. The crew will monitor the SIF\IFF reply light during the flight.

d. **SAM system.** The SAM system provides 36 combinations of signals and messages that can be transmitted by using colored or numbered flip cards. FM 1-400 describes how to communicate using this system.

e. **Other visual methods.** Flags, lights, panels, pyrotechnics, hand-and-arm signals, and aircraft maneuvers are some of the other visual communication methods. The unit SOP and SOI describe these methods in detail.

NOTE: Crew members will adhere to positive flight-following procedures during tactical operations per the appropriate flight coordination center and unit SOP.

NIGHT OR NVG CONSIDERATIONS: At reduced ambient light levels, the use of other than electronic communications is difficult and leaves a large margin for error. If possible, face-to-face meetings are recommended. If this is not possible, the crew must keep signals to a minimum and use only those signals authorized by the unit SOP.

REFERENCES:

DOD AIM 86-100
FM 1-103
FM 1-400
FM 24-35
FM 24-35-1
Task 2091
TM 11-5810-262-10
TM 11-5895-1199-12
TM 55-1520-234-10
TM 55-1520-236-10
Unit SOP

TASK 1093

TASK: Perform or describe techniques of movement.

CONDITIONS: In an AH-1 helicopter or orally in a classroom environment with mission planning completed.

STANDARDS:

1. Correctly conduct tactical movement using traveling, traveling overwatch, or bounding overwatch.

2. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew Actions.

a. The P* will remain focused outside the aircraft for clearing and keeping track of other aircraft. He will announce any maneuver or movement prior to execution.

b. The P will provide adequate warning to avoid obstacles detected in the flight path and identified on the map. He will inform the P* if contact is lost with other aircraft, if an enemy is sighted, and if his attention is focused inside the cockpit.

2. Tactical Movement Techniques. Techniques of movement are designed to exploit the mobility of helicopters while employing the fire and maneuver concept. The techniques of tactical movement are briefly described below.

a. Traveling. This technique is used primarily when enemy contact is not likely. It is the fastest method for moving aircraft but provides the least amount of security. Low-level flight and contour flight at high airspeed are normally used for movement.

b. Traveling overwatch. This technique is used when enemy contact is possible. It is characterized by continuous movement of the main elements. The overmatching element keys its movement to the terrain and its distance from the main element. It remains ready to fire or maneuver, or both, to support the main elements. Contour flight is normally used for movement. Airspeed is generally high and varied depending on the weather, ambient light, terrain, and threat.

c. __Bounding overwatch.__ This technique is used when enemy contact is likely and the greatest degree of concealment is required. Elements move by bounds. One element remains in position to observe, fire, or maneuver before the other element moves. Overwatching elements cover the progress of bounding elements from a covered and concealed position, which offers observation and fields of fire against potential enemy positions. Contour flight and NOE flight are normally used for movement. Airspeed during each bound is varied depending on the availability of vegetation and terrain for concealment.

NOTE: When multiple aircraft are not available to perform this task, it may be described in the aircraft or in a classroom environment.

NIGHT OR NVG CONSIDERATIONS:

1. The inherent difficulty in detecting obstacles and closure rates at night requires extra caution when performing this task. Each aircrew must be constantly aware of the actions and intentions of other aircrews in the team. Therefore, additional radio calls announcing intent, for example, to slow or stop movement, are recommended in the training environment.

2. The crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection.

NOTE: Paragraph 6-2k (page 6-3) contains additional night or NVG tactical operation considerations.

REFERENCES:

FM 1-116
TC 1-201
TM 55-1520-234-10
TM 55-1520-236-10
Unit SOP

TASK 1094

TASK: Identify major US or allied equipment and major threat equipment.

CONDITIONS: In a tactical or simulated tactical environment or in a classroom environment.

STANDARDS:

1. Without the use of references, correctly identify major US or allied equipment expected to be in the area of operations.

2. Without the use of references, correctly identify major threat equipment expected to be in the area of operations by its NATO nomenclature per FM 1-402.

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. While looking at the actual equipment or when shown pictures or mock-ups of the equipment, the crew members will correctly identify major US or allied equipment expected to be in the area of operations.

2. While looking at the actual equipment or when shown pictures or mock-ups of the equipment, the crew members will correctly identify major threat equipment expected to be in the area of operations. They must identify the equipment by its NATO nomenclature.

3. If the task is performed in the aircraft, the PC will direct the P*/P to announce the type and direction of equipment detected. The other crew member will confirm the type and direction of the equipment.

NIGHT OR NVG CONSIDERATIONS: Because of visual limitations even with the NVG, accurate identification of equipment is difficult. Use of the NVG with the C-NITE TSU enhances the detectio/ identification ability of the crew. The crew must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation.

REFERENCES:

FM 1-402
FM 44-30
FM 100-2-3

TASK 1095

TASK: Operate aircraft survivability equipment.

CONDITIONS: In an AH-1 helicopter or an AH1FWS equipped with ASE and during a tactical flight in a simulated threat environment or orally in a classroom environment.

STANDARDS:

1. Correctly prepare the equipment for operation.

2. Without error, perform a self-test check, if required.

3. Without delay, identify the friendly or threat radar system from the visual display or audio warning.

4. Properly operate the equipment.

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. The crew will perform a preflight inspection and will perform or simulate operational and employment procedures and precautions for the AN/ALQ-136(V)5, AN\ALQ-=144A, AN/APR-39(V)l, and M130 (chaff).

2. The aviator in the pilot's station will perform turn-on, self-test, and operational checks; operating procedures; and shutdown procedures. He will evaluate and interpret the ASE visual and/or aural indication.

3. The crew will properly execute mission employment doctrine and determine partial failure alternatives.

NIGHT OR NVG CONSIDERATIONS: The crew must adjust the aircraft lighting properly. If the P* is in the pilot's station, he should avoid fixating on the AN\APR-39(V)l visual display.

REFERENCES:

ASET I and II Programs
FM 1-101
TM 11-5841-283-12
TM 11-5865-200-12
TM 11-5865-202-12

TASK 1096

TASK: Perform actions on contact.

CONDITIONS: In an AH-1 helicopter or an AH1FWS, in a simulated tactical environment, with a tactical map.

STANDARDS:

1. Use correct actions on contact consistent with the tactical situation.

2. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P*/P will announce the threat (hostile fire, radar detection, or visual detection) and direction and will confirm the location of the threat.

2. The P* will immediately deploy to cover, and the P*/P will employ suppressive fire if appropriate. The P* will announce the direction of flight to evade detection and direct the P to remain focused outside the aircraft to assist in clearing.

3. The P will provide adequate warning to avoid obstacles. He will announce when his attention is focused inside the cockpit; for example, when operating weapon systems.

4. After successfully deploying to cover, the crew will--

a. Continue observation as appropriate to the mission.

b. Report the situation.

c. Develop the situation.

d. Choose a course of action if not directed by the unit commander. (The P*/P will announce the unit commander's directive if not monitored by the other crew member.)

NOTE: Tasks 1040 and 2091 discuss evasive maneuvers and tactical reports, respectively.

NIGHT OR NVG CONSIDERATIONS:

1. At low ambient light levels, obstacle detection is difficult. The P* may experience spatial disorientation if he executes abrupt maneuvers. Proper scanning techniques and good cockpit communication are necessary to avoid these hazards.

2. The crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection.

NOTE: The crew must treat visual obstacles the same as physical obstacles.

REFERENCES:

FM 1-116
Task 1040
Task 2091
Unit SOP

TASK 1097

TASK: Negotiate wire obstacles.

CONDITIONS: In an AH-1 helicopter, in an AH1FWS, or orally in a classroom environment.

STANDARDS:

1. Locate and accurately estimate the height of wires.

2. Determine the best method to negotiate the wire obstacle.

3. Safely negotiate the wire obstacle, minimizing the time unmasked.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P*/P will announce when he sees the wires. He will confirm the location of wire obstacles with the other crew member.

2. The crew will discuss the characteristics of wires and accurately estimate the amount of available clearance between them and the ground to determine the method of crossing. The crew also will locate guy wires and supporting poles. The PC will determine the method of negotiating the wires.

3. The P* will remain focused outside the aircraft and announce the method of negotiating the wires and initiating the maneuver. Before crossing, the crew will identify the highest and lowest wires. The P* will cross near a pole to aid visual perception and minimize the time that the aircraft is unmasked. When underflying wires, he will maintain a minimum clearance of hover height plus 25 feet and ground speed no greater than that of a brisk walk. The P* will ensure lateral clearance from guy wires and poles.

4. The P will provide adequate warning to avoid hazards, wires, and poles or supporting structures. He will announce when the aircraft is clear and when his attention is focused inside the cockpit.

NOTE: The crew must use proper scanning techniques to avoid obstacles.

NIGHT OR NVG CONSIDERATIONS:

1. The crew should not perform this task while wearing the NVG unless the location has been checked during daylight conditions and all obstacles have been identified.

2. Wires are difficult to detect with the NVG.

3. When underflying wires, the crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection.

REFERENCES:

TC 1-201
TC 1-204
Unit SOP

TASK 1099

TASK: Operate Mark XII IFF System.

CONDITIONS: In an AH-1 helicopter or an AH1FWS equipped with the Mark XII IFF System and given a mission briefing that includes signal operation instructions.

STANDARDS:

1. Correctly prepare system for operation.

2. Correctly perform the self-test check.

3. Correctly classify IFF and transponder defects relative to the mission.

4. Correctly operate the equipment without assistance.

DESCRIPTION: The aviator in the pilot's station will perform or simulate the operational and employment procedures and precautions for the Mark XII IFF System. These include a preflight inspection; turn-on, self-test, and operational checks; mission employment doctrine and operating procedures; partial failure alternatives; and indication or signal interpretation. During shutdown, the aviator in the pilot's station will correctly execute code-holding procedures or zeroize the codes as required.

NOTE: TM 11-5895-1199-12 contains details on the Mark XII IFF System.

NIGHT OR NVG CONSIDERATIONS: At reduced ambient light levels, the crew must use extra care to ensure that the proper codes are entered.

REFERENCES:

DOD AIM 86-100
TM 11-5895-1199-12
TM 55-1520-234-10
TM 55-1520-236-10

TASK 1109

TASK: Supervise loading of weapons.

CONDITIONS: Given an AH-1 helicopter with a weapon system.

STANDARDS:

1. Ensure that the aircraft is properly loaded.
2. Ensure that weapon systems are properly loaded.

WARNING

Observe laser safety procedures.

CAUTION

Ensure that electrically fired ammunition is loaded well away from electrical and radar sources.

DESCRIPTION: The crew will ensure that the aircraft is properly grounded and the weapon systems are properly loaded. They must thoroughly inspect the weapon systems for serviceability. If applicable, the crew will perform a stray current check on rocket launchers prior to loading the system. The PC will determine the kind and amount of ammunition to be loaded for each weapon system.

NIGHT OR NVG CONSIDERATIONS: At reduced ambient light levels, the crew should consider using artificial lighting to ensure the proper loading of ammunition.

REFERENCES:

TM 9-1055-460-13&P
TM 9-1090-203-20
TM 9-1090-206-20-1
TM 55-1520-234-10
TM 55-1520-236-10

TASK 1110

TASK: Perform a preflight inspection on weapon systems.

CONDITIONS: Given an AH-1 helicopter with appropriate weapon systems installed.

STANDARDS: Without error, perform a preflight inspection on the weapon systems according to TM 55-1520-234-10 or TM 55-1520-236-10.

DESCRIPTION: Check each item, in sequence, as described in TM 55-1520-234-10 or TM 55-1520-236-10. Ensure that each weapon is properly installed.

NIGHT OR NVG CONSIDERATIONS: If time permits, accomplish the preflight inspection during daylight hours. During the hours of darkness, use a flashlight with an unfiltered lens to supplement available lighting.

REFERENCES:

TM 55-1520-234-10
TM 55-1520-236-10

TASK 1111

TASK: Operate rocket management system.

CONDITIONS: In an AH-1 helicopter with the rocket management system installed or in an AH1FWS.

STANDARDS:

1. Correctly program the RMS for the armament load and mission.

2. Correctly operate the RMS without assistance.

3. Correctly perform crew coordination actions.

DESCRIPTION: The aviator in the pilot's station will place the RMS into operation by--

a. Setting the type warhead for the correct launcher zone.

b. Setting the proper penetration for the designated target.

c. Setting the desired fuse rate.

d. Setting the mode and quantity for the desired target effect.

e. Setting range to the target using both manual and laser range information.

f. Arming the system and effectively engaging the designated target.

NOTE 1: Unless directed otherwise, the PC will determine the selection and quantity of the ammunition fired.

NOTE 2: Live fire is not required for completion of this task if the crew is performing the task during continuation training.

NIGHT OR NVG CONSIDERATIONS: At reduced ambient light levels, the aviator in the pilot's station must use proper scanning techniques when making the transition from inside the cockpit to outside the aircraft. If different types of warhead rockets are installed in different launcher zones, the crew must ensure that the proper zone is armed prior to firing.

REFERENCES:

TC 1-140
TM 55-1520-234-10
TM 55-1520-234-CL
TM 55-1520-236-10
TM 55-1520-236-CL

TASK 1112

TASK: Perform armament system checks.

CONDITIONS: In an AH-1 helicopter with the appropriate weapon systems installed or in an AH1FWS.

STANDARDS:

1. Without error, perform armament system checks for the applicable crew station according to TM 55-1520-234-CL or TM 55-1520-236-CL.

2. Correctly classify indicated malfunctions relative to the mission.

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P*/P will perform the required armament system checks for the applicable crew station. The crew will perform the checks in the proper sequence as indicated in TM 55-1520-234-CL or TM 55-1520-236-CL. They will use the call and response method to complete the required checklist items.

2. Upon completion of the required checks, the crew will ensure that all switches are in the proper position for system operation.

NIGHT OR NVG CONSIDERATIONS: Depending on the ambient light level, the crew may need to use artificial lighting to accurately complete the required test. For example, during the TSU to turret check, the P* may find it difficult to observe the indicated gun azimuth and/or elevation without the use of a light. In addition, the viewing of a lighted area or group of lights will greatly enhance the CPG's ability to check the travel of the TSU during the tracking rate check.

REFERENCES:

TM 55-1520-234-10
TM 55-1520-234-CL
TM 55-1520-236-10
TM 55-1520-236-CL

TASK 1113

TASK: Operate M28/M197 turret system.

CONDITIONS: In an AH-1 helicopter with an M28/M197 turret system installed or in an AH1FWS.

STANDARDS:

1. Correctly determine the type turret weapon to be used (M28 subsystem).

2. Correctly use both manual and laser (if installed) range information.

3. Correctly engage the designated target using both FLEX and STOWED modes of operation.

4. Correctly perform crew coordination actions.

DESCRIPTION: The P*/P will place the turret system into operation to effectively engage the designated target. The P*/P will either observe the target or receive a target handover. The crew will determine the proper weapon system for achieving the desired effect on the target. They will determine the range to the target and supply the range to the turret system using both manual range inputs and, if installed, laser information. The PC will designate the sighting system to be used.

NOTE 1: Task 1144 discusses target handover.

NOTE 2: Unless directed otherwise, the PC will determine the selection and quantity of the ammunition fired.

NOTE 3: Live fire is not required for completion of this task if the crew is performing the task during continuation training.

NIGHT OR NVG CONSIDERATIONS:

1. At reduced ambient light levels, the crew must use proper scanning techniques when making the transition from inside the cockpit to outside the aircraft. When the P* is firing the system, the P's primary focus should be outside the aircraft to assist with obstacle avoidance. The P will announce when his attention is focused inside the cockpit; for example, when using the TSU or programming the RMS.

2. During NVG operations, the crew should use short bursts to minimize muzzle flash effects.

3. The crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection.

REFERENCES:

Task 1144
TC 1-140
TM 55-1520-234-10
TM 55-1520-234-CL
TM 55-1520-236-10
TM 55-1520-236-CL

TASK 1114

TASK: Operate rocket launchers.

CONDITIONS: In an AH-1 helicopter with the rocket launchers installed or in an AH1FWS.

STANDARDS:

1. Properly place the launchers into operation.

2. Properly engage the targets.

3. Correctly perform crew coordination actions.

DESCRIPTION: The P*/P will place the rocket launchers into operation to effectively engage the designated target. The P*/P will either observe the target or receive a target handover. The PC will designate the sighting system to be used.

NOTE 1: Task 1144 discusses target handover.

NOTE 2: Unless directed otherwise, the PC will determine the selection and quantity of the ammunition fired.

NOTE 3: Live fire is not required for completion of this task if the crew is performing the task during continuation training.

NIGHT OR NVG CONSIDERATIONS:

1. At reduced ambient light levels, the crew must use proper scanning techniques when making the transition from inside the cockpit to outside the aircraft. When the P* is firing the system, the P's primary focus should be outside the aircraft to assist with obstacle avoidance. The P will announce when his attention is focused inside the cockpit; for example, when using the TSU or programming the RMS.

2. During NVG operations, the rocket motor signature will momentarily degrade the crew's ability to detect obstacles. The crew can minimize this degradation by limiting the number of rockets fired at one time and by using artificial lighting.

3. The crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection.

REFERENCES:

Task 1144
TC 1-140
TM 55-1520-234-10
TM 55-1520-234-CL
TM 55-1520-236-10
TM 55-1520-236-CL

TASK 1115

TASK: Operate TOW missile system.

CONDITIONS: In an AH-1 helicopter with the TOW missile system installed or in an AH1FWS.

STANDARDS:

1. Properly place the system into operation.

2. Properly engage the targets.

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. The CPG will place the system into operation to fire a TOW missile at a designated target. He will accurately determine the range to the target using the WORM formula or map information. Laser range or doppler information will be used if available. The CPG will give the P* directions, as necessary, to keep the target in sight throughout the engagement. He will announce missile launch, wire cut, subsequent engagement, or any deviation from the planned attack. The CPG also will announce when his attention is -focused outside the aircraft.

2. The P* will acknowledge all directives from the CPG. He will keep the aircraft in prelaunch constraints before missile launch and postlaunch constraints after missile launch. The P* will provide suppressive fire, as necessary, using either the turret or rocket system.

NOTE 1: Live fire is not required for completion of this task.

NOTE 2: Task 1144 discusses target handover procedures.

NOTE 3: TC 1-140 discusses the firing of TOW IIB missiles.

NIGHT OR NVG CONSIDERATIONS:

1. Unless the aircraft is equipped with the C-NITE TSU, the TOW system is not an effective weapon except when used under high levels of artificial illumination.

2. If adequate light levels exist and the decision to fire is made, the techniques described below offer the best chances for success.

a. The CPG will place the sight onto the center of mass of the target and announce firing the missile. The P* will acknowledge and look away from the side the missile is to be fired from. The CPG will ensure that the SHC remains stationary and will wait for flight motor burnout. When the missile is far enough down range so that the infrared source no longer obstructs the target, the CPG will reposition the sight onto the target. He will announce missile impact and/or wire cut. The P* will acknowledge the wire cut.

b. The CPG will place the sight onto an object other than the target but at approximately the same range. The object should be close enough to keep the target at the edge of the sight field of view. The CPG will announce firing the missile. The P* will acknowledge and look away from the side the missile is to be fired from. After the missile is fired and the flight motor signature no longer obscures the field of view, the CPG will adjust the sight onto the center of mass of the target. The CPG will announce missile impact and/or wire cut. The P* will acknowledge the wire cut.

REFERENCES:

Task 1144
TC 1-140
TM 55-1520-234-10
TM 55-1520-234-CL
TM 55-1520-236-10
TM 55-1520-236-CL

TASK 1117

TASK: Safe and clear weapon systems.

CONDITIONS: In an AH-1 helicopter with weapon systems installed.

STANDARDS: Without error, properly safe and clear the weapon systems.

DESCRIPTION:

1. The crew will safe and clear the weapon systems, as appropriate, prior to the preflight inspection, after live firing exercises, and at any other time deemed necessary.

2. The crew will properly ground the aircraft, as required, and insert the jettison safety pins. Bullet traps or other safety devices will be installed as appropriate. For AH-lE and AH-lF helicopters, disconnecting the W2P1 electrical connector will safe the M197 gun.

3. The crew will raise the charging handle on the TOW missiles.

4. If the aircraft is to be shut down with the rockets installed, the crew must ensure that the igniters are in contact with the rockets. The crew also must ensure that appropriate circuit breakers are in and that the aircraft is properly grounded.

NOTE 1: Live fire is not required for completion of this task.

NOTE 2: The PC is responsible for ensuring that the aircraft is properly grounded and that weapons are safe and clear.

NIGHT OR NVG CONSIDERATIONS: This task should be performed during daylight hours. If this is not possible, the crew should use artificial lighting to ensure that they can perform the procedures properly.

REFERENCES:

TM 55-1520-234-10
TM 55-1520-236-10

TASK 1118

TASK: Perform firing techniques.

CONDITIONS: In an AH-1 helicopter or an AH1FWS and given the location of an enemy position and the order to engage the target.

STANDARDS:

1. Correctly estimate the range to the target.

2. Correctly determine the ordnance and method of engagement to be used.

3. Correctly apply ballistic correction factors for the weapon used.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P*/P will estimate the range to the target. This can be done visually; by using map reconnaissance, laser, doppler, or sight mil values; or by using a combination of methods.

2. The PC will evaluate the situation using the applicable factors of METT-T. He will select the appropriate weapon system and type of fire.

a. **Hover fire.** Hover fire is conducted with the aircraft normally unmasked below ETL. When the crew uses this technique, station time and/or armament load will be reduced because of power limitations. When possible, the crew will move the aircraft between engagements and use point-type weapons as the preferred method of attack.

NOTE: Task 1119 discusses firing position operations.

b. **Diving fire.** Diving fire is normally used during low-intensity conflicts. It offers the advantages of relative invulnerability to small arms fire, increased armament load, increased accuracy, and increased target acquisition and tracking capabilities. The entry altitude, entry airspeed, dive angle, and recovery altitude will depend on the threat, tactical mission profile, ambient weather conditions, and aircraft gross weight.

NOTE: Task 2069 discusses diving flight.

c. Running fire. Running fire is conducted with the aircraft above ETL. This improves the stability of the aircraft and the accuracy of the weapon system. Running fire also increases station time and armament load over the hover fire technique. It offers a slight decrease in vulnerability over the diving fire technique. The crew should break contact with the target area prior to coming within range of threat weapons.

NOTE: Task 1035 discusses terrain flight.

3. Generally, the aviator not engaging with a weapon system will focus his attention primarily outside the aircraft to assist with obstacle avoidance.

NOTE: Live fire is not required for completion of this task.

NIGHT OR NVG CONSIDERATIONS: The crew must consider ambient light levels and available contrast, as well as the factors of METT-T, when selecting the type of fire. Difficulty in determining aircraft altitude and rate of closure and detecting obstacles will increase the fatigue level of the aircrew. The crew must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation.

REFERENCES:

FM 1-112
Task 1035
Task 1119
Task 2069
TC 1-140
TM 55-1520-234-10
TM 55-1520-236-10
Unit SOP

TASK 1119

TASK: Perform firing position operations.

CONDITIONS: In an AH-1 helicopter or an AH1FWS in a training or tactical environment.

STANDARDS:

1. Correctly select the firing position.

2. Correctly enter the firing position.

3. Correctly engage the target.

4. Correctly egress the firing position.

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* will remain focused outside the aircraft for clearing and will maintain aircraft orientation toward the target. He will announce any maneuver or movement prior to execution.

2. The P will direct the P* to move the aircraft to retain visual acquisition of the target.

3. The crew will enter the firing position, engage the target, egress, and reposition to an alternate firing position. Selection of firing positions should be based on the following considerations:

a. **Background.** The helicopter should not be silhouetted.

b. **Range.** The kill zone should be within the last one-third of the weapon's range.

c. **Target altitude.** The firing position should be level with or higher than the target area, if possible.

d. **Sun or full moon.** The sun or full moon should be behind or to the side of the helicopter.

e. **Shadow.** When possible, the firing position should be within an area covered by shadow.

f. **Concealment.** Vegetation around the firing area should be sufficient for the helicopter to remain masked.

g. **Rotor wash.** The location of the firing position should avoid or reduce the visual signal caused by the effect of rotor wash on the surrounding terrain such as debris, trees, snow, and dust.

h. **Maneuver area.** The position should permit easy ingress and egress.

i. **Field of fire.** The target should be visible throughout the kill zone.

NOTE 1: Live fire is not required for completion of this task.

NOTE 2: Hover OGE power is required for this task.

NIGHT OR NVG CONSIDERATIONS:

1. Night.

a. The selection of a firing position is difficult at night. Success requires a knowledge of the various methods of determining the height of obstacles.

b. Before conducting firing position operations, the crew must ensure that the searchlight is in the desired position. If the searchlight is used, the crew's night vision will be impaired for several minutes. The crew must exercise extra caution if they continue the flight before reaching full dark adaptation.

c. When hovering above 25 feet without aircraft lights, the P* may have difficulty maintaining altitude and position. To maintain position, the P* should use references such as lights, tops of trees, or man-made objects above and to the front and sides of the aircraft. By establishing a reference angle to these objects, the P* can detect altitude changes by changes in his viewing perspective. Hovering near ground features, such as roads, provides ideal references for judging lateral movement. The P* may become spatially disoriented when changing his viewing perspective back and forth between high and low references. Therefore, he should rely on the P for assistance in maintaining orientation.

2. NVG.

a. Depending on the ambient light level, the size of surrounding obstacles, and the size of the firing position, the crew may use artificial lighting for obstacle avoidance.

b. The crew must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation.

c. Target engagements with the CPG using the TSU do not constitute single-pilot NVG operations if the conditions in (1) and (2) below are met.

(1) The CPG'S NVG have a flip-up capability (AN/AVS-6).

(2) The CPG engages targets from a single firing position. (If the aircraft is repositioned, both aviators must be aided.)

REFERENCES:

FM 1-112
FM 1-116
TC 1-140
TM 55-1520-234-10
TM 55-1520-236-10

TASK 1144

TASK: Perform target handover.

CONDITIONS: In an AH-1 helicopter, an AH1FWS, or orally in a classroom environment.

STANDARDS:

1. Correctly use the appropriate weapon system.

2. Correctly hand over the target.

3. Correctly receive the target handover.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. **Either Crew Member.** When either crew member designates a target for acquisition, he will announce "Pilot/gunner target." This will be followed by a brief description of the target and a suggested weapon system or a range. Examples are "Gunner target, BMP by tree line, guns," or "Pilot target, dismounted infantry in open, rockets direct, laser range." The other crew member will quickly acquire the target and announce "Tally." If the target is not acquired, he will announce "No joy." It is critical that the CPG relieve the P* of the target acquisition as soon as possible.

2. **Backseat to Front Seat.** The PLT will hand over the target to the CPG by announcing "Gunner target," followed by a brief description of the target and, if desired, a suggested weapon system. The CPG will place his ATS switch to the track position and activate the PHS switch\button. The HSS on the CPG helmet will retract, and the TSU should point to the target selected by the PLT. The CPG will look through the TSU and, when the target is sighted, announce "Tally." This indicates that the handover is complete and that the PLT may resume normal scanning duties or prepare for an attack. If using an ALT, the PLT can perform a target handover once the correct laser designation has been detected. Procedures are the same except the PLT will substitute the words "Laser tracker" for the target description. The CPG will then activate the ALT switch rather than the PHS.

3. **Front Seat to Backseat.** The CPG will hand over the target to the PLT by announcing "Pilot target," followed by a brief description of the target and a range. The PLT will use the HUD or PSI for azimuth information, relying on the CPG for

final adjustments. The PLT will announce "Tally" when the target is sighted. This indicates that the handover is complete and that the CPG may resume normal scanning duties. If the target handover indicates an indirect rocket engagement, the PLT will announce "Ready" when the aircraft is aligned with an approximate heading to the target and switches are in the proper positions. The CPG will make any corrections necessary and give the command “Engage.”

NOTE: The heading tape on the C-NITE TSU permits the CPG to give a heading to the PLT as part of the handover.

NIGHT OR NVG CONSIDERATIONS: Obstacle avoidance is especially critical during target handovers because both crew members are looking in the same direction. Target handovers should be accomplished as quickly as possible so that normal scan patterns can be resumed.

REFERENCES:

FM 1-112
FM 1-116
TM 55-1520-234-10
TM 55-1520-236-10
Unit SOP

TASK 2004

TASK: Perform pinnacle or ridgeline operation.

CONDITIONS: In an AH-1 helicopter or an AH1FWS with the before-landing check completed.

STANDARDS:

1. Reconnaissance.

a. Establish desired altitude ±100 feet.

b. Establish desired airspeed ±10 KIAS.

c. Properly perform a continuous reconnaissance.

2. Approach.

a. Maintain ground track alignment with the selected approach path with minimum drift.

b. Maintain a constant approach angle.

c. Maintain an appropriate rate of closure.

d. Execute a smooth, controlled termination in the forward one-third of the landing area.

3. Takeoff.

a. Complete a before-takeoff check without error.

b. Properly clear the aircraft.

c. Perform an airspeed-over-altitude takeoff while maintaining heading ±10 degrees.

d. Maintain appropriate airspeed ±10 KIAS.

4. Crew Coordination. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* will select a flight path, an airspeed, and an altitude that afford the best observation of the landing area. When practical, he will position the aircraft on the windward side of the pinnacle or ridgeline. The P* will remain focused outside the aircraft to evaluate the suitability of the area, evaluate the effects of wind, and clear the aircraft throughout the approach and landing. He will select a touchdown point in the forward one-third of the landing area and announce whether he will terminate the approach to a hover or to the ground. The P* also will announce any deviation from the planned approach and a tentative flight path for the departure. The approach angle may vary from a shallow to a steep angle, depending on the wind, density altitude, gross weight, and availability of forced landing areas. The crew will continue the reconnaissance on the final approach to confirm information previously gained. Motion parallax may make the rate of closure on the final approach difficult to determine until the aircraft is close to the landing point. The P* will reduce airspeed to slightly above ETL until the rate of closure can be determined and then will adjust the rate of closure to no faster than a brisk walk. If the P* has doubts that power is adequate, he should stop the descent prior to reaching the near edge of the landing area while maintaining a slow closure rate. At this point, if power is sufficient to maintain the approach angle and rate of closure, the P* should continue the approach. If not, he should execute a go-around. The P* should execute a go-around before going below ETL if the reconnaissance reveals that a safe landing cannot be accomplished.

2. The P will confirm the suitability of the area, assist in clearing the aircraft, and provide adequate warning of obstacles. He will announce when his attention is focused inside the cockpit.

3. After touchdown, the P* will check aircraft stability as he lowers the collective and, if aircraft movement is detected, will reposition the aircraft. The crew will perform a ground reconnaissance and clear the aircraft. The P will perform the before-takeoff check and verify a hover power check if required. The crew will clear the aircraft during the takeoff.

4. The P* will remain focused outside the aircraft during the maneuver. He will announce his intent to take off and the direction of takeoff. The P* will perform an airspeed-over-altitude takeoff and will announce his intent to either abort or alter the takeoff. If the takeoff requires clearing obstacles, the P* will use power as necessary to clear the obstacles while maintaining a constant climb angle and ground track. After clearing the obstacles, he will adjust attitude to gain forward airspeed.

5. The P will announce when ready for takeoff and remain focused outside the aircraft to assist in clearing and to provide adequate warning of obstacles. He also will announce when his attention is focused inside the cockpit; for example, when performing map navigation.

NOTE 1: Hover OGE power is required for this task.

NOTE 2: When landing to a pinnacle or ridgeline, the crew should avoid extending the rotor blades over the edge into the upward flowing air. They must ensure that all of the landing gear is completely on the landing pad.

NIGHT OR NVG CONSIDERATIONS:

1. Awareness of the various methods of making a suitable evaluation at night (for example, lines of contrast) is essential. The crew must treat visual obstacles the same as physical obstacles.

2. When flying above terrain flight altitudes, the P* must keep in mind the inherent limitations of night vision devices. He also must be aware of the increased difficulty in estimating the rate of closure and make the approach more slowly.

3. Depending on the ambient light, size of surrounding obstacles, and the available contrast, the crew must decide as quickly as possible whether to use artificial lighting during the approach. If a successful landing is doubtful, the P* should turn on the landing light or execute a go-around.

4. The crew must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation.

REFERENCES:

FM 1-202
FM 1-203
TC 1-204
TM 55-1520-234-10
TM 55-1520-234-CL
TM 55-1520-236-10
TM 55-1520-236-CL

TASK 2005

TASK: Perform FM radio homing.

CONDITIONS: In an AH-1 helicopter or an AH1FWS.

STANDARDS:

1. Correctly tune the homing station.
2. Correctly use homing procedures.
3. Correctly identify station passage.
4. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew Actions.

a. The P* will remain focused outside the aircraft. He will announce when his attention is focused inside the cockpit; for example, when tuning the FM radio. He also will announce when he passes the station, terminates or alters the homing maneuver, or sees the objective.

b. The P will remain focused outside the aircraft to assist in obstacle avoidance. He will announce when his attention is focused inside the cockpit; for example, when performing map navigation. The P will acknowledge directives from the P* and will announce when he sees the objective.

c. The PC will determine the need for FM homing. He will direct the P*/P to place the FM radio to the homing position.

2. Procedures.

a. AH-lE, AH-1F, or AH-1P. Establish contact with the station, and specify definite transmission and pause periods. Set the function selector switch on the VHF/FM communication control panel to HOMING; then select FM HOME on the HSI control panel. Ensure that the NAV warning flag is masked. (Signal strength is indicated by the vertical deviation pointer on the ADI and the glide slope deviation pointer on the HSI. The pointers move up with increasing strength.) Fly the aircraft to the station by heading in a direction that will cause the course deviation bar in the HSI to center. Solve ambiguity by changing the heading when the bar centers and checking that the bar drifts in the opposite direction. While homing to the station, change heading slightly (10 to 15 degrees) during transmissions and observe that the bar continues to deflect in the opposite direction. If the bar shows a turn in the same direction, it indicates that the aircraft has passed the station. In this case, continue the turn and attempt to identify the station visually or to verify position.

b. **AH-1S** Establish contact with the station, and specify definite transmission and pause periods. Set the function selector switch on the FM control panel to HOME. Ensure that both warning flags are masked. (Signal strength is indicated by the horizontal pointer deflecting downward as signal strength increases.) Fly the aircraft to the station by heading in a direction that will cause the vertical pointer on the course indicator to center. Solve ambiguity by changing the heading when the bar centers and checking that the bar drifts in the opposite direction. While homing to the station, change heading slightly (10 to 15 degrees) during transmissions and observe that the bar continues to deflect in the opposite direction. If the bar shows a turn in the same direction, it indicates that the aircraft has passed the station. In this case, continue the turn and attempt to identify the station visually or to verify position.

NIGHT OR NVG CONSIDERATIONS: The use of ground lights will aid the crew in detecting the objective. If crew members are wearing NVG, they should request the use of infrared chemical lights to minimize the light signature.

REFERENCES:

FM 1-203
FM 1-240
TM 55-1520-234-10
TM 55-1520-236-10

TASK 2009

TASK: Perform formation flight.

CONDITIONS: In an AH-1 helicopter.

STANDARDS:

1. Correctly maneuver into the flight formation.

2. Correctly change position in the flight formation when required.

3. Maintain proper horizontal and vertical separation for the type of formation flight being conducted.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* will remain focused outside the aircraft for clearing and keeping track of other aircraft. He will announce any maneuver or movement prior to execution and inform the P if contact is lost with other aircraft.

2. The P will provide adequate warning to avoid traffic or obstacles detected in the flight path and identified on the map. He will inform the P* if contact is lost with other aircraft, if an enemy is sighted, and if his attention is focused inside the cockpit.

3. The P*/P will perform formation flight per AR 95-1, TC 1-201, TC 1-204, FM 1-107, and the unit SOP.

NOTE: The crew may experience wake turbulence when operating near heavy aircraft traffic.

NIGHT OR NVG CONSIDERATIONS: The crew must increase the interval between aircraft to a minimum of three rotor disks and keep formation changes to a minimum. Crew members must use proper scanning techniques to avoid fixation.

1. Night During unaided night flight, the crew should use formation lights as well as position lights. Anticollision lights should be turned off except for those on the last aircraft.

2. <u>NVG.</u> When conducting formation flight, the crew must use proper scanning techniques to avoid spatial disorientation. The p* and p must both assist in maintaining aircraft Separation. To some extent, specific aircraft external lighting configurations will be determined by the ambient light level and weather conditions.

NOTE: Paragraphs 6-2i and j (page 6-3) contain additional night or NVG formation flight considerations.

REFERENCES:

AR 95-1
AR 95-3
FM 1-107
TC 1-201
TC 1-204
Unit SOP

TASK 2020

TASK: Call for and adjust indirect fire.

CONDITIONS: In an AH-1 helicopter or an AH1FWS, in a training or tactical environment with an artillery unit, or orally in a classroom environment.

STANDARDS:

1. Remain oriented on the target while repositioning the aircraft.

2. Properly mask and unmask the aircraft as required.

3. Accurately adjust indirect fire on the target using the appropriate call-for-fire element.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. Targets.

a. Planned. Planned targets may be scheduled or on call. They should be planned against confirmed, suspected, or likely enemy locations and on prominent terrain to serve as reference points for shifting fires onto targets of opportunity.

b. Unplanned. Targets of opportunity are engaged by one of two methods: grid or shift from a known point. Subsequent adjustments are made based on a reference line.

2. Call-for-Fire Elements. The call-for-fire elements are--

a. Observer identification (appropriate call sign).

b. Warning order (type mission; for example, adjust fire, fire for effect, suppression, immediate suppression).

c. Location of target (grid coordinates, known location designation, shift with appropriate reference line).

d. Description of target.

e. Method of engagement (type adjustment, trajectory, ammunition, and/or distribution desired).

f. Method of fire and control (for example, "At my command").

3. Crew Actions.

a. The PC will determine the need to call for or adjust indirect fire. Using the procedures in FM 6-30, the P will make the call. He will indicate target location by either grid coordinates or shift from a known point and make subsequent adjustments.

b. The P* will remain focused outside the aircraft to clear the aircraft throughout the maneuver. He should not unmask the aircraft in the same location more than once. The P may request "splash," which gives him a warning of five seconds before the impact.

c. The crew will continue the fire mission until directed otherwise or the target is neutralized. The P will send an "end of mission" message with a battle damage assessment or an "unable to observe" message.

NOTE 1: Task 2091 discusses a battle damage assessment.

NOTE 2: Compass directions are sent to the FDC in roils. If the direction is in degrees, the observer must so indicate.

NOTE 3: When using a spotting line for adjustments, the FDC will assume that the gun-target line is used unless otherwise specified by the observer.

NOTE 4: If the observer is using a spotting line and repositions the aircraft, he must inform the FDC if the spotting line changes by 5 degrees or more.

NIGHT OR NVG CONSIDERATIONS: The crew must exercise care when observing the impact of artillery rounds because the flash signature may momentarily degrade the capability of the NVG. The P* should not directly observe the impact of the rounds. If the crew is unaided, their night vision will be impaired for a short time if they directly observe the impact. When adjusting indirect fire, the crew must follow procedures to protect their night vision.

REFERENCES:

FM 6-30
Task 2091
TC 1-204
Unit SOP

TASK 2069

TASK: Perform diving flight.

CONDITIONS: In an AH-1 helicopter, in an approved training area with a clearing turn completed, or in an AH1FWS.

STANDARDS:

1. Establish entry altitude ±100 feet.

2. Establish entry airspeed 100 KIAS (normal) or 50 KIAS (steep), ±10 KIAS.

3. Establish a 13-degree dive angle (normal), ±2 degrees, or a 30-degree dive angle (steep) , +0 to -5 degrees.

4. Maintain the aircraft in trim.

5. Recover to level flight before reaching computed Vne or 1,000 feet AGL.

6. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* will remain focused outside the aircraft to clear the aircraft throughout the maneuver. He will announce a normal or steep dive prior to initiating the maneuver and any deviation from the maneuver. He also will announce recovery from the maneuver.

2. The P will provide adequate warning to avoid traffic or obstacles detected in the flight path and will announce any deviation from the parameters of the maneuver. He also will announce when his attention is focused inside the cockpit; for example, when monitoring airspeed, altitude, or RRPM.

3. The P* will perform the following actions:

a. **Normal.** From straight and level flight at an assigned altitude and 100 KIAS, smoothly apply the cyclic to establish an 11- to 15-degree dive angle. Maintain a constant power setting (power required to maintain straight and level flight prior to entry) and constant trim. Apply additional right pedal as airspeed increases. Maintain a constant dive angle until the recovery. Adjust collective as necessary to maintain the desired power setting and RRPM. Start the recovery by smoothly applying aft cyclic at an altitude that will allow the recovery to be completed before reaching 1,000 feet AGL. Do not exceed the computed Vne during the maneuver.

b. __Steep.__ From straight and level flight at an assigned altitude and 50 KIAS, smoothly apply the cyclic to establish a 25- to 30-degree dive angle. Maintain a constant power setting (power required to maintain straight and level flight at 50 KIAS) and constant trim. Apply additional right pedal as the airspeed increases. Maintain a constant dive angle until the recovery. The airspeed and rate of descent will increase rapidly in a steep dive. Adjust collective as necessary to maintain the desired power setting and RRPM. Start the recovery early enough to complete the dive before descending below 1,000 feet AGL. Do not exceed the computed Vne during the maneuver.

NOTE: During training, the minimum entry altitude is 2,500 feet AGL if the maneuver is performed in the aircraft.

NIGHT OR NVG CONSIDERATIONS:

1. The crew must use proper scanning techniques to avoid obstacles and to prevent spatial disorientation.

2. If performed in the aircraft, this training task is prohibited while crew members are wearing NVG.

REFERENCES:

FM 1-203
TM 55-1520-234-10
TM 55-1520-236-10

TASK 2073

TASK: Perform standard autorotation.

CONDITIONS: In an AH-1 helicopter with an IP and the emergency procedures training criteria in AR 95-1 met or in an AH1FWS, with the before-landing check completed, and given an entry altitude.

STANDARDS:

1. Establish entry altitude as directed ±100 feet.

2. Establish entry airspeed 100 KIAS, ±10 KIAS.

3. Select the correct the correct entry point.

4. Visually check and call out RRPM, N1, and trim.

5. Ensure airspeed of 70 KIAS, +10 to -5 KIAS, at 100 feet AGL.

6. Execute a smooth, progressive deceleration at 70 to 100 feet AGL.

7. Apply initial pitch at 12 feet, ±3 feet, AGL.

8. Maintain heading alignment at touchdown ±5 degrees.

9. Execute a smooth, controlled termination.

10. Correctly perform crew coordination actions.

CAUTION

Do not lower the collective to provide braking action.

DESCRIPTION:

1. Prior to initiating the autorotation, the P* will direct the IP/P to help monitor RRPM, Nl, trim. and airspeed. The P* will announce initiation of the maneuver and any deviation during the maneuver.

2. Upon reaching the correct entry point, the P* will lower the collective to the fully down position. He will retard the throttle to engine idle stop and adjust the pedals as required to maintain trim. The P* will adjust the cyclic as required to establish a 70-knot attitude and check the circle of action. He will maintain ground track by crabbing (above 100 feet) and slipping (below 100 feet). The P* will check and call out RRPM, Nl, and trim. Before reaching 100 feet AGL, he will ensure that a steady-state autorotation is attained. If it is not, the P* will execute a power recovery, terminate with power, or execute a go-around as appropriate. A steady-state autorotation means that the--

a. RRPM is in the normal range.

b. Aircraft is at the correct airspeed.

c. Aircraft is descending at a normal rate.

d. Aircraft is in position to terminate in the intended landing area.

3. The IP/P will provide adequate warning for corrective action if the limits for RRPM, Nl, trim, or airspeed may be exceeded.

4. During the descent, the P* will monitor RRPM, trim, and landing area alignment and will make any necessary corrections. He will acknowledge all IP/P announcements or directives.

5. Between 70 and 100 feet, the P* will apply aft cyclic to initiate a smooth, progressive deceleration. He will maintain aircraft alignment with the touchdown area by properly applying the pedals and cyclic. The P* will adjust the collective, if required, to prevent excessive RRPM. At approximately 12 feet AGL, he will apply sufficient collective to control the rate of descent and ground speed and will adjust the cyclic to establish a landing attitude. The amount of collective applied and the rate at which it is applied will depend on the rate of descent and ground speed. Just before touchdown, the P* will apply collective as necessary to cushion the landing.

6. After touchdown, the P* will maintain ground track alignment with the pedals. He must not apply additional aft cyclic beyond that required for a landing attitude. When the aircraft has come to a complete stop, the P* will lower the collective to the fully down position and neutralize the pedals and cyclic.

NOTE: Entry point is defined as the point that, when the autorotation is commenced, will allow the aircraft to touch down in the intended landing area.

NIGHT OR NVG CONSIDERATIONS:

1. Attitude control is critical during night autorotations. Reduced visual references at night will limit the P*'s ability to estimate airspeed, altitude, and alignment with the touchdown area. To compensate for reduced visual references, the P* should establish a steady-state autorotation by 200 feet AGL. Selecting ground references that provide high visual contrast or that are of a known height in the vicinity of the touchdown area will help the P* in judging the approach. If the crew uses the landing light, they should turn it on prior to descending through 100 feet AGL.

2. If performed in the aircraft, this training task is prohibited while crew members are wearing NVG.

REFERENCES:

AR 95-1
FM 1-203
TC 1-204
TM 55-1520-234-10
TM 55-1520-236-10

TASK 2074

TASK: Perform low-level autorotation.

CONDITIONS: In an AH-1 helicopter with an IP and the emergency procedures training criteria in AR 95-1 met or in an AHIFWS, with the before-landing-check completed, and given an entry altitude.

STANDARDS:

1. Establish entry altitude as directed ±10 feet.
2. Establish entry airspeed 100 KIAS, ±1O KIAS.
3. Select the correct entry point.
4. Execute a smooth, progressive deceleration.
5. Apply initial pitch at 12 feet, ±3 feet, AGL.
6. Maintain heading alignment at touchdown ±5 degrees.
7. Execute a smooth, controlled termination.
8. Correctly perform crew coordination actions.

CAUTION

Do not lower the collective to provide braking action.

DESCRIPTION:

1. Prior to initiating the autorotation, the P* will direct the IP/P to help monitor RRPM, Nl, trim, and airspeed. The P* will announce initiation of the maneuver and any deviation during the maneuver.

2. From the downwind altitude, the P* will initiate a descending 180-degree turn to arrive at an altitude of 100 feet AHO (or as directed) prior to the entry point. During the descent, he will maintain visual contact with the intended landing area. Upon reaching the correct entry point, the P* will simultaneously lower the collective to the fully down position while retarding the throttle to engine idle stop and applying aft cyclic to maintain the entry altitude. The P* will adjust pedals as required to maintain trim and adjust collective as necessary to maintain RRPM within limits. He will adjust the cyclic as required to maintain entry altitude until intercepting a standard autorotational descent profile. The P* will visually check RRPM and N1. As the aircraft begins to descend, he will maintain aircraft alignment with the touchdown area by properly applying the pedals and cyclic.

3. The IP/P will provide adequate warning for corrective action if the limits for RRPM, Nl, trim, or airspeed may be exceeded.

4. At approximately 12 feet AGL, the P* will apply sufficient collective to control the rate of descent and ground speed. The amount of collective applied and the rate at which it is applied will depend on the rate of descent and ground speed. The P* will adjust the cyclic to establish a landing attitude. Just before touchdown, he will apply collective as necessary to cushion the landing.

5. After touchdown, the P* will maintain ground track alignment with the pedals. He must not apply additional aft cyclic beyond that required for a landing attitude. When the aircraft has come to a complete stop, the P* will lower the collective and neutralize the pedals and cyclic.

NOTE: Entry point is defined as the point that, when the autorotation is commenced, will allow the aircraft to touch down in the intended landing area.

NIGHT OR NVG CONSIDERATIONS:

1. Attitude control is critical during night autorotations. Reduced visual references at night will limit the P*'s ability to estimate airspeed, altitude, and alignment with the touchdown area. Selecting ground references that provide high visual contrast or that are of a known height in the vicinity of the touchdown area will help the P* in judging the altitude of the aircraft. If the crew uses the landing light, they should turn it on prior to entry.

2. If performed in the aircraft, this training task is prohibited while crew members are wearing NVG.

REFERENCES:

AR 95-1
FM 1-203
TC 1-204
TM 55-1520-234-10
TM 55-1520-236-10

TASK 2077

TASK: Perform simulated antitorque malfunction (fixed pedal setting).

CONDITIONS: In an AH-1 helicopter with an IP and the emergency procedures training criteria in AR 95-1 met or in an AH1FWS, with the before-landing check completed, and given entry altitude and airspeed.

STANDARDS:

1. Establish entry altitude as directed ±100 feet.

2. Establish entry airspeed as directed ±10 KIAS.

3. Maintain a constant approach angle.

4. Maintain ground track alignment with the landing direction.

5. Maintain landing area alignment at touchdown ±10 degrees.

6. Execute a smooth, controlled termination.

7. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew Actions.

a. On the downwind leg, the P* will prepare for a simulated antitorque malfunction by disengaging the yaw channel SCAS and removing mechanical slack from the throttle. The P* will remain focused outside the aircraft and continue to fly a normal traffic pattern and execute the proper approach.

NOTE: Mechanical slack is defined as reducing the throttle without gaining manual control.

b. The IP/P will remain primarily focused outside the aircraft and will alert the P* of any obstacles. On final, he will direct the P* to relax pressure on the pedals and place the aircraft in an out-of-trim condition. Once the pedals are positioned, the IP/P will direct the P* to begin the approach.

2. Procedures.

a. Right pedal setting.

(1) On base leg, the aircraft should be at the appropriate altitude and 80 KIAS. On final, the P* will ensure that the aircraft is at the proper altitude and airspeed and in trim with the power set as necessary to maintain 80 KIAS. The IP\P will then establish a nose-right, out-of-trim condition (not to exceed 10 degrees from the runway heading). After intercepting a shallow approach angle, the P* will adjust the collective as necessary to maintain the angle. He will maintain entry airspeed until the apparent ground speed and rate of closure appear to be increasing. The P* will progressively decrease the rate of descent and rate of closure. He will plan to arrive over the first usable one-third of the landing area at approximately 2 feet above the ground at or slightly above ETL. The P* will reduce throttle as necessary to overcome the yaw effect and will align the aircraft with the landing direction.

(2) When the aircraft is aligned with the intended landing direction, the P* will adjust the collective as necessary to cushion the landing. After ground contact, the P* will use the collective, cyclic, and throttle as necessary to maintain aircraft alignment with the landing direction. When the aircraft has come to a complete stop, he will reduce the collective to the fully down position and neutralize the pedals and cyclic. The P* will ensure that the throttle is fully open. He also will reengage the yaw channel SCAS when the no-go light is extinguished.

b. Left pedal setting.

(1) On base leg, the aircraft should be at the appropriate altitude and 80 KIAS. On final, the P* will ensure that the aircraft is at the proper altitude and airspeed and in trim with the power set as necessary to maintain 80 KIAS. The IP will then establish a nose-left, out-of-trim condition (not to exceed 10 degrees from the runway heading). After intercepting a shallow approach angle, the P* will adjust the collective as necessary to maintain the angle. He will maintain entry airspeed until the apparent ground speed and rate of closure appear to be increasing. The P* will progressively decrease the rate of descent and rate of closure. He will plan to arrive over the first usable one-third of the landing area at approximately 2 feet above the ground at or slightly above ETL. If the nose of the aircraft is to the left, the P* will maintain altitude with the collective while decreasing forward speed until ETL is lost. At this time, the nose of the aircraft should come to the right because of the increased power required to maintain altitude.

If the nose of the aircraft comes past the 12 o'clock position, the P* should retard throttle as necessary to align the aircraft with the landing area.

(2) When the aircraft is aligned with the intended landing direction, the P* will proceed with the maneuver as described in a(2) above.

NOTE: After touchdown, aircraft heading may not be controllable with the throttle and collective. If this happens, the P* should position the cyclic to follow the turn until the aircraft comes to a complete stop.

NIGHT OR NVG CONSIDERATIONS: Altitude, apparent ground speed, and rate of closure are difficult to estimate at night. Therefore, the rate of descent during the final 100 feet should be slightly slower than during the day to avoid abrupt attitude changes at low altitudes. Difficulty in judging closure rates is compounded by the yaw angle of the aircraft. While the approach speed should be as slow as possible, care must be taken to cross--reference the approach speed with the yaw angle to ensure that an excessive yaw condition does not develop.

NOTE 1: The rate of descent at touchdown must not exceed 300 FPM.

NOTE 2: The crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection.

NOTE 3: If performed in the aircraft, this training task is prohibited while crew members are wearing NVG.

REFERENCES:

AR 95-1
FM 1-203
TC 1-204
TM 55-1520-234-10
TM 55-1520-236-10

TASK 2091

TASK: Transmit a tactical report.

CONDITIONS: In an AH-1 helicopter, in an AH1FWS, or orally in a classroom environment and given sufficient information to compile a tactical report.

STANDARDS:

1. Correctly transmit the appropriate report using the proper format.

2. Correctly perform crew coordination actions.

DESCRIPTION:

1. **Crew Actions.** The PC will determine the need to make a tactical report. Both crew members must be able to provide timely, accurate, and concise reports. The P will normally transmit the report and will ensure that the information is in the established format.

2. **Tactical Reports.**

a. **Spot report.** A spot report is used to report information about the enemy and area of operations. It is equally as important to report no enemy sightings or activity.

(1) Call sign of observer.

(2) SALUTE.

(a) S--size.

(b) A--activity.

(c) L--location.

(d) U--unit (if known).

(e) T--time.

(f) E--equipment.

(3) What you are doing about it.

b. **Battle damage assessment.** The battle damage assessment is submitted by the observer following naval gunfire, artillery fire, a tactical air strike, or when requested by headquarters.

ALFA:	Call sign of observing source.
BRAVO:	Location of target.
CHARLIE:	Time strike started and ended.
DELTA:	Percentage of target coverage (pertains to the percentage of projectiles that hit the target area).
ECHO:	Itemized destruction.
FOXTROT:	Remarks; for example, the direction the enemy may have taken in leaving the target area.

c. **MIJI report.** This report is submitted as soon as the jamming is discovered. It is reported by secure means only.

Line 1:	Type of report (meaconing, intrusion, jamming, or interference).
Line 2:	Affected unit (call sign and suffix).
Line 3:	Location (your encrypted grid location).
Line 4:	Frequency affected (encrypted frequency).
Line 5:	Type of equipment affected (ultrahigh frequency, very high frequency, frequency modulated, beacon, and so on).
Line 6:	Type of interference (type of jamming and signal).
Line 7:	Strength of interference (strong, medium, or weak).
Line 8:	Time interference started and stopped (if continuing, so state).
Line 9:	Effectiveness of interference (estimate percentage of transmission blockage).
Line 10:	Operator's name and rank (self-explanatory).
Line 11:	Remarks (list anything else that may help identify or locate the source of interference).

NOTE: Additional reports may be required. They should be specified in the unit SOP, and the format should be according to the appropriate Army publication.

REFERENCES:

FM 1-116
FM 3-3
FM 3-100
FM 34-1
Unit SOP

TASK 2092

TASK: Perform standard autorotation with turn.

CONDITIONS: In an AH-1 helicopter with an IP and the emergency procedures training criteria in AR 95-1 met or in an AH1FWS with the before-landing check completed, and given an entry altitude.

STANDARDS:

1. Establish entry altitude as directed ±100 feet.

2. Establish entry airspeed 100 KIAS, ±10 KIAS.

3. Visually check and call out RRPM, Nl, and trim.

4. Select the correct entry point.

5. Maintain the proper attitude during the turn.

6. Complete the final turn, and align the aircraft with the landing area prior to reaching 200 feet AGL.

7. Establish airspeed 70 KIAS, ±10 to -5 KIAS, prior to reaching 100 feet AGL.

8. Execute a smooth, progressive deceleration at 70 to 100 feet AGL.

9. Apply initial pitch at 12 feet, ±3 feet, AGL.

10. Maintain heading alignment at touchdown ±5 degrees.

11. Execute a smooth, controlled termination.

12. Correctly perform crew coordination actions.

CAUTION

Do not lower the collective to provide braking action.

DESCRIPTION:

1. Prior to initiating the autorotation, the P* will direct the IP/P to help monitor RRPM, Nl, trim, and attitude. He will announce initiation of the maneuver and any deviation during the maneuver.

2. Upon reaching the correct entry point, the P* will lower the collective to the fully down position. He will retard the throttle to engine idle stop and adjust the pedals as required to maintain trim. The P* will adjust the cyclic as required to establish a 65- to 100-knot attitude and will initiate a descending turn to terminate in the intended landing area. (The P* should disregard the airspeed indicator while establishing the turn.) The P* will adjust the collective as required to maintain RRPM within limits. He will check and call out RRPM, Nl, and trim. The P* will adjust the bank angle as necessary to ensure that the turn is completed and that the aircraft is aligned with the landing direction before descending below 200 feet AGL. Prior to reaching 100 feet AGL, the P* will ensure that a steady-state autorotation is established. If not, he will execute a power recovery, terminate with power, or execute a go-around as appropriate. A steady-state autorotation means that the--

a. RRPM is in the normal range.

b. Aircraft is at the correct airspeed.

c. Aircraft is descending at a normal rate.

d. Aircraft is in position to terminate in the intended landing area.

3. The IP/P will provide adequate warning for corrective action if the limits for RRPM, Nl, trim, or airspeed may be exceeded.

4. During the descent, the P* will monitor RRPM, trim, and landing area alignment and will make any necessary corrections. He will acknowledge all IP/P announcements or directives.

5. Between 70 and 100 feet, the P* will apply aft cyclic to initiate a smooth, progressive deceleration. He will maintain aircraft alignment with the touchdown area by properly applying the pedals and cyclic. The P* will adjust the collective, if required, to prevent excessive RRPM. At approximately 12 feet AGL, he will apply sufficient collective to control the rate of descent and ground speed and will adjust the cyclic to establish a landing attitude. The amount of collective applied and the rate at which it is applied will depend on the rate of descent and ground speed. Just before touchdown, the P* will apply collective as necessary to cushion the landing.

6. After touchdown, the P* will maintain ground track alignment with the pedals. He must not apply additional aft cyclic beyond that required for a landing attitude. When the aircraft comes to a complete stop, the P* will lower the collective to the fully down position and neutralize the pedals and cyclic.

NOTE: Entry point is defined as the point that, when the autorotation is commenced, will allow the aircraft to touch down in the intended landing area.

NIGHT OR NVG CONSIDERATIONS:

1. Attitude control is critical during night autorotations. Reduced visual references at night will limit the P*'s ability to estimate airspeed, altitude, and alignment with the touchdown area. To compensate for reduced visual references, the P* should establish a steady-state autorotation by 200 feet AGL. Selecting ground references that provide high visual contrast or that are of a known height in the vicinity of the touchdown area will help the P* in judging the approach. If the crew uses the landing light, they should turn it on prior to descending through 100 feet AGL.

2. If performed in the aircraft, this training task is prohibited at night or while crew members are wearing NVG.

REFERENCES:

AR 95-1
FM 1-203
TC 1-204
TM 55-1520-234-10
TM 55-1520-236-10

TASK 2093

TASK: Perform simulated hydraulic system malfunction.

CONDITIONS: In an AH-1 helicopter with an iP and the emergency procedures training criteria in AR 95-1 met or in an AH1FWS with the before-landing check completed.

STANDARDS:

1. Without error, execute emergency procedures for hydraulic power failure per TM 55-1520-234-10 or TM 55-1520-236-10.

2. Maintain altitude as directed ±100 KIAS.

3. Maintain airspeed as directed ±10 KIAS.

4. Maintain heading control ±10 degrees and ground track alignment with the landing direction.

5. Maintain a constant shallow approach angle.

6. Execute a smooth, controlled touchdown, in the first usable one-third of the touchdown area, at or slightly above 50 KIAS.

7. Maintain landing area alignment ±5 degrees.

8. Correctly perform crew coordination actions.

DESCRIPTION:

1. The IP/P will turn on the force trim, or direct that it be turned on, to simulate the control stiffness associated with hydraulic failure.

2. The P* will remain focused outside the aircraft and will maintain the desired heading and altitude while simulating the emergency procedures described in TM 55-1520-234-10 or TM 55-1520-236-10. He will direct the IP/P to help monitor aircraft control and to confirm the emergency procedure with TM 55-1520-234-CL or TM 55-1520-236-CL. The P* will announce initiation of the approach and any deviation during the maneuver.

3. The IP/P will remain primarily focused outside the aircraft and will inform the P* of any obstacles. He will acknowledge directives from the P* and assist with the maneuver as directed.

4. The P* will perform a descending, decelerating, 180-degree turn from downwind to final approach. He should maintain a constant angle of bank and decelerate to 80 KIAS during the turn.

5. Upon intercepting a shallow approach angle, the P* will decrease the collective, as required, to establish and maintain that angle throughout the approach. He should progressively decrease the rate of descent and rate of closure to effect a touchdown at or slightly above 50 KIAS within the first usable one-third of the landing area.

6. On final approach, the P* will simulate turning on, or direct the IP/P to simulate turning on, the emergency collective accumulator/emergency hydraulic pump switch. He will control the rate of descent with the collective, maintaining aircraft attitude and landing area alignment with the cyclic. Above 50 feet AGL, the P* will maintain the aircraft in trim; below 50 feet AGL, he will maintain the aircraft aligned with the landing direction. The P* will direct the IP/P to help clear any obstacles in the approach path.

7. After touchdown, the P* will maintain ground track alignment with the cyclic and heading alignment with the landing direction with the pedals. He will decrease the collective to slow forward speed. The P* may apply aft cyclic for aerodynamic braking. When the aircraft comes to a complete stop, he will lower the collective to the fully down position and neutralize the pedals and cyclic.

8. To minimize wear on the skid shoe during training, the IP/P may direct the P* to execute a takeoff when it becomes apparent that the running landing is successful.

NIGHT OR NVG CONSIDERATIONS: Altitude, apparent ground speed, and rate of closure are difficult to estimate at night. Selecting ground references that provide high visual contrast or that are of a known height in the vicinity of the touchdown area will help the P* in judging the approach. If the crew uses the landing light, they should turn it on as soon as the aircraft is established on final.

NOTE 1: The rate of descent at touchdown must not exceed 300 FPM.

NOTE 2: The crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection.

NOTE 3: If performed in the aircraft, this training task is prohibited while crew members are wearing NVG.

REFERENCES:

AR 95-1
FM 1-203
TC 1-204
TM 55-1520-234-10
TM 55-1520-236-10

TASK 2114

TASK: Perform low-level, high-airspeed autorotation.

CONDITIONS: In an AH-1 helicopter with an IP and the emergency procedures training criteria in AR 95-1 met or in an AH1FWS with the before-landing check completed.

STANDARDS:

1. Establish entry altitude as directed ±25 feet.

2. Establish entry airspeed 130 KIAS, ±10 KIAS.

3. Select the correct entry point.

4. Establish airspeed 70 KIAS, +10 to -5 KIAS, prior to reaching 100 feet AGL.

5. Execute a smooth, progressive deceleration at 70 to 100 feet AGL.

6. Apply initial pitch at 12 feet, ±3 feet, AGL.

7. Maintain heading alignment at touchdown ±5 degrees.

8. Execute a smooth, controlled termination.

9. Correctly perform crew coordination actions.

CAUTION

Do not lower the collective to provide braking action.

DESCRIPTION:

1. Prior to initiating the autorotation, the P* will direct the IP/P to help monitor RRPM, Nl, trim, and airspeed. He will announce initiation of the maneuver and any deviation during the maneuver.

2. The P* will perform a descending, accelerating 180-degree turn from downwind to final. He should plan to arrive on final at an altitude of 100 feet AHO (or as directed) and 130 KIAS. During the descent, he will maintain visual contact with the intended landing area at all times. Upon reaching the correct entry point, the P* will retard the throttle to engine idle stop and immediately apply a slight amount of aft cyclic to take control of the SCAS and to maintain the entry altitude. If desired, the P* may initiate a slight increase in altitude, not to exceed 100 feet. He will lower the collective to the fully down position or as necessary to maintain RPM and will adjust pedals as required to maintain trim. The P* will visually check the RRPM, Nl, and trim. Prior to reaching 100 feet AGL, he will ensure that a steady-state autorotation is established. If it is not, the P* will execute a power recovery, terminate with power, or execute a go-around as appropriate. A steady-state autorotation means that the--

a. RRPM is in the normal range.

b. Aircraft is at the correct airspeed.

c. Aircraft is descending at a normal rate.

d. Aircraft is in position to terminate in the intended landing area.

3. The IP/P will provide adequate warning for corrective action if the limits for RRPM, Nl, trim, or airspeed may be exceeded.

4. During the descent, the P* will monitor RRPM, trim, and landing area alignment and will make any necessary corrections. He will acknowledge all IP/P announcements or directives.

5. Between 70 and 100 feet, the P* will apply aft cyclic to initiate a smooth, progressive deceleration. He will maintain aircraft alignment with the touchdown area by properly applying the pedals and cyclic. The P* will adjust the collective, if required, to prevent excessive RRPM. At approximately 12 feet AGL, he will apply sufficient collective to control the rate of descent and ground speed. The amount of collective applied and the rate at which it is applied will depend on the rate of descent and ground speed. The P* will adjust the cyclic to establish a landing attitude. Just before touchdown, he will apply collective as necessary to cushion the landing.

6. After touchdown, the P* will maintain ground track alignment with the pedals. He must not apply additional aft cyclic beyond that required for a landing attitude. When the aircraft comes to a complete stop, the P* will lower the collective to the fully down position and neutralize the pedals and cyclic.

NOTE: Entry point is defined as the point that, when the auto-rotation is commenced, will allow the aircraft to touch down in the intended landing area.

NIGHT OR NVG CONSIDERATIONS:

1. Attitude control is critical during night autorotations. Reduced visual references at night will limit the P*'s ability to estimate airspeed, altitude, and alignment with the touchdown area. Selecting ground references that provide high visual contrast or that are of a known height in the vicinity of the touchdown area will help the P* in judging aircraft altitude. If the crew uses the landing light, they should turn it on prior to entry.

2. The crew should consider using artificial lighting if the ambient light level is insufficient for obstacle detection.

3. If performed in the aircraft, this training task is prohibited at night or while crew members are wearing NVG.

REFERENCES:

AR 95-1
FM 1-203
TC 1-204
TM 55-1520-234-10
TM 55-1520-236-10

TASK 2115

TASK: Perform low-level, low-airspeed autorotation.

CONDITIONS: In an AH-1 helicopter with an IP and the emergency procedures training criteria in AR 95-1 met or in an AH1FWS with the before-landing check completed.

STANDARDS:

1. Establish entry altitude as directed ±10 feet.

2. Establish entry airspeed 60 KIAS, +5 to -0 KIAS.

3. Select the correct entry point.

4. Execute a smooth, progressive deceleration.

5. Apply initial pitch at 12 feet, ±3 feet, AGL.

6. Maintain heading alignment at touchdown ±5 degrees.

7. Execute a smooth, controlled termination.

8. Correctly perform crew coordination actions.

CAUTION

Do not lower the collective to provide braking action.

DESCRIPTION:

1. Prior to initiating the autorotation, the P* will direct the IP/P to help monitor RRPM, Nl, trim, and airspeed. He will announce initiation of the maneuver and any deviation during the maneuver.

2. On base leg, the P* will establish an angle of descent to arrive at an altitude of 50 feet AGL (or as directed) just prior to the entry point. During the descent, he will maintain visual contact with the intended landing area. Upon reaching the correct entry point, the P* will simultaneously retard the throttle to engine idle stop while lowering the collective three-fourths of the way to the fully down position. The P* will maintain the aircraft aligned with the touchdown area with the pedals and will apply aft cyclic to attain a maximum nose-high landing attitude.

He will adjust the collective, as required, to prevent excessive RRPM. As the aircraft begins to descend, the P* will maintain aircraft alignment with the touchdown area by properly applying the pedals and cyclic.

NOTE: A maximum nose-high landing attitude is defined as the tail stinger no lower than the heels of the skids.

3. The IP/P will check the RRPM and N1.

4. At approximately 12 feet AGL, the P* will apply sufficient collective to control the rate of descent and ground speed. The amount of collective applied and the rate at which it is applied will depend on the rate of descent and ground speed. The P* will adjust the cyclic to establish a landing attitude. Just before touchdown, he will apply collective as necessary to cushion the landing.

5. After touchdown, the P* will maintain ground track alignment with the pedals. He must not apply additional aft cyclic beyond that required for a landing attitude. When the aircraft comes to a complete stop, the P* will lower the collective to the fully down position and neutralize the pedals and cyclic.

NOTE: Entry point is defined as the point that, when the autorotation is commenced, will allow the aircraft to touch down in the intended landing area.

NIGHT OR NVG CONSIDERATIONS:

1. Attitude control is critical during night autorotations. Reduced visual references at night will limit the P*'s ability to estimate airspeed, altitude, and alignment with the touchdown area. Selecting ground references that provide high visual contrast or that are of a known height in the vicinity of the touchdown area will help the P* in judging aircraft altitude. If the crew uses the landing light, they should turn it on prior to entry.

2. If performed in the aircraft, this training task is prohibited at night or while crew members are wearing NVG.

REFERENCES:

AR 95-1
FM 1-203
TC 1-204
TM 55-1520-234-10
TM 55-1520-236-10

CHAPTER 7

MAINTENANCE AIRCREW TASKS

This chapter describes those maneuvers and procedures that are essential for maintaining maintenance aircrew skills. Tasks will be performed for both training and evaluation. They will only be performed when a qualified and current MP/ME is occupying a crew station. If discrepancies are found between this chapter and TM 55-1520-236-MTF or TM 55-1520-244-MTF, the technical manual takes precedence.

7-1. TASK CONTENTS

a. Task Number and Title. Each task is identified by a number and a title which correspond to those for the tasks listed in Chapter 5 (Figure 5-3).

b. Conditions. The conditions specify the situation in which the task is to be performed. They describe the important aspects of the performance environment. All conditions must be met before task iterations can be credited.

c. Standards. The standards describe the minimum degree of proficiency or standard of performance to which the task must be accomplished.

d. Description. The description explains how the task should be accomplished to meet the standards. It includes individual and crew-coordinated actions that are to be performed as indicated by the MP (maintenance test pilot), ME (maintenance test flight evaluator), P* (pilot on the controls), P (pilot not on the controls), PC (pilot in command), PLT (pilot), and CE (crew chief). During maintenance test flights, the MP will be the PC. Unless otherwise noted, the MP will perform P* duties from the pilot station.

e. References. The references listed for each task are sources of information about that particular task.

7-2. INDIVIDUAL AND CREW-COORDINATED ACTIONS

a. Individual Actions. These actions are the portions of a crew task that an individual must accomplish.

b. **Crew-Coordinated Actions.** These portions of a task require the interaction of the entire crew to ensure safe, efficient, and effective task execution.

TASK 2500

TASK: Perform prior-to-maintenance-test-flight checks.

CONDITIONS: In an AH-1 helicopter and given TM 55-1520-234-CL or TM 55-1520-236-CL and DA Form 2408-12 (Army Aviator's Flight Record) and DA Form 2408-13 (Aircraft Status Information Record).

STANDARDS:

1. Without error, perform the preflight inspection according to TM 55-1520-234-CL or TM 55-1520-236-CL.

2. Correctly enter appropriate information on DA Forms 2408-12 and 2408-13.

3. Correctly determine the suitability of the aircraft for flight.

4. Correctly determine the maneuvers, checks, and tasks required during the test flight.

5. Correctly determine all malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

6. Correctly perform crew coordination actions.

DESCRIPTION:

1. The PC will ensure that the preflight inspection is conducted according to TM 55-1520-234-CL or TM 55-1520-236-CL. He may direct that the other crew member(s) inspect all or designated sections of the aircraft. The PC will verify that all preflight checks have been completed. He will ensure that the appropriate information has been entered on DA Forms 2408-12 and 2408-13.

2. The other crew member(s) will complete the preflight inspection as directed. They will inform the PC whether the aircraft or assigned sections meet required preflight inspection criteria.

3. The PC will determine the maneuvers or checks necessary for the maintenance test flight. The crew will use additional publications and references as necessary. The PC will brief the aircrew and any supporting ground crew concerning operations around or on the aircraft. He will ensure that the ground communications capability is adequate. The PC will stress any safety considerations or procedures applicable to the flight.

4. The PC will ensure that a walk-around inspection is completed prior to flight.

REFERENCES:

Aircraft logbook
AR 95-1
AR 95-3
DA Pamphlet 738-751
TM 55-1520-234-10
TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-234-CL
TM 55-1520-236-10
TM 55-1520-236-23 series
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF
TM 55-2840-229-23-1
TM 55-2840-229-23-2

TASK 2502

TASK: Perform interior checks.

CONDITIONS: In an AH-1 helicopter or an AH1FWS and given TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

2. Correctly use the call and response method.

3. Correctly check and perform all items in sequence.

4. Correctly determine all malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. Each crew member will complete the required checks pertaining to his assigned crew station according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

2. Each crew member will announce when his checks are completed.

REFERENCES:

TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-234-CL
TM 55-1520-236-23 series
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF

TASK 2504

TASK: Perform before-starting-engine checks.

CONDITIONS: In an AH-1 helicopter or an AH1FWS and given TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

2. Correctly use the call and response method.

3. Correctly check and perform all items in sequence.

4. Correctly determine all malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. The type of test flight to be performed (general or limited) will determine what specific checks will be required. At a minimum, crew members will perform all checks required for flight according to TM 55-1520-234-10 or TM 55-1520-236-10 or TM 55-1520-234-CL or TM 55-1520-236-CL.

2. Each crew member will complete the required checks pertaining to his assigned crew station according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

3. The aircrew and, if available, the ground crew will announce when their checks are completed.

REFERENCES:

TM 55-1520-234-10
TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-234-CL
TM 55-1520-236-10
TM 55-1520-236-23 series
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF

TASK 2506

TASK: Perform starting engine checks.

CONDITIONS: In an AH-1 helicopter or an AH1FWS and given TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

2. Correctly use the call and response method.

3. Correctly check and perform all items in sequence.

4. Correctly determine all malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. The PC will brief the other crew member(s) on their duties in completing the task. He may assign individual crew duties on the basis of pilot preference, engine maintenance required, and crew experience. In his briefing, the PC will include crew duties in an emergency. Crew member(s) will complete the task by accomplishing all requirements in TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

2. Each crew member will complete the required checks pertaining to his assigned crew station according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

3. The P* will announce initiation of the engine start.

4. The aircrew and, if available, the ground crew will clear the area around the aircraft prior to engine start.

REFERENCES:

TM 1-1500-328-23
TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-234-CL

TC 1-213

TM 55-1520-236-23 series
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF

TASK 2522

TASK: Perform engine run-up checks.

CONDITIONS: In an AH-1 helicopter or an AH1FWS and given TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

2. Correctly use the call and response method.

3. Correctly check and perform all items in sequence.

4. Correctly determine all malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. The type of test flight to be performed (general or limited) will determine what specific checks will be required. At a minimum, crew members will perform all checks required for flight according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

2. Each crew member will complete the required checks pertaining to his assigned crew station according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

3. The aircrew and, if available, the ground crew will announce when their checks are completed.

REFERENCES:

TM 1-1500-328-23
TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-234-CL
TM 55-1520-236-23 series
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF

TASK 2534

TASK: Perform baseline and normal engine health indicator test.

CONDITIONS: In an AH-1 helicopter or an AH1FWS and given TM 55-1520-236-MTF or TM 55-1520-244-MTF and TMs 55-2840-229-23-1 and 55-2840-229-23-2.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-236-MTF or TM 55-1520-244-MTF and TMs 55-2840-229-23-1 and 55-2840-229-23-2.

2. Correctly use the call and response method.

3. Correctly check and perform all items in sequence.

4. Correctly determine all malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

5. Correctly complete the HIT baseline work sheet.

6. Correctly perform crew coordination actions.

DESCRIPTION:

1. The PC will brief the P or CE on their duties in performing the task. The P* will position the helicopter heading into the wind. The aircrew will perform the procedure according to TM 55-1520-236-MTF or TM 55-1520-244-MTF and TMs 55-2840-229-23-1 and 55-2840-229-23-2.

2. The P or CE will record the aircraft hours, FAT, and indicated EGT/TGT for the appropriate gas turbine speed. The P* will then compute the difference between the current EGT/TGT reading and the baseline reading and record it on the engine HIT log.

REFERENCES:

Engine HIT log
TM 55-1520-236-MTF
TM 55-1520-244-MTF
TM 55-2840-229-23-1
TM 55-2840-229-23-2

TASK 2536

TASK: Perform before-takeoff check.

CONDITIONS: In an AH-1 helicopter or an AH1FWS and given TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MFT or TM 55-1520-244-MTF.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

2. Correctly use the call and response method.

3. Correctly check and perform all items in sequence.

4. Correctly determine any malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. Each crew member will complete the required checks pertaining to his assigned crew station. The PC will ensure that the before-takeoff checks are completed according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

2. The P* will direct the P or CE to call out the before-takeoff checks according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

3. The P or CE will call out the before-takeoff checks when directed.

REFERENCES:

TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-234-CL
TM 55-1520-236-23 series
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF

TASK 2537

TASK: Perform takeoff-to-hover check.

CONDITIONS: In an AH-1 helicopter or an AH1FWS and given TM 55-1520-236-MTF or TM 55-1520-244-MTF with the before-takeoff check completed.

STANDARDS:

1. Properly clear the aircraft.

2. Determine proper cyclic, collective, and pedal control responses.

3. Establish a 3-foot hover, ±l foot.

4. Determine the proper center of gravity.

5. Determine proper droop cam operation.

6. Correctly determine all malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

7. Ensure that the torque does not exceed the validation factor.

8. Correctly perform crew coordination actions.

DESCRIPTION:

1. All crew members will clear the area around the aircraft.

2. The P* will announce his intent to bring the aircraft to a hover.

3. With the collective fully down, the P* will place the cyclic in the neutral position. He will increase the collective with a smooth, positive pressure. The P* will apply pressure to the pedals to maintain heading and coordinate the cyclic for a vertical ascent. He will note that the apparent center of gravity is normal and that no excessive control displacement is required during the ascent. The P* will adjust the collective to maintain the desired altitude and check that N2 remains at 6600 RPM, ±40 RPM (AH-1S), or at 100 percent, ±0.6 percent (AH-1E, AH-1F, or AH-1P), of the flat pitch RPM. With the aircraft hovering into the wind, the P* will ensure that the cyclic is nearly centered and that the pedal position is normal.

4. The P or CE will remain focused primarily inside the cockpit. He will assist the P* by monitoring the systems and flight instruments. When the aircraft is clear of the parking area, the P or CE will check the area for indications of fuel or oil leaks.

REFERENCES:

TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-236-23 series
TM 55-1520-236-MTF
TM 55-1520-244-MTF

TASK 2538

TASK: Perform torquemeter/power check.

CONDITIONS: In an AH-1 helicopter or an AH1FWS with the hover power check completed and performance planning data available.

STANDARDS:

1. Correctly compute a 5-foot hover torque based on actual conditions.

2. Properly clear the aircraft.

3. Maintain aircraft heading into the wind.

4. Maintain a stabilized 5-foot hover, ±1 foot.

5. Correctly note torque indication.

6. Correctly determine all malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

7. Correctly perform crew coordination actions.

DESCRIPTION:

1. All crew members will clear the area around the aircraft.

2. The P* will remain focused primarily outside the aircraft. The P or CE will assist him by monitoring the aircraft systems and flight instruments. The P or CE also will assist with obstacle avoidance and will record indicated torque from the backseat.

3. The P* will increase the collective and bring the aircraft to a stabilized 5-foot hover into the wind. He will note the torque indication and compare it with the computed torque value. The MP will analyze and resolve any difference in the torque values.

NOTE: The actual torque requirement should be determined by using actual FAT and PA indicated at a setting of 29.92 and the actual aircraft weight at the time of the check. The actual torque should be within 4 percent or 2 psi of the computed torque value. Wind in excess of 10 knots may affect the torque required to hover.

REFERENCES:

TM 55-1520-234-10
TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-236-10
TM 55-1520-236-23 series
TM 55-1520-236-MTF
TM 55-1520-244-MTF

TASK 2539

TASK: Perform pedal authority check.

CONDITIONS: In an AH-1 helicopter or an AH1FWS and given TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

2. Properly clear the aircraft.

3. Maintain a stabilized 3-foot hover, ±l foot.

4. Correctly perform 90-degree hovering turns to the left and right of the wind direction, not to exceed 90 degrees of turn in four seconds.

5. Correctly determine aircraft controllability and tail rotor response.

6. Correctly determine that flight instrument response is normal.

7. Correctly determine all malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

8. Correctly perform crew coordination actions.

DESCRIPTION:

1. All crew members will clear the area around the aircraft.

2. The P* will remain focused primarily outside the aircraft. The P or CE will assist him by monitoring the aircraft systems and flight instruments. The P or CE also will assist with obstacle avoidance and will perform other duties directed by the P*.

3. The P* will apply pressure on the desired pedal to begin the turn. Using pressure and counterpressure on both pedals to maintain a constant rate of turn, he will note that excessive pedal pressures are not required and that the pedal positions are normal.

4. The P* will make left and right hovering turns 90 degrees to each side of the wind direction. He will check that the turn and slip indicator and compasses respond normally.

REFERENCES:

TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-234-CL
TM 55-1520-236-23 series
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF

TASK 2540

TASK: Perform yaw channel response.

CONDITIONS: In an AH-1 helicopter or an AH1FWS and given TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

STANDARDS:

1. Maintain a stabilized 3-foot hover, ±1 foot.

2. Properly clear the aircraft.

3. Maintain aircraft heading into the wind.

4. Establish a slight vertical ascent.

5. Correctly determine if the SCAS maintains the original heading.

6. Correctly determine all malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

7. Correctly perform crew coordination actions.

DESCRIPTION: The P* will maintain the aircraft heading into the prevailing wind. He will increase the collective slightly without moving the pedals, noting that the SCAS maintains the aircraft aircraft close to the original heading. The P will assist in clearing the aircraft and will provide adequate warning of obstacles, excessive drift, or excessive altitude changes.

NOTE: If yaw channel SCAS function is questionable, disengage the yaw channel of the SCAS and repeat the check for comparison.

REFERENCES:

TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-234-CL
TM 55-1520-236-23 series
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF

TASK 2541

TASK: Perform sideward hovering flight.

CONDITIONS: In an AH-1 helicopter or an AH1FWS and given TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

2. Properly clear the aircraft.

3. Maintain a stabilized 3-foot hover, ±1 foot.

4. Maintain aircraft heading into the wind and the flight path perpendicular to the wind direction.

5. Correctly determine aircraft controllability and tail rotor response.

6. Maintain hover speed consistent with autorotational capabilities.

7. Correctly determine all malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

8. Correctly perform crew coordination actions.

DESCRIPTION:

1. All crew members will clear the area around the aircraft.

2. The P* will remain focused primarily outside the aircraft. The P or CE will assist him by monitoring the aircraft systems and flight instruments. The P or CE also will assist with obstacle avoidance and will perform other duties directed by the P*.

3. The P* will apply cyclic in the desired direction of flight, noting that no excessive inputs are required. After the p* neutralizes the cyclic, the aircraft should coast to a stabilized hover.

REFERENCES:

TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-234-CL
TM 55-1520-236-23 series
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF

TASK 2542

TASK: Perform forward hovering flight.

CONDITIONS: In an AH-1 helicopter or an AH1FWS and given TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

2. Properly clear the aircraft.

3. Maintain a stabilized 3-foot hover, ±1 foot.

4. Maintain aircraft heading into the wind, ±10 degrees.

5. Correctly determine aircraft controllability and tail rotor response.

6. Correctly accelerate forward to ETL.

7. Correctly determine all malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

8. Correctly perform crew coordination actions.

DESCRIPTION:

1. All crew members will clear the area around the aircraft.

2. The P* will remain focused primarily outside the aircraft. The P or CE will assist him by monitoring the aircraft systems and flight instruments. The P or CE also will assist with obstacle avoidance and will perform other duties directed by the P*.

3. The P* will apply sufficient forward cyclic to accelerate to ETL. He will note that no excessive control inputs are required, that vibration levels and instrument responses are normal, and that the aircraft responds normally. The P* will apply aft cyclic and note that the aircraft returns to normal hovering flight.

NOTE: The P* will maintain tail rotor altitude during the deceleration.

REFERENCES:

TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-234-CL
TM 55-1520-236-23 series
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF

TASK 2543

TASK: Perform pylon mounts check (SCAS on and SCAS off).

CONDITIONS: In an AH-1 helicopter and given TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

2. Properly clear the aircraft.

3. Maintain a stabilized 5-foot hover, ±1 foot.

4. Maintain aircraft heading into the wind, ±10 degrees.

5. Correctly induce pylon rock (SCAS on and SCAS off).

6. Correctly determine all malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

7. Correctly perform crew coordination actions.

DESCRIPTION:

1. All crew members will clear the area around the aircraft.

2. The P* will remain focused primarily outside the aircraft. The P or CE will assist him by monitoring the aircraft systems and flight instruments. The P or CE also will assist with obstacle avoidance and will perform other duties directed by the P*.

3. The P* will move the cyclic fore and aft, not to exceed 3 to 4 inches, at a rate sufficient to induce pylon rock. He will then neutralize the cyclic and record the number of cycles (beats) required to dampen pylon rock. The P* will note that no abnormal vibrations or engine surges occur.

REFERENCES:

TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-234-CL
TM 55-1520-236-23 series
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF

TASK 2544

TASK: Perform engine response check.

CONDITIONS: In an AH-1 helicopter and given TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

2. Properly clear the aircraft.

3. Initiate the check from a 3-foot hover, ±1 foot.

4. Ensure that the ECU and deice switches are off.

5. Correctly determine engine response without exceeding limitations.

6. Correctly determine all malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

7. Correctly perform crew coordination actions.

DESCRIPTION:

1. All crew members will clear the area around the aircraft.

2. The P* will remain focused primarily outside the aircraft. The P or CE will assist him by monitoring the aircraft systems and flight instruments. The P or CE also will assist with obstacle avoidance and will perform other duties directed by the P*.

3. The P* will positively apply sufficient collective pitch to cause the N2 to decrease. The engine should respond smoothly and rapidly, and the N2 should initially decrease. (No stalls should occur.) The N2 must recover prior to the P*'s reducing the collective. The P* should not exceed an altitude of 50 feet AGL.

4. The P or CE will advise the P* if N2 droop occurs. The P or CE also will assist in ensuring that airframe and engine limitations are not exceeded.

NOTE: A well-rigged droop cam, an overspeed governor, and fuel control may keep the N2 stable. The gross weight of the aircraft should not be light for this check.

REFERENCES:

TM 55-1520-234-10
TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-234-CL
TM 55-1520-236-10
TM 55-1520-236-23 series
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF

TASK 2545

TASK: Perform low RPM hover check.

CONDITIONS: In an AH-1 helicopter or an AH1FWS; and given TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

2. Properly clear the aircraft.

3. Maintain a stabilized 3-foot hover, ±1 foot.

4. Establish aircraft heading into the wind.

5. Correctly perform 45-degree hovering turns to the left and right of the initial heading.

6. Correctly determine aircraft controllability and tail rotor response.

7. Correctly determine all malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

8. Correctly perform crew coordination actions.

DESCRIPTION:

1. <u>Crew Actions.</u>

a. All crew members will clear the area around the aircraft.

b. The P* will remain focused primarily outside the aircraft. The P or CE will assist him by monitoring the aircraft systems and flight instruments. The P or CE also will assist with obstacle avoidance and will perform other duties directed by the P*.

2. <u>Procedure.</u> With the aircraft stabilized at a 3-foot hover, the P* will slowly decrease N2 to 6000 RPM (AH-1S) or 91 percent (AH-1E, AH-1F, or AH-1P) with the governor increase/decrease switch. If aircraft controllability or control reponses become abnormal during the RPM reduction, the P* will terminate the maneuver and check the static control rigging.

He will check antitorque controllability by executing 45-degree hovering turns to the left and right of the initial heading. With the aircraft stabilized at a 3-foot hover and N2 at 6000 RPM or 91 percent, the P* will check for excessive lateral vibrations. He will then increase the N2 to 6600 RPM or 100 percent using the governor increase/decrease switch while maintaining a 3-foot hover.

REFERENCES:

TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-234-CL
TM 55-1520-236-23 series
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF

TASK 2546

TASK: Perform manual throttle operation, emergency governor mode.

CONDITIONS: In an AH-1 helicopter or an AH1FWS, with the aircraft on a level surface heading into the wind, and given TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

2. Properly clear the aircraft.

3. Without error, perform the procedure to change the governor to the emergency mode according to the description below.

4. Maintain aircraft heading into the wind, ±10 degrees.

5. Maintain N2 at 6400 RPM, ±300 RPM, or 97 percent, ±3 percent.

6. Establish a 3-foot hover, ±1 foot.

7. Correctly note engine performance throughout the maneuver.

8. Correctly return the governor to the automatic mode.

9. Correctly determine all malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

10. Correctly perform crew coordination actions.

DESCRIPTION:

CAUTION

To prevent an overspeed, overtemperature, compressor stall, or engine failure, make smooth throttle and collective adjustments. Closely monitor N1, N2, and EGT/TGT.

1. Crew Actions.

a. All crew members will clear the area around the aircraft.

b. The P* will remain focused primarily outside the aircraft. The P or CE will assist him by monitoring the aircraft systems and flight instruments. The P or CE also will assist with obstacle avoidance and will perform other duties directed by the P*.

> **CAUTION**
>
> The P* must be prepared to place his governor switch to the emergency position if the P or CE does not quickly return his switch to the automatic position.

2. Procedure. With the aircraft on the ground, the N2 stabilized at 6600 RPM or 100 percent, and the collective fully down, the P* will retard the throttle to engine idle stop. After the engine stabilizes at engine idle RPM, the P* will move the governor control switch to the emergency position and note a decrease in engine RPM and appropriate caution light illumination. He will adjust the throttle to 6400 RPM or 97 percent and bring the aircraft to a stabilized 3-foot hover by smoothly increasing the collective and adjusting the throttle to maintain 6400 RPM or 97 percent. The P* will apply cyclic and pedals as necessary to maintain a stationary hover and a constant heading. Upon completion of the hover, the P* will land the aircraft by smoothly reducing the collective and adjusting the throttle to maintain 6400 RPM or 97 percent. After landing, he will reduce the throttle to engine idle stop. After noting a decrease in the engine RPM, the P* will move the governor control switch to the automatic position and verify that the N1 stabilizes at engine idle RPM. The MP will direct the P or CE to identify the governor switch and place it in the emergency position. After noting a sliqht decrease in N1, the P or CE will immediately return the switch to the automatic-position. The P* will increase the throttle to the fully open position and verify normal engine RPM.

REFERENCES:

TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-234-CL
TM 55-1520-236-23 series
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF

TASK 2547

TASK: Perform power cylinder check (dual- and single-system operations).

CONDITIONS: In an AH-1 helicopter, with a qualified and current MP in the backseat and a qualified and current pilot in the front seat who is properly briefed, and given TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

2. Properly clear the aircraft.

3. Maintain a 15-foot hover, ±5 feet.

4. Maintain aircraft heading into the wind, ±10 degrees.

5. Maintain position over the starting point with drift not to exceed 10 feet.

6. Correctly determine all malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

7. Correctly perform crew coordination actions.

DESCRIPTION:

1. <u>Crew Actions.</u>

a. All crew members will clear the area around the aircraft.

b. The P* will remain focused primarily outside the aircraft and will place the aircraft in a stabilized 15-foot hover. He will then transfer control of the collective and throttle to the P. The P will assist in maintaining a stabilized 15-foot hover and in monitoring the aircraft systems and flight instruments. He also will assist with obstacle avoidance and will perform other duties directed by the P*.

NOTE: Immediately prior to performing this task, the P* will brief the P on the emergency procedure should the flight controls jam or become abnormally stiff.

2. Procedures.

a. Dual-svstem operation. The P* will establish a 15-foot hover and transfer control of the collective and throttle to the P. The P* will move the cyclic smoothly and progressively 6 to 8 inches fore and aft. He will note normal unrestricted operation of the controls and then stabilize the aircraft. The P* will then smoothly move the cyclic laterally through 6 to 8 inches, note normal unrestricted operation of the controls, and stabilize the aircraft.

NOTE: If the controls jam or become abnormally stiff, the P* will immediately recycle the hydraulic control switch to the opposite position and back to BOTH. The MP will then land the aircraft and investigate the problem.

b. Single-system operation.

(1) The P* will establish a 15-foot hover and transfer control of the collective and throttle to the P. He will place the hydraulic control switch in the number 1 system test position. The P* will note illumination of the master caution and HYD pressure number 2 caution segment lights and stabilize the aircraft. He will move the cyclic smoothly and progressively 6 to 8 inches fore and aft. The P* will note normal unrestricted operation of the controls and then stabilize the aircraft. He will then smoothly move the cyclic laterally through 6 to 8 inches, note normal unrestricted operation of the controls, and stabilize the aircraft.

(2) The P* will place the hydraulic control switch in the number 2 system test position. He will note illumination of the master caution and HYD pressure number 1 caution segment lights and stabilize the aircraft. The P* will move the cyclic smoothly and progressively 6 to 8 inches fore and aft. He will note normal unrestricted operation of the controls and then stabilize the aircraft. The P* will then smoothly move the cyclic laterally through 6 to 8 inches, note normal unrestricted operation of the controls, and stabilize the aircraft.

REFERENCES:

TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-234-CL
TM 55-1520-236-23 series
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF

TASK 2548

TASK: Perform collective servo authority check (dual- and single-system operations).

CONDITIONS: In an AH-1 helicopter, with a qualified and current MP in the backseat and a qualified and current pilot in the front seat who is properly briefed, and given TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

2. Properly clear the aircraft.

3. Initiate the check from a 5-foot hover, ±1 foot.

4. Maintain aircraft heading into the wind, ±10 degrees.

5. Maintain position over the starting point with drift not to exceed 10 feet.

6. Correctly determine all malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

7. Correctly perform crew coordination actions.

DESCRIPTION:

1. **Crew Actions.** All crew members will clear the area around the aircraft.

2. **Procedures.**

a. **Dual-system operation.** The MP will transfer the flight controls to the PLT. The PLT (the P*) will remain focused primarily outside the aircraft and will place the aircraft in a stabilized 5-foot hover. He will smoothly increase the collective to 85 percent or 48 psi torque and note the amount of force required. The P* will then return the aircraft to a stabilized 5-foot hover. The MP will assist with clearing the aircraft and with monitoring the aircraft systems and flight instruments. He also will assist with obstacle avoidance.

NOTE: Immediately prior to performing this task, the MP will brief the P* on the emergency procedure for collective lock-up or control limitation.

b. <u>Single-system operation.</u>

(1) The MP will place the HYD test switch to the number 1 position, noting illumination of the master caution and number 2 HYD pressure segment lights. The P* will smoothly increase the collective to 85 percent or 48 psi torque or control limitation, whichever is less. The MP will note the torque value attained. The P* will relax pressure on the controls and stabilize the aircraft at a 5-foot hover while the MP returns the HYD test switch to BOTH. If in an AH-1E or AH-1F, the P* will land the aircraft and the MP will reengage the SCAS. If in an AH-1P or AH-1S, the P* will return the aircraft to a 5-foot hover.

(2) The MP will place the HYD test switch to the number 2 position, noting illumination of the master caution and number 1 HYD pressure segment lights. The P* will smoothly increase the collective to obtain 85 percent or 48 psi torque or control limitation, whichever is less. The MP will note the torque value attained. The P* will relax pressure on the controls and stabilize the aircraft at a 5-foot hover while the MP returns the HYD test switch to BOTH. If in an AH-1E or AH-1F, the P* will land the aircraft and the MP will reengage the SCAS. If in an AH-1P or AH-1S, the P* will return the aircraft to a 5-foot hover.

NOTE: If collective lockup or control limitation occurs, the MP will immediately recycle the hydraulic control switch to BOTH. The P* will then land the aircraft, and the MP will investigate the problem.

REFERENCES:

TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-234-CL
TM 55-1520-236-23 series
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF

TASK 2549

TASK: Perform takeoff and climb-out checks.

CONDITIONS: In an AH-1 helicopter or an AH1FWS and given TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

2. Correctly complete the before-takeoff check.

3. Correctly determine all malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

4. Correctly perform crew coordination actions.

DESCRIPTION: The P* will perform a normal takeoff and climb out to the initial test altitude. He will note normal aircraft response, vibration levels, vibration entry airspeeds, and instrument operations. The P will assist the P* in clearing the aircraft and will perform other duties directed by the P*.

NOTE: A normal takeoff is recommended for this task, because it provides the most desirable flight profile in case of an emergency.

REFERENCES:

TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-234-CL
TM 55-1520-236-23 series
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF

TASK 2550

TASK: Perform instrument operation and correlation check.

CONDITIONS: In an AH-1 helicopter or an AH1FWS and given TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

2. Correctly check and perform all items in sequence.

3. Correctly determine all malfunctions or discrepancies and apply corrective actions/troubleshooting procedures.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* will vary airspeed and altitude as necessary to check the performance of installed instruments. He will ensure that the backseat instruments correlate properly with the front-seat instruments. The P will verify front-seat instrument readings.

2. Each crew member will announce when his checks are completed.

REFERENCES:

TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-234-CL
TM 55-1520-236-23 series
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF

TASK 2551

TASK: Perform control rigging checks.

CONDITIONS: In an AH-1 helicopter or an AH1FWS and given TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

STANDARDS:

1. Maintain minimum safe altitude.

2. Maintain 100 KIAS, ±5 KIAS.

3. Maintain torque at 45 percent (AH-1E, AH-1F, or AH-1P), or 25 psi (AH-1S).

4. Maintain the aircraft in trim.

5. Correctly note cyclic and pedal positions.

6. Correctly determine all malfunctions or discrepancies and apply corrective actions/troubleshooting procedures.

7. Correctly perform crew coordination actions.

DESCRIPTION:

1. **SCAS On.** During straight and level flight, the P* will smoothly reduce the collective to establish torque at 45 percent or 25 psi and airspeed at 100 KIAS. He will maintain torque, airspeed, and trim and will note that the cyclic is nearly centered and that the pedals are neutral. The P will verify that the pedals are neutral. The P* will turn the force trim on and note that it tends to hold the aircraft attitude. He will then turn off the force trim.

2. **SCAS Off.** The P* will maintain torque, airspeed, and trim and will note the control positions. He will disengage all SCAS channel switches and note the control positions. The P* will compare the control positions with those noted for the SCAS on. The P* will then reengage the SCAS.

REFERENCES:

TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-234-CL

TM 55-1520-236-23 series
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF

TASK 2554

TASK: Perform autorotation RPM check.

CONDITIONS: In an AH-1 helicopter or an AH1FWS, with the landing check completed at a predetermined entry altitude and airspeed, and given TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

2. Correctly check and perform all items in sequence.

3. Correctly determine all malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

4. Maintain aircraft within gliding distance of the emergency landing area.

5. Maintain entry airspeed of 80 KIAS, ±5 KIAS.

6. Maintain the aircraft in trim.

7. Complete the recovery to powered flight prior to descending below 500 feet AGL.

8. Correctly perform crew coordination actions.

DESCRIPTION: The P* will maintain 80 KIAS and then smoothly lower the collective to the fully down position. He will retard the throttle to the flight idle position while ensuring that the main rotor does not overspeed. The P* will note that the N1 stabilizes at flight idle (68 to 72 percent) and that the aircraft is in trim. He also will note that the torque is at 0 percent or 0 psi and that sufficient right pedal remains. The P* will note any unusual vibrations and ensure that the rotor is stabilized at the appropriate RPM. He will perform the power recovery by smoothly increasing the throttle to fully open and will note that the needles join. The P* will then increase the collective to a power setting that will establish a positive climb. The P will clear the aircraft and assist as directed by the P*.

REFERENCES:

TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-234-CL
TM 55-1520-236-23 series
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF

TASK 2561

TASK: Perform vibration analysis.

CONDITIONS: In an AH-1 helicopter or an AH1FWS and given TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

2. Correctly check and perform all items in sequence.

3. Maintain a minimum safe altitude.

4. Properly note any change in vibration level.

5. Maintain the aircraft in trim.

6. Correctly determine all malfunctions or discrepancies and apply corrective actions/troubleshooting procedures.

7. Correctly perform crew coordination actions.

DESCRIPTION:

1. **Crew Actions.** The P will focus his attention primarily outside the aircraft and will assist in clearing. He will announce when his attention is focused inside the cockpit; for example, when recording the results of the checks.

2. **Procedures.**

a. **Cruise and descent check.** The P* will establish straight and level flight at 80 KIAS and will note the vibration level. He will maintain 80 KIAS and reduce torque to 15 to 18 percent (AH-1E, AH-1F, or AH-1P) or 8 to 10 psi (AH-1S). The P* will note any vibration or change in the vibration level during the descent and then will reestablish straight and level flight at 80 KIAS.

NOTE: The cruise and descent check is only required on aircraft with B 540 rotor blades installed.

b. **Acceleration check.** The P* will smoothly increase airspeed in 10-KIAS increments, up to 150 KIAS, or until he notes an unacceptable vibration level. He will note the airspeed at which any change in the vibration level occurs. The P* will then resume normal flight.

c. **G loading check.** The P* will place the aircraft in straight and level flight and adjust the torque to maintain 80 KIAS. He will execute a 20- to 30-degree dive and will maintain entry torque and aircraft in trim. The P* will accelerate to approximately 130 KIAS. He will then perform a moderate G pullout, applying aft cyclic and adjusting collective as necessary to maintain torque and rotor within limits. The P* will note any excessive vibrations or pylon oscillations during the dive and recovery from the dive. The P* will then return the aircraft to cruise flight.

REFERENCES:

TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-234-CL
TM 55-1520-236-23 series
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF

TASK 2566

TASK: Perform communication and navigation equipment checks.

CONDITIONS: In an AH-1 helicopter or an AH1FWS and given TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

STANDARDS:

1. Maintain altitude as required to check all installed equipment.

2. Maintain airspeed as required.

3. Properly check all installed avionics equipment.

4. Correctly determine malfunctions or discrepancies and apply corrective actions/troubleshooting procedures.

5. Correctly perform crew coordination actions.

DESCRIPTION: The P* will check the operation of all installed communication and navigation equipment. He will check all communication radios on at least two frequencies, including the GUARD frequency. The P* will check navigation radios for correct needle indications. He will check the transponder with the nearest ATC facility. The P will clear the aircraft and check navigation equipment as directed by the P*.

REFERENCES:

TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-234-CL
TM 55-1520-236-23 series
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF

TASK 2567

TASK: Perform engine topping check.

CONDITIONS: In an AH-1 helicopter or an AH1FWS and given TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

STANDARDS:

1. Correctly determine the maximum indicated torque using the calibration factor (engine data plate torque).

2. Ensure that ECU and deice switches are off and that the pilot's altimeter is set to 29.92.

3. Maintain 80 KIAS, ±10 KIAS.

4. Correctly perform the engine topping check.

5. Correctly analyze and record topping data.

6. Correctly determine whether the aircraft passed or failed the engine topping check according to TMs 55-2840-229-23-1 and 55-2840-229-23-2.

7. Correctly determine all malfunctions or discrepancies and apply corrective actions/troubleshooting procedures.

8. Correctly perform crew coordination actions.

DESCRIPTION:

1. <u>Crew Actions.</u> The P will focus his attention primarily outside the aircraft. He will assist in clearing the aircraft and perform other duties directed by the P*.

2. <u>Procedure.</u> The P* will initiate a normal climb until reaching 3,500 feet PA (minimum of 1,000 feet AGL). He will smoothly increase the collective to obtain maximum indicated torque, ensuring that N1, TGT, and torque limits are not exceeded. The P* will maintain maximum indicated torque until N2 decreases to 6400 RPM or 97 percent, until the N1 or TGT limit is reached, or until the maximum topping altitude is reached. If the N2 decreases prior to reaching a limit, the P* will maintain N2 at 6400 RPM or 97 percent. While passing through the next 1,000 feet PA, the P will record torque, N1, TGT, and PA. The P* will increase the collective to decrease the N2 to 6200 RPM or 94 percent. He will note no changes in N1 as he increases the collective. The P* will reduce the collective and descend to the topping altitude (PA) previously recorded. He will fly at the topping altitude for one minute, and the P will record the FAT. The P* will then reset the pilot's altimeter and resume normal flight.

NOTE 1: If the N1, TGT, or altitude limit is reached prior to actual engine topping (N2 decrease), the P will record N1, torque, TGT, PA, and FAT for use during the troubleshooting procedure.

NOTE 2: Actual topping of the aircraft engine is not required during training and evaluation. The intent is to demonstrate maneuver proficiency only.

REFERENCES:

TM 55-1520-234-10
TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-234-CL
TM 55-1520-236-10
TM 55-1520-236-23 series
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF
TM 55-2840-229-23-1
TM 55-2840-229-23-2

TASK 2568

TASK: Perform after-landing and engine shutdown checks.

CONDITIONS: In an AH-1 helicopter or an AH1FWS and given TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

2. Correctly check and perform all items in sequence.

3. Correctly determine all malfunctions or discrepancies and apply corrective actions/troubleshooting procedures.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. Each crew member will complete the required checks pertaining to his assigned crew station according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF.

2. The aircrew and, if available, the ground crew will announce when their checks are completed.

REFERENCES:

TM 55-1520-234-23-1
TM 55-1520-234-23-2
TM 55-1520-234-CL
TM 55-1520-236-23 series
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF

TASK 2569

TASK: Perform special/detailed procedures.

CONDITIONS: In an AH-1 helicopter with special equipment installed.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-234-CL or TM 55-1520-236-CL or TM 55-1520-236-MTF or TM 55-1520-244-MTF, with changes for special equipment posted, and use additional publications as required.

2. Correctly check and perform all items in sequence.

3. Correctly determine all malfunctions or discrepancies and apply corrective actions/troubleshooting procedures.

4. Correctly perform crew coordination actions.

DESCRIPTION: The crew will check any additional/special equipment installed in the aircraft and demonstrate knowledge of the system and published operational checks. They also will demonstrate knowledge of published charts, graphs, and work sheets. They may perform selected checks orally.

REFERENCES:

AR 95-1
AR 95-3
TM 1-1500-328-23
TM 55-1520-234-10
TM 55-1520-234-CL
TM 55-1520-236-10
TM 55-1520-236-CL
TM 55-1520-236-MTF
TM 55-1520-244-MTF
Applicable publications for equipment installed

CHAPTER 8

EVALUATION

This chapter describes evaluation principles and grading considerations. It also contains guidelines for conducting the hands-on performance test component of the APART and battle-rostered crew, proficiency, annual NVG standardization, post-accident, medical, and no-notice flight evaluations. The flight evaluation is a principal means of assessing flight standardization and aviator proficiency. It is, therefore, a key part of Army aviation standardization.

Section I. Evaluation Principles and Grading Considerations

8-1. EVALUATION PRINCIPLES

a. The evaluation must include the examinee's ability to perform essential hands-on skills to the standards prescribed in Chapter 6 or Chapter 7. It also must include the examinee’s ability to manage aircraft resources to successfully complete the assigned mission.

b. The guidelines for evaluating crew coordination are not based on objective criteria; for example, distances or degrees. Rather, they are based on a subjective analysis of how effectively a crew performs together to accomplish a series of tasks. The subjective analysis is as important as the objective evaluation of the more definitive measurable tasks. The evaluator measures crew coordination skills on the basis of subjective judgment, which is more difficult than objectively measuring the skill to accomplish a specific task.

c. Evaluation requires an analysis of how each crew member performs the crew coordination actions included in each ATM task. The evaluator must determine how effectively the examinee communicates and how effectively he sequences and times critical actions to successfully complete a task.

d. Evaluation of a crew member’s communication skills should include an analysis of how well he understands current and planned actions. Does he communicate current and proposed tasks effectively? Does he announce information before initiating a task so that the evaluator or other crew members are cued to perform their portion of the task?

e. In evaluating cockpit communication, the evaluator must determine how effectively the crew member uses standard aviation terminology. Use of this terminology is essential to ensure a clear, concise flow of information in the cockpit. The evaluator should correct any disuse or misuse of these terms on the spot to reinforce their proper usage.

f. The sequencing and timing of actions between crew members is critical. For example, the evaluator should expect the P* to forewarn him of planned maneuvers. As the P, the evaluator should announce his intentions to the P*. These announcements permit the proper sequencing of required follow-on actions. Failure to announce a task, such as a hovering turn in a confined area, could result in failure of the crew to provide clearing during the turn.

g. In all phases of individual instruction and evaluation, the evaluator is expected to perform as a crew member in good faith. At some point during the evaluation, circumstances may prevent the evaluator from performing as a crew member. In such cases, a realistic and meaningful method should be developed to effectively pass this task back to the examinee. In all other situations, the evaluator must perform as outlined in the task description or as directed by the examinee. The examinee must know that he is being supported by a fully functioning crew member.

h. The value of any evaluation depends on strict adherence to fundamental evaluation principles; anything less than strict adherence renders the evaluation meaningless. These fundamental principles are described below.

(1) The **evaluators** must be selected not only for their technical qualifications but also for their demonstrated performance, objectivity, and ability to observe and provide constructive comments.

(2) The **method** used to conduct the evaluation must be based on uniform, standard objectives. Also, the method used must be consistent with the unit's mission and must strictly adhere to the appropriate SOPs and regulations.

(3) All those concerned must completely understand the purpose of the evaluation. Moreover, the conduct of the evaluation must be purpose-oriented.

(4) Cooperation by all participants is necessary to guarantee accomplishment of the evaluation objectives. The emphasis is on all participants, not just on the examinee.

(5) The evaluation must produce **specific findings** to identify training needs. Everyone affected by the evaluation wants and needs to know what is being done wrong, what might be done better, and how improvements can be made. General comments do not always provide the direction and guidance essential for improvement. To serve its purpose, the evaluation must pinpoint both strengths and weaknesses.

8-2. GRADING CONSIDERATIONS

a. Oral Evaluation. The examinee must demonstrate a working knowledge and an understanding of the subject areas presented. The evaluator will assess the examinee's knowledge during the oral examination.

b. Flight Evaluation. Performance standards are based on an ideal situation. Grading is based on meeting the minimum standards. If other than ideal conditions exist during the evaluation, the evaluator must make appropriate adjustments to the standards.

Section II. Evaluation Guidelines

8-3. CREW MEMBER AND CREW FLIGHT EVALUATIONS

The flight evaluation determines the crew member’s ability to perform appropriate duties. It is administered for the initial designation to the assigned duty position, when required, and at periodic intervals per AR 95-1. Initial validation of an evaluator’s orders at a new duty station will be conducted in the aircraft. The evaluation sequence consists of four phases. Phases 2 and 3 contain specific guidelines for conducting various aviation missions. The evaluator is the final authority on the amount of time devoted to each phase. If the evaluation is for a unit trainer or an evaluator, the recommended procedure is for the individual conducting the evaluation to reverse roles with the examinee during Phases 1, 2, and 3. When the evaluator uses this technique, the examinee must understand how the role-reversal will be conducted and when it will be in effect.

a. Phase 1--Introduction. In this phase, the evaluator--

(1) Introduces himself to the examinee.

(2) Ensures that the examinee has all the required equipment for the flight.

(3) Confirms the purpose of the flight evaluation, explains the evaluation procedure, and discusses the evaluation standards and criteria to be used.

NOTE 1: If the evaluation is for an evaluator, the individual conducting the evaluation must explain that he will evaluate the examinee's ability to apply the learning and teaching process outlined in the Instructor's Handbook.

NOTE 2: If the evaluation is for a unit trainer, it will emphasize the examinee's performance in those areas in which the examinee will perform UT duties.

b. **Phase 2--Oral Examination.** The examinee must have a working knowledge and an understanding of all applicable topics in the respective subject areas below. He must respond correctly to questions from topics selected by the evaluator. At a minimum, the evaluator will select two topics from each appropriate subject area. An IP, SP, IE, or ME also must demonstrate an ability to instruct and evaluate any topic. Aerodynamics, tactical and mission tasks, and night tasks are not required for instrument evaluations. Tactical and mission operations and night mission operations and employment do not apply to MP evaluations. Also, for MP evaluations, questions on aeromedical factors and aerodynamics will be at the discretion of the evaluator.

NOTE: The oral examination may include a discussion of any tasks listed on the crew member's task list.

(1) **Regulations and publications (ARs 40-8, 95-1, 95-2, and 95-3; DA Pamphlet 738-751: TCs 1-140 and 1-210; DOD FLIP; and local SOPs and regulations).** Topics in this subject area are--

(a) ATP requirements.

(b) SOP requirements.

(c) DOD FLIP and maps.

(d) VFR minimums and procedures.

(e) IFR minimums and procedures.

(f) Aviation life support equipment.

(9) Weight and balance requirements.

(h) Flight plan preparation and filing.

(i) Flight restrictions due to exogenous factors.

(j) Range operations and safety.

(k) Test flight weather requirements. *

(1) Local airspace usage (test flight). *

(m) Publications required in the aircraft.

(n) Maintenance operational check requireraents. *

(o) Maintenance test flight requirements. *

(p) Maintenance test flight forms and records. *

(2) **Operating limitations and restrictions (TC 1-140 and TM 55-1520-234-10 or TM 55-1520-236-10).** Topics in this subject area are--

(a) Aircraft systems operations.

(b) Wind limitations.

(c) Rotor limitations.

(d) Power limitations.

(e) Engine limitations.

(f) Weight and balance limitations.

(9) Weather limitations.

(h) Pressure limitations.

(i) Airspeed limitations.

(j) Temperature limitations.

(k) Flight envelope limitations.

(l) Performance chart interpretation.

* Denotes topics that pertain to maintenance test pilots only.

(3) **<u>Aircraft emergency procedures and malfunctions (TM 55-1520-234-10 or TM 55-1520-236-10).</u>** Topics in this subject area are--

(a) Emergency terms and their definitions.

(b) Emergency exits and equipment.

(c) Engine malfunctions.

(d) Rotor, transmission, and drive systems.

(e) Tail rotor malfunctions.

(f) Chip detectors.

(g) Fires and hot starts.

(h) Smoke and fume elimination.

(i) Hydraulic system malfunction.

(j) Fuel system malfunction.

(k) Electrical system malfunctions.

(1) Caution and warning light emergency procedures.

(m) Landing and ditching procedures.

(n) Battery malfunction.

(o) Flight control malfunctions.

(p) Night vision goggle malfunctions.

(q) Mission avionics malfunctions.

(r) Weapon systems malfunctions.

(4) **<u>Aeromedical factors (FM 1-301 and TC 1-204).</u>** Topics in this subject area include the effects of--

(a) Hypoxia.

(b) Carbon monoxide.

(c) Self-imposed stresses.

(d) Middle ear discomfort.

(e) Spatial disorientation.

(5) **Aerodynamics and aircraft characteristics (FM 1-203 and TM 55-1520-234-10 or TM 55-1520-236-10).** Topics in this subject area are--

(a) Mushing.

(b) Total aerodynamic force.

(c) Airflow during hover.

(d) Translating tendency.

(e) Transverse flow.

(f) Dissymmetry of lift.

(9) Retreating blade stall.

(h) Dynamic rollover.

(i) Settling with power.

(j) Low G operation.

(k) Transient torque.

(1) Pitch cone coupling.

(m) Cambered vertical fin.

(n) Maneuvering flight.

(6) **Tactical and mission tasks (FMs 1-112, 1-116, 1-400, and 1-402; TCs 1-140 1-201, and 1-204: TM 55-1520-234-10 or TM 1520-236-10: and unit SOP).** Topics in this subject area are--

(a) Mission and/or survivability equipment.

(b) Attack planning and terrain analysis.

(c) Tactical formations and fire control.

(d) Target coordination and laser designation.

(e) Tactical reports.

(f) Evasive maneuvers.

(g) Terrain flight planning and safety.

(h) Battle and firing position selection.

(i) Downed aircraft procedures.

(j) Fire support and joint air attack team operations.

(k) Vertical helicopter instrument recovery procedures.

(l) Navigational chart, map, and tactical overlay interpretation.

(m) Major US or allied equipment and major threat equipment identification.

(7) **Weapon system operations (FMs 1-112 and 1-116, TC 1-140, and TM 55-1520-234-10 or TM 55-1520-236-10).** Topics in this subject area are--

(a) TOW system operation and employment.

(b) Turret system operation and employment.

(c) Aerial rocket system operation and employment.

(d) Aerial ballistics.

(e) Combined weapons engagement procedures.

(f) Range estimation.

(g) Range and weapons safety procedures.

(h) Laser operations.

(8) **Night tasks (TCs 1-140 and 1-204 and TM 55-1520-234-10 or TM 55-1520-236-10).** Topics in this subject area are--

(a) Unaided night flight.

(b) Night vision limitations and techniques.

(c) Visual illusions.

(d) Use of lights (internal and external).

(e) Types of vision.

(f) Distance estimation and depth perception.

(g) FLIR sensor optimization (C-NITE).

(h) Aircrew night and NVG requirements.

(i) Night vision goggle operation and limitations.

(j) Weapons employment during night and NVG operations.

(k) Infrared characteristics and FLIR interpretation (C-NITE).

(l) Dark adaptation, night vision protection, and central night blind spot.

(g) **Maintenance test flight troubleshooting and system operations (TM s 55-1520-234-23-1, 55-1520-234-23-2, 55-1520-236 23 series, 55-1520-236-MTF, 55-1520-244-MTF, and 55-2840-248-23).** Topics in this subject area are--

(a) Engine start.

(b) Instrument indications.

(c) Electrical system.

(d) Caution panel indications.

(e) Power plant.

(f) Engine performance check (HIT/TEAC).

(g) Power train.

(h) Hydraulic system.

(i) Flight controls.

(j) Vibrations.

(k) Fuel system.

(l) Communication and navigation equipment.

(m) Stability and control augmentation system.

c. **Phase 3--Flight Evaluation.** This phase consists of a briefing; a preflight inspection; engine-start, hover, and run-up procedures; flight tasks; and engine-shutdown and after-landing tasks.

(1) **Briefing.** The evaluator will explain the flight evaluation procedure and tell the examinee which tasks he will perform. For unit trainers and evaluators, the individual conducting the evaluation must advise the examinee that he may deliberately perform some tasks not according to standard to check the examinee's diagnostic and corrective action skills. The evaluator will conduct or have the examinee conduct a crew briefing per Task 1000 (page 6-13).

NOTE: TM 55-1520-234-10 or TM 55-1520-236-10 and local directives contain additional crew briefing requirements.

(2) **Preflight inspection and engine-start and run-up procedures.** The evaluator will evaluate the examinee's use of TM 55-1520-234-CL or TM 55-1520-236-CL and, if applicable, TM 55-1520-236-MTF or TM 55-1520-244-MTF. He also will have the examinee properly identify at least two aircraft components and two weapon system components and discuss their functions.

(3) **Flight tasks.** At a minimum, the evaluator will evaluate those tasks identified as mandatory in Chapter 5 and those mission/additional tasks selected by the commander for evaluation. He may randomly select for evaluation any other tasks listed on the task list established by the commander. An evaluator must demonstrate an ability to instruct or evaluate appropriate flight tasks. A unit trainer must demonstrate an ability to instruct topics in the areas in which he performs UT duties. When used as part of the proficiency flight evaluation, the evaluation may include an orientation of the local area, checkpoints, weather, and other pertinent information.

(4) **Engine-shutdown and after-landing tasks.** The evaluator will evaluate the examinee's use of TM 55-1520-234-CL or TM 55-1520-236-CL and, if applicable, TM 55-1520-236-MTF or TM 55-1520-244-MTF.

d. **Phase 4--Debriefing.** During this phase, the evaluator will--

(1) Use the forms listed below, if applicable, to critique the examinee's performance.

(a) DA Form 4507-R (Standard Evaluation/Training Grade Slip).

(b) DA Form 4507-2-R (Continuation Comment Slip).

(c) DA Form 5051-4-R (Maintenance Test Flight Maneuvers Grade Slip (AH-1)).

(d) DA Form 5812-R (Maneuver/Procedure Grade Slip for AH-1 Aviators).

(e) DA Form 7121-R (Battle-Rostered Crew Evaluation/Training Grade Slip).

(2) Discuss, with the examinee, the examinee's strengths and weaknesses.

(3) Offer the examinee recommendations for improvement.

(4) Tell the examinee whether he passed or failed the evaluation.

(5) Complete the applicable DA forms in (1) above per instructions in Chapter 9.

(6) Ensure that the examinee reviews and signs the applicable DA forms in (1) above per instructions in Chapter 9.

8-4. BATTLE-ROSTERED CREW EVALUATION

a. This evaluation is conducted to determine a crew's ability to perform all required tasks in the day mode and, if applicable, the NVG mode. (Only crew members in NVG-designated positions will be evaluated in the NVG mode.)

b. Evaluators must evaluate the crew during a mission to ensure that the crew members perform the tasks to standards. To observe a mission, the evaluator may use any combination of the methods described below, depending on assets and aircraft capabilities.

(1) Observation from the instructor/operator station of an AH1FWS.

NOTE: Not all tasks can be performed in the simulator.

(2) Observation from another aircraft as wingman during multihelicopter operations.

(3) Review of video tapes after a mission.

(4) Debriefing and interrogation of the crew.

c. When the crew has demonstrated proficiency in all crew tasks, both during the day and with the NVG (if applicable), and the unit commander is satisfied that the crew has met the standards for each task, he will certify the crew as CRL 1. The evaluator will use DA Form 7121-R to record the evaluation results.

d. Crews must be evaluated at least annually within the 90 days that precede the anniversary of their certification. No-notice evaluations are encouraged. Crews will be decertified if they do not meet CRL 1 requirements stated in TC 1-210.

8-5. PROFICIENCY FLIGHT EVALUATION

This evaluation is conducted per TC 1-210, using guidelines established by the commander. After the evaluation, the evaluator will debrief the examinee and complete DA Forms 4507-R, 4507-2-R (if applicable), 5051-4-R (if applicable), 5812-R, and 7121-R per instructions in Chapter 9. A proficiency flight evaluation is conducted to determine--

a. An individual's proficiency when questioned by the commander.

b. An individual's proficiency when the individual's currency has lapsed per AR 95-1.

c. Which readiness level is appropriate for an individual to enter upon unit assignment.

8-6. ANNUAL NVG STANDARDIZATION FLIGHT EVALUATION

This evaluation is conducted per TC 1-210 using this manual and the Commander's Task List. After the evaluation, the evaluator will debrief the examinee and complete DA Forms 4507-R, 4507-2-R (if applicable), 5812-R, and 7121-R per instructions in Chapter 9.

8-7. POSTACCIDENT FLIGHT EVALUATION

This evaluation is required by AR 95-1. The type and nature of the evaluation depend on the crew duties the crew member was performing at the time of the accident. Emphasis should be placed on evaluating the task which was being performed at the time of the accident under similar conditions, if possible. Safe operating practices must never be sacrificed in an attempt to re-create the conditions that existed at the time of the accident. After the evaluation, the evaluator will debrief the examinee and complete DA Forms 4507-R, 4507-2-R (if applicable), 5051-4-R (if applicable), and 5812-R per instructions in Chapter 9.

8-8. MEDICAL FLIGHT EVALUATION

This evaluation is conducted per AR 95-1. The evaluator, on the recommendation of the flight surgeon, will require the examinee to perform a series of tasks most affected by the examinee's disability. The evaluation should measure the examinee's potential to perform ATM tasks despite his disability. It should not be based on current proficiency.

a. After the examinee has completed the medical flight evaluation, the evaluator will prepare a memorandum. The memorandum will include--

(1) A description of the environmental conditions under which the evaluation was conducted; for example, day, night, or overcast.

(2) A list of tasks performed during the evaluation.

(3) A general statement of the individual's ability to perform with the disability and under what conditions he can perform.

b. The unit commander will then forward the memorandum and DA Forms 4507-R, 4507-2-R (if applicable), 5051-4-R (if applicable), and 5812-R to Commander, US Army Aviation Center, ATTN: HSXY-AER, Fort Rucker, AL 36362-5333.

8-9. NO-NOTICE EVALUATION

The commander directs the no-notice evaluation and administers it using the guidelines in paragraph 8-3 above. The evaluation is used to determine the crew member's and crew's proficiency and to provide the commander an indication of the status of his training program. It may be an oral, a written, or a flight evaluation (or any combination or portion of the three) as directed by the commander. After the evaluation, the evaluator will debrief the crew member or crew and complete DA Forms 4507-R, 4507-2-R (if applicable), 5051-4-R (if applicable), 5812-R, and 7121-R per instructions in Chapter 9.

CHAPTER 9

AIRCREW GRADING SYSTEM

The aircrew grading system provides the commander a complete and continuous performance record on each crew member in his unit. These records reflect the performance of individuals at a given time. Poor performance may or may not indicate inadequacy on the part of the crew member. The problem may be with the unit training program itself. A detailed analysis of all records should tell the commander where the problem is. Only then should he attempt to fix it. Five separate forms are used for evaluation or training flights. Blank copies of these forms are at the back of this training circular. They may be reproduced locally on 5 1/2- by 8-inch paper. The importance of these records to the commander as quality control and standardization tools cannot be overstated. They must be filled out carefully, completely, and legibly (printed in dark blue or black ink).

9-1. DA FORM 4507-R (STANDARD EVALUATION/TRAINING GRADE SLIP)

This form is used to record information concerning evaluations or training. It consists of two pages and is identical for all Army aircraft or simulation devices. Figures 9-1 and 9-2 (pages 9-3 and 9-4) show a sample of a completed DA Form 4507-R. Instructions for completing this form are given below.

a. **Examinee/Trainee and Evaluator/Instructor.** Required entries are self-explanatory. Show last names first.

b. **Flight Time Data.**

(1) **Total hours.** Enter total hours (fixed-wing or rotary-wing) if required by local directives.

(2) **Purpose.** Circle evaluation or training. If evaluation, write in the specific purpose of the evaluation flight; for example, proficiency flight.

NOTE: UTs must circle training in the purpose block.

(3) **Time today and cumulative time.** Enter flight time today at the completion of the evaluation or training flight. Use the cumulative time block to record accrued flight training time. When more than one flight period is required for the evaluation, enter the accrued evaluation time.

(4) **Seat.** Enter the applicable crew station (FS for front seat or BS for backseat).

(5) **Type aircraft, crew duty, type of training, and time flown.** Enter the type of aircraft, and place an X in the appropriate blocks. Circle NVG or NVS, as appropriate, when the type of training includes a night vision device. (If the type of training or crew duty position is other than that shown, specify in the space provided.) Enter the time flown in the block below each applicable condition; that is, day, night, hood, WX, simulator, NVG, or NVS.

c. **Evaluator/Instructor Recommendations.** Place an X in the appropriate blocks, and circle the applicable items. If the crew duty position is other than that shown, specify in the space provided. Use the comment slip on the back of the form to explain unsatisfactory performance, referencing the appropriate maneuver or procedure number from DA Form 5051-4-R or DA Form 5812-R. Recommended additional training also may be listed on the back of the form, even though all maneuvers and procedures may have been performed satisfactorily. Use DA Form 4507-2-R if additional space is needed. After completing the evaluation or training--

(1) Debrief the examinee or trainee and inform him of his status.

(2) Sign in the space provided on the front of the form and on the first unused line after the comments on the back.

(3) Obtain the examinee's or trainee's signature on the front of the form and beside your signature on the comment slip. (By signing the form, the examinee or trainee acknowledges that he has been debriefed. His signature does not mean that he concurs or nonconcurs with the results.)

(4) Circle S, U, or NA to indicate the overall grade for the flight based on the considerations below. Then enter the date.

(a) During training flights, individual maneuvers or procedures may be graded unsatisfactory (U) without resulting in an overall grade of unsatisfactory.

(b) When used to develop an individual training program, the proficiency flight evaluation may be ungraded (NA).

(c) During any evaluation flight except for (b) above, failure of any maneuver or procedure will result in an overall grade of unsatisfactory (U). When the examinee or trainee is reevaluated, the maneuvers or procedures graded unsatisfactory, at a minimum, must be evaluated again.

STANDARD EVALUATION/TRAINING GRADE SLIP

For use of this form, see TCs 1-209, 1-211, 1-212, 1-213, 1-214, 1-215, and 1-216; the proponent agency is TRADOC.

EXAMINEE/ TRAINEE	NAME: KING, STEVEN R.	RANK: CW2	SSN: 123-45-6789
	UNIT: HHT 3/4 CAV		BIRTH MONTH: OCT
EVALUATOR/ INSTRUCTOR	NAME: WOOD, RICHARD R.	RANK: CW2	SSN: 289-44-6801
	UNIT: C CO 1/82 CAB		

FLIGHT TIME DATA

TOTAL HOURS (FW):

TOTAL HOURS (RW): 700

PURPOSE: EVALUATION/TRAINING (SPECIFY) APART

TIME TODAY: 4.0 CUMULATIVE TIME: SEAT: FS/BS

TYPE AIRCRAFT: AH-1

		PI	PC	UT	IP	SP	IE	MP	ME	CE	
X	CONTACT				X						
	INSTRUMENT										
X	NVG/NVS				X						
	TACTICS										
	GUNNERY										
	OTHER										

DAY	NIGHT	HOOD	WX	SIMULATOR	NVG	NVS
2.0	1.0				1.0	

EVALUATOR/INSTRUCTOR RECOMMENDATIONS

		PI	PC	UT	IP	SP	IE	MP	ME	CE	
X	(ISSUE) (VALIDATE) ORDERS/STATUS AS				X						
	(SUSPEND) (REVOKE) DUTIES AS										

- [ ] REQUIRES ADDITIONAL (FLIGHT) (ACADEMIC) (SIMULATION DEVICE) TRAINING
- [x] SEE BACK FOR COMMENTS

I HAVE DEBRIEFED THE EXAMINEE OR TRAINEE AND INFORMED HIM OF HIS STATUS.

EVALUATOR'S OR INSTRUCTOR'S SIGNATURE: Richard R. Wood

I HAVE BEEN DEBRIEFED BY THE EVALUATOR OR INSTRUCTOR AND UNDERSTAND MY CURRENT STATUS.

EXAMINEE'S OR TRAINEE'S SIGNATURE: Steven R. King

OVERALL GRADE FOR THIS FLIGHT IS: S U NA DATE: 3 AUG '92

DA FORM 4507-R, MAR 92 EDITION OF SEP 88 IS OBSOLETE

Figure 9-1. Sample of a completed DA Form 4507-R (front)

COMMENT SLIP

THIS HAS BEEN A SATISFACTORY
APART IP EVALUATION.
Steven R. King   Richard R. Wood

PAGE 2, DA FORM 4507-R, MAR 92

Figure 9-2. Sample of a completed DA Form 4507-R (back)

9-2. DA FORM 4507-2-R (CONTINUATION COMMENT SLIP)

This form is used to continue comments from the back of DA Form 4507-R. It consists of two pages and is identical for all Army aircraft or simulation devices. Figures 9-3 and 9-4 (pages 9-6 and 9-7) show a sample of a completed DA Form 4507-2-R. When completing this form, use the procedure described in paragraph 9-1C. When all forms have been completed, staple them together.

9-3. DA FORM 5812-R (MANEUVER/PROCEDURE GRADE SLIP FOR AH-1 AVIATORS)

This form, which consists of two pages, lists the base and mission tasks shown in Chapter 5. Blank spaces are provided to list additional tasks designated by the commander. Figures 9-5 and 9-6 (pages 9-8 and 9-9) show a sample of a completed DA Form 5812-R. The evaluator or instructor should carry this form during the evaluation or training flight. Instructions for completing this form are given below.

a. Enter the examinee’s or trainee’s name (last name first) and the date.

b. Enter either S or U in the grade (GR) block after the examinee or trainee completes each maneuver or procedure.

c. Enter D in the grade block if the task is demonstrated and the crew member is unable to practice it for some reason.

d. Place a diagonal in the grade blocks for all maneuvers or procedures not evaluated. An alternative method is to place a diagonal in the first and last unused blocks and draw a vertical line connecting the two diagonals. Use this method when three or more consecutive maneuvers or procedures are not graded.

e. Enter sound, objective comments, referencing the appropriate maneuver or procedure number, on the back of DA Form 4507-R or, if additional space is needed, on DA Form 4507-2-R. These comments are important for reference by other instructors or evaluators during future training or evaluation.

f. Sign the form in the first unused block.

NOTE: Tasks with circles are mandatory for standardization flight evaluations. Tasks with squares are mandatory for instrument flight evaluations. Tasks with diamonds are mandatory for NVG standardization flight evaluations.

CONTINUATION COMMENT SLIP

For use of this form, see TCs 1-209, 1-211, 1-212, 1-213, 1-214, 1-215, and 1-216; the proponent agency is TRADOC

Examinee's/Trainee's Name: KING, STEVEN R. Date: 3 AUG 92

THIS FORM IS USED TO CONTINUE
COMMENTS FROM THE BACK OF DA FORM 4507-R.
Steven R. King Richard R. Wood

DA FORM 4507-2-R, MAY 87

Figure 9-3. Sample of a completed DA Form 4507-2-R (front)

CONTINUATION COMMENT SLIP

THIS FORM IS USED TO CONTINUE COMMENTS FROM THE BACK OF DA FORM 4507-R.

Steven R. King Richard R. Wood

PAGE 2, DA FORM 4507-2-R, MAY 87

Figure 9-4. Sample of a completed DA Form 4507-2-R (back)

MANEUVER/PROCEDURE GRADE SLIP FOR AH-1 AVIATORS

For use of this form, see TC 1-213; the proponent agency is TRADOC.

Examinee's/Trainee's Name WRIGHT, ORVILLE Date 10 JAN 93

Instructor or evaluator will sign in the first unused block.

NO	STANDARDIZATION EVALUATION/ TRAINING TASKS	GR	NO	STANDARDIZATION EVALUATION/ TRAINING TASKS	GR
1	CREW MISSION BRIEFING	S	29	HOVERING AUTOROTATION	S
2	VFR FLIGHT PLANNING	S	30	SIMULATED ENGINE FAILURE AT A HOVER	S
3	IFR FLIGHT PLANNING		31	SIMULATED ENGINE FAILURE AT ALTITUDE	S
4	DD FORM 365-4		32	SIMULATED ENGINE FAILURE, HIGH SPEED, AT ALTITUDE	S
5	DA FORM 4887-R	S	33	MANUAL THROTTLE OPERATION, EMERGENCY GOVERNOR MODE	S
6	PREFLIGHT INSPECTION	S	34	FLIGHT WITH SCAS DISENGAGED	
7	ENGINE-START THROUGH AFTER-LANDING CHECKS	S	35	TERRAIN FLIGHT NAVIGATION	S
8	HOVER POWER CHECK	S	36	AERIAL OBSERVATION	
9	HOVERING FLIGHT	S	37	AIRCRAFT, ARMAMENT, AND/OR NVG EMERGENCY PROCEDURES	S
10	NORMAL TAKEOFF	S	38	INSTRUMENT TAKEOFF	
11	SIMULATED MAXIMUM PERFORMANCE TAKEOFF	S	39	RADIO NAVIGATION	S
12	DECELERATION/ACCELERATION		40	HOLDING PROCEDURES	S
13	TRAFFIC PATTERN FLIGHT	S	41	UNUSUAL ATTITUDE RECOVERY	S
14	FUEL MANAGEMENT PROCEDURES	S	42	RADIO COMMUNICATION PROCEDURES	S
15	PILOTAGE AND DEAD RECKONING	S	43	TWO-WAY RADIO FAILURE PROCEDURES	
16	DOPPLER NAVIGATION	S	44	NONPRECISION APPROACH	S
17	VMC APPROACH	S	45	PRECISION APPROACH	S
18	SHALLOW APPROACH TO A RUNNING LANDING	S	46	INADVERTENT IMC PROCEDURES/VHIRP	S
19	CONFINED AREA OPERATIONS	S	47	MASKING AND UNMASKING	S
20	SLOPE OPERATIONS	S	48	TACTICAL COMMUNICATION PROCEDURES AND ECCM	S
21	TERRAIN FLIGHT MISSION PLANNING	S	49	MOVEMENT TECHNIQUES	S
22	TERRAIN FLIGHT TAKEOFF	S	50	MAJOR US/ALLIED AND THREAT EQUIPMENT IDENTIFICATION	S
23	TERRAIN FLIGHT	S	51	AIRCRAFT SURVIVABILITY EQUIPMENT	S
24	HOVER OGE CHECK	S	52	ACTIONS ON CONTACT	S
25	NOE DECELERATION	S	53	WIRE OBSTACLES	S
26	TERRAIN FLIGHT APPROACH	S	54	MARK XII IFF SYSTEM	S
27	HIGH-SPEED FLIGHT		55	WEAPONS LOADING	S
28	EVASIVE MANEUVERS	S	56	WEAPON SYSTEMS PREFLIGHT INSPECTION	S

DA FORM 5812-R, NOV 92 EDITION OF AUG 89 IS OBSOLETE

Figure 9-5. Sample of a completed DA Form 5812-R (front)

MANEUVER/PROCEDURE GRADE SLIP FOR AH-1 AVIATORS					
NO	STANDARDIZATION EVALUATION/ TRAINING TASKS	GR	NO	STANDARDIZATION EVALUATION/ TRAINING TASKS	GR
57	ROCKET MANAGEMENT SYSTEM	S			
58	ARMAMENT SYSTEM CHECKS	S			
59	M28/M197 TURRET SYSTEM	S			
60	ROCKET LAUNCHERS	S			
61	TOW MISSILE SYSTEM	S			
62	WEAPON SYSTEMS SAFE AND CLEARANCE	S			
63	FIRING TECHNIQUES	S			
64	FIRING POSITION OPERATIONS	S			
65	TARGET HANDOVER				
66	PINNACLE OR RIDGELINE OPERATION				
67	FM RADIO HOMING				
68	FORMATION FLIGHT				
69	INDIRECT FIRE				
70	DIVING FLIGHT				
71	STANDARD AUTOROTATION				
72	LOW-LEVEL AUTOROTATION				
73	SIMULATED ANTITORQUE MALFUNCTION (FPS)				
74	TACTICAL REPORT				
75	STANDARD AUTOROTATION WITH TURN				
76	SIMULATED HYDRAULIC SYSTEM MALFUNCTION	S			
77	LOW-LEVEL, HIGH-AIRSPEED AUTOROTATION				
78	LOW-LEVEL, LOW-AIRSPEED AUTOROTATION				
79	ORAL EVALUATION	S			
	Wilbur E. Wright				

REVERSE, DA FORM 5812-R, NOV 92

Figure 9-6. Sample of a completed DA Form 5812-R (back)

9-4. DA FORM 5051-4-R (MAINTENANCE TEST FLIGHT MANEUVERS GRADE SLIP (AH-l))

This form provides a record of evaluation and training conducted at the unit level. It addresses those tasks and procedures required in the performance of maintenance test flights. DA Form 5051-4-R is an important tool in attaining standardization and quality control. It should be filled out correctly and legibly. Figure 9-7 shows a sample of a completed DA Form 5051-4-R. The evaluator or instructor should carry this form during the evaluation or training flight. Instructions for completing this form are given below.

a. Enter the examinee's or trainee's name (last name first) and the date.

b. Enter either S or U in the grade (GR) block after the examinee or trainee completes each maneuver or procedure.

c. Enter D in the grade block if the task is demonstrated and the crew member is unable to practice it for some reason.

d. Place a diagonal in the grade blocks for all maneuvers or procedures not evaluated. An alternative method is to place a diagonal in the first and last unused blocks and draw a vertical line connecting the two diagonals. Use this method when three or more consecutive maneuvers or procedures are not graded.

e. Enter sound, objective comments, referencing the appropriate maneuver or procedure number, on the back of DA Form 4507-R or, if additional space is needed, on DA Form 4507-2-R. These comments are important for reference by other instructors or evaluators during future training or evaluation.

f. Sign the form in the first unused block.

MAINTENANCE TEST FLIGHT MANEUVERS GRADE SLIP (AH-1)

For use of this form, see TC 1-213; the proponent agency is TRADOC.

Examinee's / Trainee's Name KING, STEVEN R. Date 3 Aug 92

Instructor or evaluator will sign in the first unused block.

NO	MANEUVER/ PROCEDURE	GR
1	PRIOR-TO-MAINTENANCE-TEST-FLIGHT CHECKS	S
2	INTERIOR CHECKS	S
3	BEFORE-STARTING-ENGINE CHECKS	S
4	STARTING ENGINE CHECKS	S
5	ENGINE RUN-UP CHECKS	S
6	BASELINE AND NORMAL ENGINE HEALTH INDICATOR TEST	
7	BEFORE-TAKEOFF CHECK	S
8	TAKEOFF-TO-HOVER CHECK	S
9	TORQUEMETER/POWER CHECK	S
10	PEDAL AUTHORITY CHECK	S
11	YAW CHANNEL RESPONSE	S
12	SIDEWARD HOVERING FLIGHT	
13	FORWARD HOVERING FLIGHT	
14	PYLON MOUNTS CHECK (SCAS ON AND SCAS OFF)	S
15	ENGINE RESPONSE CHECK	S
16	LOW RPM HOVER CHECK	S
17	MANUAL THROTTLE OPERATIONS, EMERGENCY GOVERNOR MODE	S
18	POWER CYLINDER CHECK	S
19	COLLECTIVE SERVO AUTHORITY CHECK	S
20	TAKEOFF AND CLIMB-OUT CHECKS	S
21	INSTRUMENT OPERATION AND CORRELATION CHECK	S
22	CONTROL RIGGING CHECKS	S
23	AUTOROTATION RPM CHECK	S
24	VIBRATION ANALYSIS	S
25	COMMUNICATION AND NAVIGATION EQUIPMENT CHECKS	S
26	ENGINE TOPPING CHECK	S
27	AFTER-LANDING AND ENGINE SHUTDOWN CHECKS	S
28	SPECIAL/DETAILED PROCEDURES	S
29	ORAL EVALUATION	S
30	Richard R. Wood	
31		
32		
33		

NOTE: ITEMS 30 THROUGH 33 INTENTIONALLY LEFT BLANK FOR LATER USE.

DA FORM 5051-4-R, NOV 92 EDITION OF JUL 90 IS OBSOLETE.

Figure 9-7. Sample of a completed DA Form 5051-4-R

9-5. DA FORM 7121-R (BATTLE-ROSTERED CREW EVALUATION/TRAINING GRADE SLIP)

This form is used to record information about battle-rostered crew evaluations and training. It consists of two pages and is identical for all Army aircraft or simulation devices. Figures 9-8 and 9-9 (pages 9-14 and 9-15) show a sample of a completed DA Form 7121-R. Instructions for completing this form are given below.

a. **Battle-Rostered Crew Examinees/Trainees and Evaluator/ Instructor.** Fill in the names and ranks of the PC and PI in the space provided. Enter the duty symbols, names, and ranks of the nonrated crew members in the space provided. Then enter the unit of the crew. Required entries in the evaluator/instructor block are self-explanatory. Show last names first.

b. **Crew Data.**

(1) **Total battle-rostered crew hours.** Enter the total hours flown as a battle-rostered crew.

(2) **Date designated a battle-rostered crew.** Enter the CRL 1 certification date.

(3) **Purpose.** Circle evaluation or training. If evaluation, write in the specific purpose of the evaluation flight; for example, no-notice.

(4) **Time today and cumulative time.** Enter flight time today at the completion of the evaluation or training flight. Use the cumulative time block to record accrued flight training time. When more than one flight period is required for the evaluation, enter the accrued evaluation time.

(5) **Type of aircraft, crew tasks, mode of flight, and time flown.** Enter the type of aircraft. For crew tasks evaluated, enter either S or U in the space provided and circle the appropriate mode of flight. Enter the time flown in the block below each applicable condition; that is, day, night, WX, simulator, NVG, and NVS.

c. **Evaluator/Instructor Recommendations.** Enter an X in the box, and circle the appropriate status of crew qualifications. If the crew requires additional training, place an X in the appropriate box and circle the type of training. Enter an X in the box provided if comments are on the back. Use the space on the back to explain unsatisfactory performance, referencing the appropriate crew task. Recommended additional training also may be listed on the back, even though the crew tasks were performed satisfactorily. After completing the evaluation--

(1) Debrief the examinees or trainees and inform them of their status.

(2) Sign in the space provided on the front of the form and on the first unused line after the comments on the back.

(3) Obtain the PC'S, PI's, and nonrated crew members' signatures on the front of the form and beside your signature after the comments on the back. (By signing the form, the crew members acknowledge that they have been debriefed. Their signatures do not mean that they concur or nonconcur with the results.)

(4) Circle S, U, or NA to indicate the overall grade for the flight based on the considerations below. Then enter the date.

(a) During training flights, individual maneuvers or procedures may be graded unsatisfactory (U) without resulting in an overall grade of unsatisfactory.

(b) When used to develop a crew training program, the proficiency flight evaluation may be ungraded (NA).

(c) During any evaluation flight, an unsatisfactory grade (U) for an individual crew member will result in an overall grade of unsatisfactory for the crew. When the crew is reevaluated, the tasks graded unsatisfactory, at a minimum, must be evaluated again.

BATTLE-ROSTERED CREW EVALUATION/TRAINING GRADE SLIP

For use of this form, see TC 1-209 and TCs 1-211 through 1-219; the proponent agency is TRADOC.

BATTLE-ROSTERED CREW EXAMINEES/ TRAINEES		NAME	RANK
	PC:	JAMES, WINDOM J.	CW4
	PI:	GOSSARD, JAY J.	CW3
	NONRATED CREW MEMBERS		
	DUTY SYMBOL	NAME	RANK
	UNIT:		
EVALUATOR/ INSTRUCTOR		NAME	RANK
		YAEGER, CHARLES E.	CPT
	UNIT:	B CO 1-282 AVN.	

CREW DATA

TOTAL BATTLE-ROSTERED CREW HOURS: 30	DATE DESIGNATED A BATTLE-ROSTERED CREW: 3Aug 92
PURPOSE: EVALUATION/TRAINING NO-NOTICE	
TIME TODAY: 2.0	CUMULATIVE TIME:

TYPE AIRCRAFT: AH-1

CREW TASK 1 S	D/N/NVD	CREW TASK 6 ____	D/N/NVD
CREW TASK 2 S	D/N/NVD	CREW TASK 7 ____	D/N/NVD
CREW TASK 3 S	D/N/NVD	CREW TASK 8 S	D/N/NVD
CREW TASK 4 ____	D/N/NVD	CREW TASK 9 ____	D/N/NVD
CREW TASK 5 S	D/N/NVD	CREW TASK 10 ____	D/N/NVD

DAY	NIGHT	WX	SIMULATOR	NVG	NVS	
				2.0		

EVALUATOR/INSTRUCTOR RECOMMENDATIONS

- [X] (ISSUE) (VALIDATE) CREW QUALIFICATIONS
- [ ] (SUSPEND) (REVOKE) CREW QUALIFICATIONS
- [ ] REQUIRES ADDITIONAL (FLIGHT) (ACADEMIC) (SIMULATION DEVICE) TRAINING
- [X] SEE BACK FOR COMMENTS

I HAVE DEBRIEFED THE EXAMINEES/TRAINEES AND INFORMED THEM OF THEIR STATUS.

EVALUATOR'S/INSTRUCTOR'S SIGNATURE: Charles E. Yaeger

WE HAVE BEEN DEBRIEFED BY THE EVALUATOR/INSTRUCTOR AND UNDERSTAND OUR CURRENT STATUS.

PC'S SIGNATURE: Windom J. James

PI'S SIGNATURE: Jay J. Gossard

NONRATED CREW MEMBERS' SIGNATURES: ____________

OVERALL GRADE FOR THIS FLIGHT IS: S U NA DATE: 26 MAR 92

DA FORM 7121-R, MAR 92

Figure 9-8. Sample of a completed DA Form 7121-R (front)

COMMENTS

THIS HAS BEEN A SATISFACTORY NO-NOTICE CREW EVALUATION FOR CW4 JAMES AND CW3 GOSSARD. IT WAS CONDUCTED FROM THE CHALK 2 POSITION DURING FORMATION FLIGHT.

Windom J. James Charles E. Yeager

Jay J. Gossard

PAGE 2, DA FORM 7121-R, MAR 92

Figure 9-9. Sample of a completed DA Form 7121-R (back)

GLOSSARY

ADI	attitude direction indicator
AGL	above ground level
AH	attack helicopter
AH1FWS	AH-1 flight weapons simulator
AHO	above highest obstacle
AIM	Airman's Information Manual
AL	Alabama
ALT	airborne laser tracker
ammo	ammunition
ANVIS	aviator's night vision imaging system
APART	annual proficiency and readiness test
AR	Army regulation
ARNG	Army National Guard
ASE	aircraft survivability equipment
ASET	aircraft survivability equipment trainer
ASR	airport surveillance radar
ATC	air traffic control
ATM	aircrew training manual
ATS	acquisition, track, stow (switch)
ATTN	attention
avail	available
AVIM	aviation intermediate maintenance
avn	aviation
AVUM	aviation unit maintenance
BMP	Boyevaya Mashina Pekhoty [literal Russian: combat vehicle, infantry (amphibious armored)]
BS	backseat
C	Celsius
cal	calibrated
CDB	course deviation bar
CDI	course deviation indicator
CE	crew chief
CG	center of gravity
CL	checklist
C-NITE	Cobra night
co	company
cont	continuous
CONUS	continental United States
CPG	copilot-gunner
CRL	crew readiness level

D	day; demonstrated (for grade slip purposes)
DA	Department of the Army
DC	District of Columbia
DD	Department of Defense
DOD	Department of Defense
DOES	Directorate of Evaluation and Standardization
DSN	Defense Switching Network
ECAS	Enhanced Cobra/TOW Armament System
ECCM	electronic counter-countermeasures
ECU	electronic control unit
EGT	exhaust gas temperature
emerg	emergency
eng	engine
ETA	estimated time of arrival
ETE	estimated time en route
ETL	effective translational lift
ETP	exportable training packet
F	Fahrenheit
FAA	Federal Aviation Administration
FAC	flight activity category
FAR	Federal Aviation Regulations
FAT	free air temperature
FDC	fire direction center
FIH	Flight Information Handbook
flex	flexible
FLIP	flight information publication
FLIR	forward looking infrared
flt	flight
FM	field manual or frequency modulated
FPM	feet per minute
FPS	fixed pedal setting
FS	front seat
FW	fixed wing
G	gravitational force
GA	Georgia
GR	grade
GWT	gross weight
HIT	health indicator test
HQ	headquarters
HQDA	Headquarters, Department of the Army
hr	hour (s)
HSI	horizontal situation indicator
HSS	helmet sight subsystem
HUD	heads-up display
hyd	hydraulic

IAS	indicated airspeed
ICAO	International Civil Aviation Organization
IE	instrument flight examiner
IFF	identification, friend or foe (radar)
IFR	instrument flight rules
IGE	in-ground effect
ILS	instrument landing system
IMC	instrument meteorological conditions
incl	included
ind	indicated
IP	instructor pilot
KIAS	knots indicated airspeed
KTAS	knots true airspeed
lb	pound(s)
LOC	localizer
MAP	missed approach point
max	maximum
ME	maintenance test flight evaluator
METL	mission essential task list
METT-T	mission, enemy, terrain, troops, and time available
MIJI	meaconing, intrusion, jamming, and interference
min	minimum
mm	millimeter(s)
mod	modified
MOPP	mission-oriented protective posture
MP	maintenance test pilot
MTF	maintenance test flight
N	night
N1	gas producer (speed)
N2	power turbine (speed)
NA	not applicable
NAS	National Airspace System
NATO	North Atlantic Treaty Organization
nav	navigation
NAVAID	navigational aid
NBC	nuclear, biological, chemical
NGR	National Guard regulation
	number
NOE	nap-of-the-earth
NOTAM	notice to airmen
NSN	national stock number
NVD	night vision device
NVG	night vision goggles
NVS	night vision system

OGE	out-of-ground effect
OH	observation helicopter
P	pilot not on the controls
P*	pilot on the controls
PA	pressure altitude
pam	pamphlet
pax	passenger
PC	pilot in command
PHS	pilot helmet sight
PI	pilot (for grade slip purposes)
PLT	pilot
PM	preventive maintenance
PMD	preventive maintenance daily
POI	program(s) of instruction
PPC	performance planning card
prod	production
psi	pounds per square inch
PSI	pilot's steering indicator
R	reproducible
R/C	rate of climb
ret	retract
RL	readiness level
RMI	radio magnetic indicator
RMS	rocket management system
RPM	revolutions per minute
RRPM	rotor revolutions per minute
RW	rotary wing
S	satisfactory (for grade slip purposes)
SALUTE	size, activity, location, unit, time, equipment
SAM	send a message
SCAS	stability and control augmentation system
SFTS	synthetic flight training systems
SHC	sight hand control
SIF	selective identification feature
SM	statute mile
SOP	standing operating procedure
SP	standardization instructor pilot
SSN	social security number
STANAG	standardization agreement
std	standard
TAMMS-A	The Army Maintenance Management System-Aviation
TAS	true airspeed
TC	training circular
TDA	tables of distribution and allowances
TEAC	turbine engine analysis check
TGT	turbine gas temperature

TM	technical manual
TOE	table(s) of organization and equipment
TOW	tube-launched, optically tracked, wire-guided
TRADOC	United States Army Training and Doctrine Command
TSU	telescopic sight unit
U	unsatisfactory (for grade slip purposes)
UH	utility helicopter
US	United States (of America)
USAALS	United States Army Aviation Logistics School
USAAVNC	United States Army Aviation Center
USAF	United States Air Force
UT	unit trainer
VA	Virginia
VFR	visual flight rules
VHF	very high frequency
VHIRP	vertical helicopter instrument recovery procedures
VMC	visual meteorological conditions
Vne	velocity, not to exceed (airspeed)
VOR	VHF omnidirectional range
VSI	vertical speed indicator
wt	weight
wx	weather
Z	Zulu (Greenwich mean time)

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READING RECOMMENDED

This reading contains relevant supplemental information.

FM 25-100. Training the Force. 15 November 1988.

INDEX

This index is organized alphabetically by topics and subtopics. Topics and subtopics are identified by page numbers.

STANDARD EVALUATION/TRAINING GRADE SLIP

For use of this form, see TCs 1-209, 1-211, 1-212, 1-213, 1-214, 1-215, and 1-216; the proponent agency is TRADOC.

EXAMINEE/ TRAINEE	NAME RANK SSN	
	UNIT	BIRTH MONTH
EVALUATOR/ INSTRUCTOR	NAME RANK SSN	
	UNIT	

FLIGHT TIME DATA

TOTAL HOURS (FW):	TOTAL HOURS (RW):	
PURPOSE: EVALUATION/TRAINING (SPECIFY)		
TIME TODAY:	CUMULATIVE TIME:	SEAT:

TYPE AIRCRAFT: ______		PI	PC	UT	IP	SP	IE	MP	ME	CE	
☐ CONTACT											
☐ INSTRUMENT											
☐ NVG/NVS											
☐ TACTICS											
☐ GUNNERY											
☐ OTHER ______											

DAY	NIGHT	HOOD	WX	SIMULATOR	NVG	NVS	

EVALUATOR/INSTRUCTOR RECOMMENDATIONS

		PI	PC	UT	IP	SP	IE	MP	ME	CE	
☐ (ISSUE) (VALIDATE) ORDERS/STATUS AS											
☐ (SUSPEND) (REVOKE) DUTIES AS											

☐ REQUIRES ADDITIONAL (FLIGHT) (ACADEMIC) (SIMULATION DEVICE) TRAINING

☐ SEE BACK FOR COMMENTS

I HAVE DEBRIEFED THE EXAMINEE OR TRAINEE AND INFORMED HIM OF HIS STATUS.

EVALUATOR'S OR INSTRUCTOR'S SIGNATURE: ______

I HAVE BEEN DEBRIEFED BY THE EVALUATOR OR INSTRUCTOR AND UNDERSTAND MY CURRENT STATUS.

EXAMINEE'S OR TRAINEE'S SIGNATURE: ______

OVERALL GRADE FOR THIS FLIGHT IS: | S | U | NA | DATE:

DA FORM 4507-R, MAR 92 EDITION OF SEP 88 IS OBSOLETE

COMMENT SLIP

CONTINUATION COMMENT SLIP

For use of this form, see TCs 1-209, 1-211, 1-212, 1-213, 1-214, 1-215, and 1-216; the proponent agency is TRADOC

Examinee's/Trainee's Name: ______________________ Date: __________

DA FORM 4507-2-R, MAY 87

CONTINUATION COMMENT SLIP

RW PERFORMANCE PLANNING CARD

For use of this form, see TCs 1-209,1-211, 1-213, 1-215, and 1-216; the proponent agency is TRADOC.

DEPARTURE

PA	FAT
TAKEOFF GWT	LOAD
CALIBRATION FACTOR	FUEL

	DUAL ENG	SINGLE ENG CAL	SINGLE ENG IND
MAX TORQUE AVAIL			
CONT TORQUE AVAIL			
GO/NO-GO TORQUE (OGE/IGE)			
PREDICTED HOVER TORQUE			
HOVER OGE TORQUE			
MAX ALLOWABLE GWT (OGE/IGE)			
MAX R/C OR ENDURANCE IAS			
MAX RANGE IAS			
SINGLE-ENG CAPABILITY IAS (MIN/MAX)			

VALIDATION FACTOR ____________________

SAFE PEDAL MARGIN YES_______ NO_______

ARRIVAL

PA	FAT
LANDING GWT	

	DUAL ENG	SINGLE ENG CAL	SINGLE ENG IND
MAX ALLOWABLE GWT (OGE/IGE)			
MAX TORQUE AVAIL			
HOVER IGE TORQUE			
HOVER OGE TORQUE			

SAFE PEDAL MARGIN YES_______ NO_______

DA FORM 4887-R, MAY 87

FUEL MANAGEMENT

FUEL/TIME	
START ________ / ________	BURNOUT ____________ Z
STOP ________ / ________	RESERVE ____________ Z
	CONSUMPTION RATE ________ LB PER HR

LONGITUDINAL CYCLIC TRIM

RET VNE KIAS	PROG VNE KIAS

CRUISE DATA

PA	FAT	VNE KIAS

	DUAL ENG	SINGLE ENG
CRUISE SPEED	______ IAS ______ TAS	______ IAS ______ TAS
CRUISE TORQUE		
CRUISE FUEL FLOW		

OPTIONAL DATA

WEIGHT COMPUTATION

BASIC WT (OIL INCL)	
CREW AND FLT EQUIP	
EMERG OR OTHER EQUIP	
OPERATING WT	
FUEL WT	
PAX-BAGGAGE-CARGO-AMMO	
TAKEOFF WT (MINUS RUN-UP FUEL)	

REMARKS:

MAINTENANCE TEST FLIGHT MANEUVERS GRADE SLIP (AH-1)

For use of this form, see TC 1-213; the proponent agency is TRADOC.

Examinee's / Trainee's Name__________________________ Date __________

Instructor or evaluator will sign in the first unused block.

NO	MANEUVER/ PROCEDURE	GR
1	PRIOR-TO-MAINTENANCE-TEST-FLIGHT CHECKS	
2	INTERIOR CHECKS	
3	BEFORE-STARTING-ENGINE CHECKS	
4	STARTING ENGINE CHECKS	
5	ENGINE RUN-UP CHECKS	
6	BASELINE AND NORMAL ENGINE HEALTH INDICATOR TEST	
7	BEFORE-TAKEOFF CHECK	
8	TAKEOFF-TO-HOVER CHECK	
9	TORQUEMETER/POWER CHECK	
10	PEDAL AUTHORITY CHECK	
11	YAW CHANNEL RESPONSE	
12	SIDEWARD HOVERING FLIGHT	
13	FORWARD HOVERING FLIGHT	
14	PYLON MOUNTS CHECK (SCAS ON AND SCAS OFF)	
15	ENGINE RESPONSE CHECK	
16	LOW RPM HOVER CHECK	
17	MANUAL THROTTLE OPERATIONS, EMERGENCY GOVERNOR MODE	
18	POWER CYLINDER CHECK	
19	COLLECTIVE SERVO AUTHORITY CHECK	
20	TAKEOFF AND CLIMB-OUT CHECKS	
21	INSTRUMENT OPERATION AND CORRELATION CHECK	
22	CONTROL RIGGING CHECKS	
23	AUTOROTATION RPM CHECK	
24	VIBRATION ANALYSIS	
25	COMMUNICATION AND NAVIGATION EQUIPMENT CHECKS	
26	ENGINE TOPPING CHECK	
27	AFTER-LANDING AND ENGINE SHUTDOWN CHECKS	
28	SPECIAL/DETAILED PROCEDURES	
29	ORAL EVALUATION	
30		
31		
32		
33		

NOTE: ITEMS 30 THROUGH 33 INTENTIONALLY LEFT BLANK FOR LATER USE.

DA FORM 5051-4-R, NOV 92 EDITION OF JUL 90 IS OBSOLETE.

MANEUVER/PROCEDURE GRADE SLIP FOR AH-1 AVIATORS

For use of this form, see TC 1-213; the proponent agency is TRADOC.

Examinee's/Trainee's Name ________________________ Date ____________

Instructor or evaluator will sign in the first unused block.

NO	STANDARDIZATION EVALUATION/ TRAINING TASKS	GR	NO	STANDARDIZATION EVALUATION/ TRAINING TASKS	GR
1	CREW MISSION BRIEFING		29	HOVERING AUTOROTATION	
2	VFR FLIGHT PLANNING		30	SIMULATED ENGINE FAILURE AT A HOVER	
3	IFR FLIGHT PLANNING		31	SIMULATED ENGINE FAILURE AT ALTITUDE	
4	DD FORM 365-4		32	SIMULATED ENGINE FAILURE, HIGH SPEED, AT ALTITUDE	
5	DA FORM 4887-R		33	MANUAL THROTTLE OPERATION, EMERGENCY GOVERNOR MODE	
6	PREFLIGHT INSPECTION		34	FLIGHT WITH SCAS DISENGAGED	
7	ENGINE-START THROUGH AFTER-LANDING CHECKS		35	TERRAIN FLIGHT NAVIGATION	
8	HOVER POWER CHECK		36	AERIAL OBSERVATION	
9	HOVERING FLIGHT		37	AIRCRAFT, ARMAMENT, AND/OR NVG EMERGENCY PROCEDURES	
10	NORMAL TAKEOFF		38	INSTRUMENT TAKEOFF	
11	SIMULATED MAXIMUM PERFORMANCE TAKEOFF		39	RADIO NAVIGATION	
12	DECELERATION/ACCELERATION		40	HOLDING PROCEDURES	
13	TRAFFIC PATTERN FLIGHT		41	UNUSUAL ATTITUDE RECOVERY	
14	FUEL MANAGEMENT PROCEDURES		42	RADIO COMMUNICATION PROCEDURES	
15	PILOTAGE AND DEAD RECKONING		43	TWO-WAY RADIO FAILURE PROCEDURES	
16	DOPPLER NAVIGATION		44	NONPRECISION APPROACH	
17	VMC APPROACH		45	PRECISION APPROACH	
18	SHALLOW APPROACH TO A RUNNING LANDING		46	INADVERTENT IMC PROCEDURES/VHIRP	
19	CONFINED AREA OPERATIONS		47	MASKING AND UNMASKING	
20	SLOPE OPERATIONS		48	TACTICAL COMMUNICATION PROCEDURES AND ECCM	
21	TERRAIN FLIGHT MISSION PLANNING		49	MOVEMENT TECHNIQUES	
22	TERRAIN FLIGHT TAKEOFF		50	MAJOR US/ALLIED AND THREAT EQUIPMENT IDENTIFICATION	
23	TERRAIN FLIGHT		51	AIRCRAFT SURVIVABILITY EQUIPMENT	
24	HOVER OGE CHECK		52	ACTIONS ON CONTACT	
25	NOE DECELERATION		53	WIRE OBSTACLES	
26	TERRAIN FLIGHT APPROACH		54	MARK XII IFF SYSTEM	
27	HIGH-SPEED FLIGHT		55	WEAPONS LOADING	
28	EVASIVE MANEUVERS		56	WEAPON SYSTEMS PREFLIGHT INSPECTION	

DA FORM 5812-R, NOV 92 EDITION OF AUG 89 IS OBSOLETE

MANEUVER/PROCEDURE GRADE SLIP FOR AH-1 AVIATORS					
NO	STANDARDIZATION EVALUATION/ TRAINING TASKS	GR	NO	STANDARDIZATION EVALUATION/ TRAINING TASKS	GR
57	ROCKET MANAGEMENT SYSTEM				
58	ARMAMENT SYSTEM CHECKS				
59	M28/M197 TURRET SYSTEM				
60	ROCKET LAUNCHERS				
61	TOW MISSILE SYSTEM				
62	WEAPON SYSTEMS SAFE AND CLEARANCE				
63	FIRING TECHNIQUES				
64	FIRING POSITION OPERATIONS				
65	TARGET HANDOVER				
66	PINNACLE OR RIDGELINE OPERATION				
67	FM RADIO HOMING				
68	FORMATION FLIGHT				
69	INDIRECT FIRE				
70	DIVING FLIGHT				
71	STANDARD AUTOROTATION				
72	LOW-LEVEL AUTOROTATION				
73	SIMULATED ANTITORQUE MALFUNCTION (FPS)				
74	TACTICAL REPORT				
75	STANDARD AUTOROTATION WITH TURN				
76	SIMULATED HYDRAULIC SYSTEM MALFUNCTION				
77	LOW-LEVEL, HIGH-AIRSPEED AUTOROTATION				
78	LOW-LEVEL, LOW-AIRSPEED AUTOROTATION				
79	ORAL EVALUATION				

REVERSE, DA FORM 5812-R, NOV 92

BATTLE-ROSTERED CREW EVALUATION/TRAINING GRADE SLIP

For use of this form, see TC 1-209 and TCs 1-211 through 1-219; the proponent agency is TRADOC.

BATTLE-ROSTERED CREW EXAMINEES/ TRAINEES		NAME	RANK
	PC:		
	PI:		
	NONRATED CREW MEMBERS		
	DUTY SYMBOL	NAME	RANK
	UNIT:		
EVALUATOR/ INSTRUCTOR	NAME		RANK
	UNIT:		

CREW DATA

TOTAL BATTLE-ROSTERED CREW HOURS:	DATE DESIGNATED A BATTLE-ROSTERED CREW:
PURPOSE: EVALUATION/TRAINING	
TIME TODAY:	CUMULATIVE TIME:

TYPE AIRCRAFT:____________________

CREW TASK 1 _____ D/N/NVD
CREW TASK 2 _____ D/N/NVD
CREW TASK 3 _____ D/N/NVD
CREW TASK 4 _____ D/N/NVD
CREW TASK 5 _____ D/N/NVD
CREW TASK 6 _____ D/N/NVD
CREW TASK 7 _____ D/N/NVD
CREW TASK 8 _____ D/N/NVD
CREW TASK 9 _____ D/N/NVD
CREW TASK 10 _____ D/N/NVD

DAY	NIGHT	WX	SIMULATOR	NVG	NVS	

EVALUATOR/INSTRUCTOR RECOMMENDATIONS

- ☐ (ISSUE) (VALIDATE) CREW QUALIFICATIONS
- ☐ (SUSPEND) (REVOKE) CREW QUALIFICATIONS
- ☐ REQUIRES ADDITIONAL (FLIGHT) (ACADEMIC) (SIMULATION DEVICE) TRAINING
- ☐ SEE BACK FOR COMMENTS

I HAVE DEBRIEFED THE EXAMINEES/TRAINEES AND INFORMED THEM OF THEIR STATUS.

EVALUATOR'S/INSTRUCTOR'S SIGNATURE:________________________________

WE HAVE BEEN DEBRIEFED BY THE EVALUATOR/INSTRUCTOR AND UNDERSTAND OUR CURRENT STATUS.

PC'S SIGNATURE:________________________________

PI'S SIGNATURE:________________________________

NONRATED CREW MEMBERS' SIGNATURES: ________________________________

____

OVERALL GRADE FOR THIS FLIGHT IS: | S | U | NA | DATE: ______________

DA FORM 7121-R, MAR 92

COMMENTS

By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:

MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army
03098

DISTRIBUTION:

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