TC 1-209

AIRCREW TRAINING MANUAL
OBSERVATION HELICOPTER, OH-58D
AVIATOR/AEROSCOUT OBSERVER

HEADQUARTERS, DEPARTMENT OF THE ARMY

Change 1

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Washington, DC, 25 April 2003

AIRCREW TRAINING MANUAL
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1. Change TC 1-209, 9 December 1992, as follows.

Remove old pages	Insert new pages
i through vi	i through vi
5-1 through 5-11	5-1 through 5-8
6-77 and 6-78	6-77 and 6-78
	6-78.1 through 6-78.4
6-95 and 6-96	6-95 and 6-96
	6-136.1 and 6-136.2
7-19	7-19 through 7-19.1
	A-1 through A-5
Glossary-1 through Glossary-6	Glossary-1 through Glossary-6
Reference-1 through Reference-5	Reference-1 through Reference-6
Index-1 through Index-5	Index-1 through Index-5

2. A star (★) marks new or changed material.

3. File this transmittal sheet in the front of the publication.

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PREFACE

This manual provides specific guidelines for executing OH-58D and OH-58D (Kiowa Warrior) 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 efforts of all crew members. The prescribed tasks, conditions, standards, and descriptions explain each crew member's responsibility for the successful completion of maneuvers. Each crew member must understand the actions and directives of the other crew member. This enhances crew coordination and unit interoperability and helps to prevent accidents caused by human error.

The crew coordination descriptions in Chapter 6 do not focus exclusively on 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 OH–58D crew members.

This manual applies to unit commanders, evaluators, trainers, maintenance test pilots, and crew members who operate OH-58D aircraft. ATMs are the basic documents that standardize aircrew training programs and flight evaluation procedures. By using the ATMs, commanders ensure that individual crew member proficiency is commensurate with their unit's 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.

The aircraft operator's manual contains aircraft operating procedures. If differences exist between the maneuver descriptions in the aircraft operator's 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-A, Fort Rucker, AL 36362-5263.

TC 1-209

This publication implements portions of STANAG 31114 (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 Aircrew Training Manual describes training requirements for OH-58D crew members. 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 both individual crew member and aircrew proficiency. The training focuses on the accomplishment of tasks that support the unit's mission. The scope and level of training to be achieved individually by crew members and collectively by aircrews will be dictated by the METL. Commanders must ensure that aircrews are proficient in mission-essential tasks.

1-1. CREW STATION DESIGNATION

The commander will designate a crew station (left seat/right seat) for each aviator or AO. The aviator or AO will perform all in-flight duties in the assigned station and have all hands-on performance tests evaluated from that station.

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 (battle-rostering) improves crew coordination. Commanders make battle-rostered assignments and should enforce their practice, when possible, consistent with crew resources available in 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. TC 1-210 further defines battle rostering.

1-3. SYMBOL USAGE AND WORD DISTINCTIONS

a. Symbol Usage.

(1) The diagonal (/) indicates or or and. For example, IP/SP may mean IP or SP or may mean IP and SP.

(2) P* indicates the pilot on the controls. P indicates the pilot not on the controls. (AOs can be expected to fulfill either of these duty positions, depending on the task to be performed or the training situation.)

(3) In this manual, the term A O will apply to AOs, AFSOs, and CPOs.

b. Word Distinctions.

(1) Warning, caution, and note. These words 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 that is not of a threatening nature.

(2) Will, must, should, and may. 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) NVG. This refers only to the night vision goggle imaging system, AN/AVS-6 (ANVIS).

CHAPTER 2

QUALIFICATION TRAINING

Initial qualification training in the OH-58D is conducted at the US Army Aviation Center according to an established program of instruction. Units are not authorized to conduct this training. Individuals completing the course of instruction are trained in basic helicopter, NVG, and weapon system tasks.

2-1. ACADEMIC AND FLIGHT TRAINING

a. Academic training includes instruction in combat skills, aircraft systems, ATHS, communications, navigation, and weapon systems. Academic training may be conducted at the same time as flight training.

b. Flight qualification training includes instruction on basic helicopter tasks, mission systems, and combat skills. To ensure more efficient training and learning retention, flight training is conducted without interruption.

2-2. AVIATOR AND AEROSCOUT OBSERVER QUALIFICATION TRAINING

a. An aviator or an aeroscout observer is qualified in the OH-58D when he has completed all phases of training and has graduated from the appropriate OH-58D qualification course. This course is conducted at the USAAVNC.

b. An aviator is qualified in the OH-58D (Kiowa Warrior) when he has completed all phases of training and has graduated from the appropriate OH-58D (Kiowa Warrior) qualification course. This course is conducted only at the USAAVNC.

c. An aviator qualified in the OH-58D (Kiowa Warrior) who has not been previously qualified in the OH-58D will receive academic instruction as outlined in Figure 2-1. He also will receive a minimum of three hours of flight instruction in the OH-58D, of which at least one hour must be flown at night or with NVG.

Introduction
Structure
Powerplant and related systems
CDS/instruments and indicating systems
Navigation
Communications
Aircraft survivability equipment
Precautionary measures and critical conditions
Emergency procedures
Aircraft limitations and performance planning
Aircraft manual written examination

Subjects may be covered outside the classroom by the IP.

Figure 2-1. Academic subjects

2-3. AVIATOR INSTRUMENT TRAINING

An aviator must satisfactorily complete initial instrument training conducted at the USAAVNC. He also must successfully complete an annual instrument flight evaluation given by an IE or IP as prescribed in paragraph 8-3.

2-4. PILOT-IN-COMMAND, MAINTENANCE TEST PILOT, UNIT TRAINER, AND EVALUATOR PREREQUISITES AND REQUIREMENTS

Personnel in these categories must meet the requirements stated in AR 95-1.

2-5. INITIAL NVG QUALIFICATION TRAINING

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

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 2-2. Initial NVG qualification academic subjects

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
Special	6.5
After-landing[1]	
Total hours[2]	15.0

[1]Although these tasks apply to flight instruction, they are not considered part of the total flight time.
[2]The total time may be reduced to no less than 10 hours based on the IP's or SP's recommendation concerning the aviator's proficiency.

Figure 2-3. Initial NVG qualification flight tasks and hours

undergo a one-hour training period at night in a static aircraft. The minimum tasks the aviator must perform are aircraft emergency procedures, NVG failure, and blind cockpit drill. This training period and, if applicable, the NVG flight evaluation may be applied toward the 10-hour flight minimum required for NVG qualification. Those tasks which the aviator must perform during NVG qualification training are listed in Figure 2-4. After the aviator completes the training, his proficiency will be determined through a flight evaluation or by continual evaluation by an NVG IP or SP.

Task Number	Task Title
1000	Conduct crew mission briefing
1007	Perform engine start, run-up, hover, and before-takeoff checks
1016	Perform hover power check
1017	Perform hovering flight
1018	Perform a normal takeoff
1023	Perform fuel management procedures
1024	Perform emergency procedures for actual or simulated NVG (ANVIS) failure
1025	Navigate by pilotage and dead reckoning
1027	Perform before-landing check
1028	Perform VMC approach
1030	Perform a shallow approach to a running landing
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
1041	Perform NVG (ANVIS) PM and operational checks
1043	Perform MMS operations
1044	Operate navigation system
1045	Operate communications system
1067	Perform aerial observation
1068	Perform or describe emergency procedures
1083	Perform or describe inadvertent IMC procedures/VHIRP
1090	Perform masking and unmasking
1097	Negotiate wire obstacles
1098	Perform after-landing tasks
1132[I]	Perform ADSS operational checks

[I]--this task is required to be performed by OH-58D (Kiowa Warrior) aviators.

Figure 2-4. NVG qualification training tasks

c. An aviator who is NVG-qualified in an aircraft other than the OH-58D must undergo additional NVG qualification in the OH-58D. He must complete the requirements in TC 1-210 and the training shown in Figure 2-5.

Subject	Hours
Academic training[1]	
Static aircraft training period[2] (blind cockpit drill)	1.0
Demonstration and practice of NVG tasks (Figure 2-4) and any mission tasks designated by the commander	6.0
Flight evaluation[3]	2.0
Total hours[4]	9.0

[1]Academic training should include the subjects shown in Figure 2-2.
[2]The training must be conducted at night.
[3]This may be a continual evaluation.
[4]This total time may be reduced to no less than 4.5 hours of actual flight time based on the IP's or SP's recommendation concerning the crew member's proficiency. It may include the NVG flight evaluation but not the blind cockpit drill training period. This training must be conducted in the OH-58D.

Figure 2-5. Additional aircraft NVG qualification training guide

CHAPTER 3

REFRESHER TRAINING

The refresher training program is designed for RL 3 crew members. It enables them to regain proficiency in all base tasks. This chapter lists refresher training requirements and provides guidelines for developing refresher training programs.

3-1. TRAINING REQUIREMENTS

a. A crew member is designated RL 3 when he meets the criteria in TC 1-210. Figure 3-1 shows a guide for developing a refresher academic program. Figure 3-2 shows a guide for developing a refresher flight training program.

<u>Subject</u>

MMS[1]
ATHS[1]
Weapon systems[2]
Weight and balance
Instrument approaches
Communications system[1]
Operational limitations
Local SOPs and regulations
Performance planning charts
Control and display system[1]
Flight planning, to include DOD FLIP
Aircraft systems, structure, and airframe
Precautionary measures and critical conditions
Aircraft operator's manual written examination

Any other tasks from the base task list listed in Chapter 5 (Figures 5-1 and 5-2) designated by the unit commander.

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[1]Most systems training can be accomplished in a cockpit procedural trainer, a classroom systems trainer, or in a hot cockpit.
[2]Applicable to OH-58D (Kiowa Warrior).

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

Gunnery Instruction

Flight training as outlined in TC 1-140

Instrument Instruction	Hours
Flight training	6.0
Instrument evaluation	2.0
Total hours	8.0

Figure 3-2. Refresher flight training guide

b. Units may use applicable USAAVNC lesson plans, ETPs, and POIs to conduct academic training. They may obtained these materials by writinq Commander, US Army Aviation Center, ATTN: ATZQ-TDI-D, Fort Rucker, AL 36362-5035 or calling commercial 205-255-3283/5990 or DSN 558-3283/5990.

3-2. NIGHT TRAINING

a. Unaided Niqht Fliqht. Task requirements are listed in Chapter 5 (paragraph 5-3). Night considerations are in Chapter 6.

b. NVG Fliqht. TC 1-210 discusses NVG refresher training. Figure 3-3 shows an NVG refresher training guide.

NOTE: NVG training will be accomplished only with the AN/AVS-6 (ANVIS).

Subjects	Hours
Academic training[1]	
Static aircraft training period (blind cockpit drill)[2]	1.0
Demonstration and practice of NVG tasks (Figure 2-4) 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 2-2.

[2]The training must be conducted at night.

[3]This may be a continual evaluation.

[4]This total time may be reduced to no less than 4.5 hours of actual flight time based on the IP's or SP's recommendation concerning the crew member's proficiency. It may include the NVG flight evaluation but not the blind cockpit drill training period. This training must be conducted in the OH-58D.

Figure 3-3. NVG refresher training guide

CHAPTER 4

MISSION TRAINING

This chapter and TC 1-210 prescribe mission training requirements and guidelines for developing a mission training program. Mission training develops the crew member's and aircrew's ability to perform specific tasks selected by the commander to support the unit's METL. Mission training should be done either during mission support or collective training.

4-1. TRAINING REQUIREMENTS

The mission training (RL 2) requirements for crew members are outlined in TC 1-210. The guidelines shown in Figure 4-1 are based on FAC 1 requirements for mission tasks.

Flight Instruction	Hours
Local area orientation*	2.0
Missions tasks	28.0
Total hours	30.0

*This is not required if accomplished during refresher training (Figure 3-2).

Figure 4-1. Mission flight training guide

4-2. NIGHT TRAINING

a. Unaided Night Flight. Mission tasks which the commander may designate are listed in Chapter 5 (Figure 5-3). Night considerations for tasks are listed in Chapter 6. Additional tasks may be developed by the commander.

b. NVG Flight. NVG aviator mission training requirements are outlined in TC 1-210. As a minimum, the aeroscout observer must receive eight hours of NVG mission training in those tasks designated by the commander.

(1) NVG flight considerations are listed in Chapter 6. Before undergoing NVG mission training, the crew member must have completed qualification or refresher training and must be NVG current.

(2) For NVG progression to RL 1, a crew member must complete or have completed an NVG evaluation given at night in the aircraft by an NVG IP or SP. However, the commander may designate a crew member RL 1 for NVG purposes if the crew member's records indicate he was previously NVG mission qualified. The crew member also must have demonstrated proficiency in those tasks designated by the gaining unit commander.

NOTE: NVG training will be accomplished only with the AN/AVS-6 (ANVIS).

4-3. MAINTENANCE TEST PILOT TRAINING

Mission training increases the aviator's proficiency in performing maintenance test flights. The tasks outlined in Chapter 7 are mandatory mission tasks for aviators designated to perform test flights; they will be included on the Commander's Task List in the Individual Aviation Training Folder. Commanders are not authorized to delete any MTF tasks. Personnel performing as MPs should be limited to duties in a maximum of two aircraft.

CHAPTER 5

CONTINUATION TRAINING

This chapter outlines the tasks and aircraft flight hours that crew members must complete to support the unit's METL. TC 1-210 lists the requirements for maintaining RL 1. The required performance standards are specified in Chapters 6 and 7 of this manual.

5-1. TRAINING REQUIREMENTS

a. Semiannual Flying-Hour Requirements—Aircraft. The minimum requirements for crew members are as follows.

(1) FAC 1--70 hours, all of which must be flown from the crew member's designated crew station.

(2) FAC 2--50 hours, all of which must be flown from the crew member's designated crew station.

(3) FAC 3--not applicable due to the lack of a compatible flight simulator for the OH-58D.

NOTE: Because there is no compatible simulator for the OH-58D, each aviator also must receive three hours of hood. The aviator may be required to fly additional hours of hood based on recommendations to the commander.

b. Annual Task and Iteration Requirements. The minimum requirements are—

★**(1)** One iteration of all base tasks, except as modified in paragraph 5 and 6 below, during the day and one iteration of mandatory NVG tasks as indicated in Figure 5-1. (Mandatory NVG tasks for crew members in designated NVG positions and aviators who maintain NVG currency are indicated by an X in the appropriate column of Figure 5-1.)

(2) An NVG standardization evaluation of all base tasks indicated by an X in the NVG column of Figure 5-1 for those crew members in designated NVG positions and aviators who maintain NVG currency.

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

(4) Any iterations of additional tasks as determined by the commander.

TASK NUMBER	TASK TITLE	S	I	NVG
1000	Conduct crew mission briefing	X	X	X
1001	Plan a VFR flight	X		
1003	Prepare/validate DD Form 365-4 (Weight and Balance Form F—Tactical)	X		
1004	Prepare DA Form 4887-R (RW Performance Planning Card)	X	X	X
1005	Perform preflight inspection	X		
1007	Perform engine-start, run-up, hover, and before-takeoff checks	X	X	X
1016	Perform hover power check	X	X	X
1017	Perform hovering flight	X		X
1018	Perform a normal takeoff	X		X
1022	Perform traffic pattern flight			
1023	Perform fuel management procedures	X	X	X
1024	Perform emergency procedures for actual or simulated NVG (ANVIS) failure			X
1025	Navigate by pilotage and dead reckoning			X
1027	Perform before-landing check	X	X	X
1028	Perform VMC approach	X		X
1030	Perform a shallow approach to a running landing			
1031	Perform confined area operations	X		X
1032	Perform slope operations	X		X
1033	Perform terrain flight mission planning	X		X
1034	Perform terrain flight takeoff	X		X
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
	Perform NVG (ANVIS) PM and operational checks			X
1043	Perform MMS operations	X		X
1044	Operate navigation system	X	X	X

S—tasks that are mandatory for standardization flight evaluation.
I--tasks that are mandatory for instrument flight evaluation.
NVG--tasks that must be evaluated at night while the crew member is wearing the NVG.
[1]Either task may be performed as part of the annual instrument evaluation.
[2]Two of the four weapon system tasks must be evaluated during the APART.
★[3]Perform the appropriate tasks for the equipment installed in the unit aircraft.

Figure 5-1. Aviator base task list

TASK NUMBER	TASK TITLE	S	I	NVG
1045	Operate communications system	X	X	X
★1046[1]	Perform emergency EGI approach	X or	X	
★1047[3]	Perform analog throttle operation	X		
1048	Perform simulated SCAS malfunction			
1050	Perform hovering autorotation	X		
1052	Perform simulated engine failure at a hover	X		
★1053	Perform simulated engine failure at altitude	X or	X	
★1056[3]	Perform manual throttle operations (FADEC)	X		
1067	Perform aerial observation	X		X
1068	Perform or describe emergency procedures	X	X	X
1075	Perform instrument takeoff			
1078	Perform unusual attitude recovery		X	
1079	Perform radio communication procedures		X	
1080	Perform procedures for two-way radio failure		X	
1081[1]	Perform nonprecision approach (GCA)		X	
1082	Perform precision approach (GCA)		X	
1083	Perform or describe inadvertent IMC procedures/VHIRP	X or	X or	X
★1085[3]	Perform digital communications operations (ATHS or IDM)	X		
1087	Perform or describe downed aircraft procedures			
1090	Perform masking and unmasking	X		X
1091	Perform tactical communication procedures and electronic counter-countermeasures			
1092	Transmit a tactical report (voice)	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
1098	Perform after-landing tasks	X	X	X
1099	Operate Mark XII IFF System	X		
★1114[2]	Operate 2.75-inch rocket system	X		
★1119	Perform firing position operations	X		
★1130	Operate data transfer system	X		
★1131	Operate airborne video tape recorder			
★1132	Perform ADSS operational checks			
★1139	Select appropriate weapon system	X		

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

TASK NUMBER	TASK TITLE	S	I	NVG
★1140[2]	Operate Hellfire missile system	X		
★1143	Perform weapons initialization procedures			
★1147[2]	Operate .50-caliber machine gun	X		
★1148[2]	Operate air-to-air Stinger system	X		
★1806[3]	Perform video image crosslink operations (VIXL)	X		

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

TASK NUMBER	TASK TITLE
2004	Perform pinnacle or ridgeline operation
2005	Perform FM radio homing
2006	Perform VAPI approach
2008	Perform evasive maneuvers
2009	Perform multiaircraft operations
2018	Reconnoiter and recommend an LZ/PZ
2019	Perform a route reconnaissance
2020	Call for and adjust indirect fire
2021	Transmit information using visual signaling techniques
2040	Select a combat position
2043	Perform refueling/rearming operations
2054	Perform target handover to attack helicopter
2061	Reconnoiter and recommend a holding area
2063	Perform a security mission
2065	Call for and control a tactical air strike
2066	Perform a zone reconnaissance
2067	Perform an area reconnaissance
2082	Perform techniques of movement
2100	Conduct an adjust-fire mission using the mast-mounted sight and airborne target handover system
2101	Conduct a fire-for-effect mission using the mast-mounted sight and airborne target handover system
2102	Conduct a suppression mission using the mast-mounted sight and airborne target handover system
2103	Conduct an immediate suppression mission using the mast-mounted sight and airborne target handover system
2112	Call for and designate for the Copperhead laser-guided munitions

NOTE: Commanders will choose the appropriate mission tasks for duty position.

Figure 5-2. Mission task list

★**(5)** IP/SP flying OH-58D/OH-58D(R) aircraft are required to perform one iteration of task 1053 every 90 days. In addition, IP/SP flying OH-58D(R) are required to perform one iteration of task 1056 every 90 days. If more than 90 days has passed, the IP/SP must demonstrate proficiency to an IP/SP who meets the requirements of this paragraph.

★**(6)** Two iterations of task 1053, perform simulated engine failure at altitude, semiannually.

NOTE 1: In addition to the required minimum annual tasks and iterations, MPs will perform annually, a minimum of four iterations of the MTF mission tasks listed in Figure 5-3. MEs will perform two iterations from each flight crew station annually. Each MTF mission task listed is mandatory for an MTF standardization evaluation. Personnel who are required to perform MTF duties in an additional or alternate aircraft will perform four iterations of the required tasks in each additional or alternate aircraft.

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

NOTE 3: Tasks indicated with an X in both the S and I columns may be evaluated during either or both evaluations.

c. <u>Currency Requirements.</u>

★**(1)** Aviators who are qualified in the OH-58D and the OH-58D(R) and who are current in the OH-58D(R) are also considered current in the OH-58D.

★**(2)** Aviators who are qualified in the OH-58D and the OH-58D(R) and who are current in the OH-58D will receive a proficiency flight evaluation consisting of task 1056, Perform manual throttle operations (FADEC), prior to being considered current in the OH-58D(R).

5-2. NVG CURRENCY REQUIREMENTS

a. To be considered NVG current, the crew member must participate every 45 consecutive days in a one-hour flight at night in the aircraft while wearing NVG.

b. A crew member whose currency has lapsed must complete, as 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.

TASK NUMBER	TASK TITLE
2800	Perform prior-to-maintenance test flight checks
2802	Perform before-starting engine checks
2804	Perform starting engine checks
2806	Perform engine run-up pilot checks
2808	Perform system checks
2810	Perform before-takeoff checks
2812	Perform takeoff to a hover
2814	Perform power assurance check
2816	Perform hover power check
2818	Perform hovering turns
2820	Perform sideward flight
2822	Perform forward flight to ETL
2826	Perform SCAS check
2828	Perform heading hold check
2830	Perform power cylinder check
2832	Perform engine response check
★2833	Perform manual throttle operations check (FADEC)
2834	Perform hover/hover bob-up check
2836	Perform takeoff and climb check
2838	Perform control rigging check
2840	Perform autorotation RPM check
2842	Perform hydraulics-off check
2844	Perform collective anticipator check
2854	Perform flight instruments check
2856	Perform communication checks
2868	Perform before-landing check
2870	Perform after-landing check
2872	Perform engine shutdown check
2874	Perform special/detailed procedures

Figure 5-3. Maintenance test pilot mission tasks

(1) Task 1007, Perform engine-start, run-up, hover, and before-takeoff checks.

(2) Task 1016, Perform hover power check.

(3) Task 1017, Perform hovering flight.

(4) Task 1018, Perform normal takeoff.

(5) Task 1024, Perform emergency procedures for NVG failure.

(6) Task 1027, Perform before-landing check.

(7) Task 1028, Perform VMC approach.

(8) Task 1032, Perform slope operations.

(9) Task 1034, Perform terrain flight takeoff.

(10) Task 1035, Perform terrain flight.

(11) Task 1036, Perform hover OGE check.

(12) Task 1037, NOE deceleration.

(13) Task 1038, Perform terrain flight approach.

(14) Task 1041, Perform NVG PM and operational checks.

(15) Task 1068, Perform or describe emergency procedures.

(16) Task 1098, Perform after-landing tasks.

5-3. NIGHT UNAIDED TRAINING REQUIREMENTS

Annual night unaided training is mandatory for all crew members. The following tasks will be evaluated during RL progression and a minimum of one iteration of each task will be performed annually. The commander may designate any of the following tasks for evaluation during the APART period.

a. Task 1017, Perform hovering flight.

b. Task 1018, Perform a normal takeoff.

c. Task 1025, Navigate by pilotage and dead reckoning.

d. Task 1028, Perform VMC approach.

e. Task 1083, Perform or describe inadvertent IMC procedures/VHIRP.

f. Task 1098, Perform after-landing tasks.

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. Crew members must wear full MOPP gear (MOPP level 4) during NBC training. NBC training is not required for FAC 3 positions.

★**a.** Crew members will receive NBC training in the base tasks listed below and will perform at least one iteration annually. The commander will also select mission/additional tasks based on the unit’s mission.

(l) Task 1005, Perform preflight inspection.

(2) Task 1007, Perform engine-start, run-up, hover, and before-takeoff checks.

(3) Task 1034, Perform terrain flight takeoff.

(4) Task 1035, Perform terrain flight.

(5) Task 1036, Perform hover OGE check.

(6) Task 1037, Perform NOE deceleration.

(7) Task 1038, Perform terrain flight approach.

(8) Task 1044, Operate navigation system.

(9) Task 1045, Operate communications system.

(10) Task 1098, Perform after-landing tasks.

(11) Task 1114, Operate 2.75-in rocket system.

(12) Task 1140, Operate Hellfire missile system.

(13) Task 1147, Operate .50-caliber machine gun.

(14) Task 1148, Operate air-to-air Stinger system.

NOTE: A minimum of two weapon system tasks will be performed.

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

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

(2) A qualified and current crew member, without protective mask, gloves, or NBC boots, is at one set of the flight controls at all times.

(3) Aircrews will not receive emergency procedures training in flight while wearing MOPP gear. (They will complete this training in static aircraft.)

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

CHAPTER 6

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 crew member skills. It does not contain all the maneuvers that can be performed in the aircraft. Some tasks that must be done during required training or evaluation 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/mission 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 the tasks listed in Chapter 5 (Figures 5-1 through 5-3). For ease of identification, base tasks that are to be performed by all crew members are assigned 1000-series numbers. Mission tasks that may be selected by the commander for training are assigned 2000-series numbers. Those tasks which the commander determines are essential to mission accomplishment that are not in the ATM will be designated as additional tasks, listed separately, and assigned 3000-series numbers. The commander will develop conditions, standards, and descriptions for these tasks. An information copy of each additional task should be forwarded to Director, Directorate of Evaluation and Standardization, ATZQ-ES, Fort Rucker, AL 36362-5208 for use by other units.

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* (aviator or AO on the controls), P (aviator or AO not on the controls), PC, PI, and CPO. These actions apply in all modes of flight during day, night, or NVG operations. The indications P*, P, PI, or CPO do not imply PC duties. When required, PC responsibilities are specified.

(1) **Individual action.** These actions are the portions of a crew task that an individual must accomplish. An example of an individual action is the completion of the engine-start and run-up checks by the P* and the P for their designated seat position.

(2) **Crew-coordinated actions.** These portions of a task require the interaction of the entire crew to ensure safe, efficient, and effective task execution. An example is a hover power check. The P* performs the takeoff to a hover and focuses his attention outside the aircraft to maintain a stationary hover; meanwhile, the P monitors the aircraft instruments and compares actual readings with those predicted.

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.

d. Tasks requiring specialized equipment are not mandatory in aircraft that do not have the equipment installed.

e. When an aviator is performing AO or AFSO crewmember duties, (aviator not on the controls), AO or AFSO task standards will apply. During single-pilot operations, crew coordination considerations do not apply.

f. Mandatory NVG evaluation tasks are listed in Chapter 5 (Figures 5-1 and 5-2). The standards for these tasks are the same as those for task performance without the use of NVG.

g. 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 1031, Perform confined area operations.

(2) Task 1034, Perform terrain flight takeoff.

(3) Task 1035, Perform terrain flight.

(4) Task 1037, Perform NOE deceleration.

(5) Task 1038, Perform terrain flight approach.

(6) Task 1090, Perform masking and unmasking.

(7) Task 1119, Perform firing position operations.

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

6-3. CREW COORDINATION

a. Most ATM tasks contain elements that require crew coordination. The importance of good 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 the 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 member to perform his duties properly.

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

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

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

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

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

(1) **<u>Communicate positively.</u>** Good cockpit teamwork requires positive communication between 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 acknowledgement 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) **<u>Direct assistance.</u>** 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* decision to change the sequence, timing, or priority of the P's assistance; and when 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 the crew member's assigned responsibility in the task description.

(3) **<u>Announce actions.</u>** To ensure effective and well-coordinated actions in the cockpit, both 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 the supporting action from the other crew member to avoid a potentially hazardous situation.

(4) **Offer assistance.** A crew member will provide assistance or information that has been requested. He also will offer assistance when he sees that the other crew member needs help. Both 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.** Cockpit communications must include supportive feedback to ensure that both crew members correctly understand announcements and directives. Acknowledgements 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 acknowledgement. Figure 6-1 shows an example of positive communication.

P	"Target, T72."
P*	"Tally, T72."
P	"One missile, right side."
P*	"Roger, one missile, right side."
P	"Slide right, losing target."
P*	"Sliding right."
P	"Hold."
P*	"Holding,"
P*	"Firing missile."
P	"Come up, losing target."
P*	"Coming up."
P	"Target destroyed, mission complete."

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 of these terms 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 shown in Figure 6-2.

Orientation to the terrain feature relative to the aircraft's current heading: "Directly ahead," "Out your right door," or "On your right/left 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 P* is using the ADSS, a heading command 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 obstacles clearance a primary task directive.

(b) The P 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 CPO may notice that the P* has let the aircraft move behind an obstacle that obstructs the line of sight to a target. The CPO should precede the advisory by a positive directive; for example, "Come up, losing target," "up two feet, hold," or "Slide right, losing target." When the P* reaches the desired altitude or position, the CPO should announce, "Hold."

(8) <u>Coordinate sequence and timing.</u> 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 shown in Figure 6-3.

P*	Announces his intention to slide right before doing so.
P	Focuses his attention outside the aircraft in the direction of movement to provide adequate warning of obstacles and announces, "Clear right."
P*	Initiates 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. Based on research that related crew coordination to mission performance, specific aspects were defined to include the following:

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

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

(3) Assignment of specific task priorities and responsibilities to each crew member and their confirmation of those responsibilities as part of the preflight crew briefing.

(4) Involvement of each crew member in monitoring the need for assistance in coping with terrain, visual conditions, mission, and other stressors.

(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 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, unusual attitude, excessive change in rate of closure, or any other unsafe condition.

d. The P must adequately warn the P* when ground reference is marginal or 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 crew members. It means that they will clear the immediate area in all directions during hovering and taxi operations and left, right, and overhead before and during takeoff. It also indicates that the crew members will use clearing turns to clear the area before making any climbs or descents.

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 all 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 on the results of an individually planned effort.

6-5. STANDARD COCKPIT TERMINOLOGY

Using common terms and standard phraseology in the cockpit minimizes confusion and reduces the likelihood of misunderstanding. Crew members must keep the number of 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 lists such words and phrases with their commonly accepted meanings.

Abort--terminate a preplanned aircraft maneuver.
Affirmative--yes.
Bandit--an identified enemy aircraft.
Braking--announcement made by the crew member who intends to apply brake pressure.
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."
Call out--command by the pilot on the controls for a specified procedure to be read from the checklist by the other crew member.
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 followed by the direction; for example, "left," "right," "slide left," or "slide right." Also indicates that ground personnel are authorized to approach the aircraft.
Come up/down--command to change 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 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."
Egress--command to make an emergency exit from the aircraft; will be repeated three times in a row.
Execute--initiate an action.
Expect--anticipate further instructions or guidance.
Firing--announcement that a specific weapon is to be fired.

Figure 6-4. Examples of standard words and phrases

Fly heading--command to fly an assigned compass heading. (This term generally used in low-level or contour flight operations.)
Go ahead--proceed with your message.
Go AJ--directive to activate antijam communications.
Go plain--directive to discontinue secure operations.
Go secure--directive to activate secure communications.
Go red--directive to discontinue secure operations.
Hold--command to maintain present position.
Hover--horizontal movement of aircraft perpendicular to its heading; will be followed by the word "left" or "right."
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 "door," will indicate the requirement to perform emergency door removal.
Maintain--command to continue or keep the same.
Mask/unmask--to conceal aircraft by using available terrain features and to position the aircraft above terrain features.
Mickey--a Have Quick time-synchronized signal.
Monitor--command to maintain constant watch or observation.
Move aft--command to hover aft, followed by distance in feet.
Move forward-- command to hover forward, followed by distance in feet.
Negative--incorrect or permission not granted.
Negative contact--unable to establish communication with. . . (followed by name of element).
No joy--target, traffic, or obstruction not positively seen or identified.
Now--indicates that an immediate action is required.
Outside--primary focus of attention is outside the aircraft.
Put me up--command to place the P* radio transmit selector switch to a designated position; will be followed by radio position numbers on the intercommunication panels (1, 2, 3). Tells the other crew member to place a frequency in a specific radio.
Release--command for the planned or expected release of an external load.

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

Report--command to notify.
Roger--message received and understood.
Say again--repeat your transmission.
Slide--intentional horizontal movement of an aircraft perpendicular to it's heading; will be followed by the word "right" or "left."
Slow down--command to reduce ground speed.
Speed up--command to increase ground speed.
Stand by--wait; duties of a higher priority are being performed and 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.
Tally--target, traffic, or obstruction positively seen or identified; will be followed by a repeat of the word "target," "traffic," or "observation" and the clock position.
Target--an alert that a ground threat has been spotted.
Traffic--refers to friendly aircraft that present a potential hazard to the 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 rated crew members; for example, "I have the controls," "You have the controls," and "I have the controls."
Troops on/out--command to have troops enter or exit the aircraft.
Turn--command to deviate from present ground track; will be followed by words "right" or "left," 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.
Wilco--I have received your message, I understand, and I will comply.

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

TASK 1000

TASK: Conduct crew mission briefing.

CONDITIONS: Prior to flight in an OH-58D helicopter, by the PC or AMC with both crew members present, and given a completed DA Form 5484-R (Aircrew Mission Briefing) and a crew briefing checklist.

NOTE: A suggested crew briefing checklist is shown in Figure 6-5.

STANDARDS:

1. Without error, brief the mandatory and mission-related items detailed on DA Form 5484-R.

2. Assign crew member mission duties and responsibilities.

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

4. Have the crew member(s) acknowledge that they fully understand the assignment of duties and responsibilities.

DESCRIPTION: The purpose of this task is to brief the mandatory items from DA Form 5484-R and the crew briefing checklist and to collectively visualize and rehearse the mission from takeoff to tie-down. The PC will use a checklist similar to the one shown in Figure 6-5 to conduct the aircrew briefing. The goal is to reduce, through planning, the uncertainty that arises during a mission when the crew is confronted by unexpected events. This rehearsal should include all factors of the flight, including the actions, duties, and responsibilities of each crew member. The PC or AMC will identify mission and flight requirements that will place a heavy demand on effective crew communication and proper sequencing and timing of actions. The PC/AMC must realize that additional caution may be necessary if the crew has not flown as a battle-rostered crew. The other crew member(s) will acknowledge understanding of assigned actions, duties, and responsibilities.

REFERENCES:

AR 95-1
FM 1-300

CREW BRIEFING CHECKLIST

1. Aircrew mission briefing (DA Form 5484-R).
2. Crew actions, duties, and responsibilities.
    a. Transfer of controls. (Ensure that the CPO cyclic is engaged and functioning before completing the transfer of the controls).
    b. Emergency actions.
        (1) Engine failure.
        (2) Fire.
        (3) Weapon systems.
        (4) Tail rotor malfunctions.
        (5) Egress procedures and rendezvous point.
        (6) Injured personnel removal.
    c. General crew duties.
        (1) Pilot on the controls.
            (a) Fly the aircraft (primary focus outside).
            (b) Avoid traffic or obstacle.
            (c) Cross-check instrument systems.
            (d) Monitor and transmit on assigned radios.
        (2) AO and pilot not on the controls.
            (a) Avoid traffic or obstacles.
            (b) Operate COM/NAV systems.
            (c) Navigate.
            (d) Copy clearances and other information.
            (e) Cross-check instrument systems.
            (f) Monitor and transmit on assigned radios.
            (g) Perform other duties as assigned by P*.
3. Required items (uniform, ID tags, publications, and SOI).
4. Pilot in command analysis of aircraft.
    a. Logbook and preflight deficiencies.
    b. Performance planning card.
    c. Mission modification based on aircraft analysis.
5. Inadvertent IMC procedures.
6. FARP procedures.
7. Crew comments and discussion.
8. Crew member(s) acknowledgment of PC briefing.

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

Task 1001

TASK: Plan a VFR flight.

CONDITIONS: Prior to flight in an OH-58D helicopter 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 under VMC according to AR 95-1 and FAR/host country regulations.

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

4. Select the course(s) and altitude(s) that best ensure mission completion, and correctly compute magnetic heading(s) ±5 degrees.

5. Determine the 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, ±25 pounds.

7. Without error, complete a DD Form 365-4 (Weight and Balance Form F--Tactical) or, if applicable, 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 and the DOD FLIP.

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. The PC will ensure that the other crew member is current and qualified to perform the mission. He also will determine whether the aircraft is properly equipped to accomplish the assigned mission.

2. <u>Procedure.</u> Using USAF, FAA, or host-country weather facilities, obtain information about the weather. After ensuring 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 area, and allow for changes in routing that may be required because of the weather or terrain. Select the course(s) and altitude(s) that will best facilitate mission accomplishment. Use a CPU-26A/P computer/Weems plotter (or equivalent) to plot the flight, and determine the magnetic heading, ground speed, and ETE for each leg. Compute total distance and flight time, and calculate the required fuel using the appropriate charts in TM 55-1520-248-10. Ensure that the weight and balance forms kept in the aircraft logbook apply to 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.

NIGHT OR NVG CONSIDERATIONS: More detailed planning is necessary at night because of visibility restrictions. Checkpoints used during the day may not be suitable for night or NVG use.

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 55-1520-248-10
TM 55-1500-342-23

TASK 1003

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

CONDITIONS: Prior to flight in an OH-58D helicopter and given crew weights, aircraft configuration, aircraft weight and balance information, TMs 55-1500-342-23 and 55-1520-248-10, and a blank or prepared 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 weight and CG will remain within the allowable limits for the entire flight.

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

REFERENCES:

AR 95-3
TM 55-1500-342-23
TM 55-1520-248-10

TASK 1004

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

CONDITIONS: Given a completed DD Form 365-4 (Weight and Balance Form F-Tactical); TM 55-1520-248-10; environmental conditions at takeoff, en route, and landing; and a blank DA Form 4887-R.

STANDARDS:

1. Without error, complete the PPC according to procedures given in TM 55-1520-248-10 and the description below.

2. Correctly perform crew coordination actions.

DESCRIPTION:

1. The PC will determine and have available aircraft performance data necessary to complete the mission. The PPC is used as an aid to organize this information or to handle emergency procedures that may arise during the mission. The PC must ensure that aircraft limitations and capabilities will not be exceeded. The PPC shown in Figures 6-6 and 6-7 will be used instead of other (obsolete) performance planning cards or sheets that may be displayed in TM 55-1520-248-10. The front of the PPC is used to organize departure and arrival information, and the reverse is used for fuel management, mission, and en route planning.

2. When determining aircraft performance, the highest pressure altitude and temperature forecasted during the mission should be used. Instructions for completing the items indicated by circled numbers in Figures 6-6 and 6-7 are given below. Items not indicated by circled numbers do not pertain to the OH-58D. Because DA Form 4887-R is used for several types of rotary-wing aircraft, some circled numbers are not in sequence.

a. **<u>Departure.</u>**

(1) **Item 1--PA.** Record PA at departure point at ETD.

(2) **Item 2--FAT.** Record FAT at departure point at ETD.

NOTE: Predicted hover power will be computed using the pressure altitude and temperature at the ETD. Maximum torque available may be computed using the highest pressure altitude and temperature forecasted during the mission.

(3) Item 3--Takeoff GWT. Record takeoff gross weight.

(4) Item 4--Load. Record weight of load (if applicable).

(5) Item 5--Fuel. Record takeoff fuel weight.

(6) Item 6--Max Torque Avail. Using the maximum torque available (30-minute operation) chart, enter the graph at FAT. Move horizontally to pressure altitude, not to exceed transmission limit. Then move vertically to the maximum torque available.

(7) Item 7--Cent Torque Avail. Using the appropriate cruise, read continuous torque available, not to exceed transmission or TGT limit.

(8) Item 8--Predicted Hover Torque. Using the hover power required chart, enter at pressure altitude. Move horizontally to FAT, and move vertically to takeoff gross weight. Move horizontally to the 2-foot hover altitude line, then move down to read predicted torque at a 2-foot skid height.

(9) Item 9--Hover OGE Torque. Using the hover power chart, enter at pressure altitude. Move horizontally to FAT, then move vertically to takeoff gross weight. Move horizontally to the OGE hover height line, then vertically to read predicted hover torque OGE.

(10) Item 10--Max Allowable GWT (OGE/IGE). Enter hover ceiling chart on left side at FAT. Move horizontally to PA and then vertically down to the OGE hover line and record OGE GWT. Then move vertically down to the IGE hover altitude line and horizontally to IGE GWT and record IGE GWT. The IGE GWT will always meet or exceed the OGE GWT.

(11) Item 11--Max R/C or Endurance IAS. Select the appropriate cruise chart for the anticipated pressure altitude and FAT. Enter the chart at maximum gross weight. Move up to the Max R/C or MAX END line. Then move horizontally and read Max R/C or Endurance IAS.

(12) Item 12--Max Range IAS. Derive from the appropriate cruise chart for anticipated conditions.

b. <u>Arrival.</u>

(1) Item 13--PA. Use the forecasted PA at destination at ETA.

(2) Item 14--FAT. Use the forecasted FAT at destination at ETA.

(3) Item 15--Landing GWT. Estimate landing gross weight.

(4) Item 16--Max Allowable GWT (OGE/IGE). Using arrival environmental conditions, compute the maximum allowable gross weight. Use the procedure described in a(l0) above.

(5) Item 17--Max Torque Avail. Using arrival environmental conditions, compute the maximum torque available as described in a(6) above.

(6) Item 18--Hover IGE Torque. Using arrival environmental conditions and landing gross weight, compute torque required to hover IGE as described in a(8) above.

(7) Item 19--Hover OGE Torque. Using arrival environmental conditions and landing gross weight, compute torque required to hover OGE as described in a(9) above.

c. Fuel Management (Item 20). Use this space to record the in-flight fuel consumption check, to include fuel burnout and appropriate reserve.

d. Cruise Data.

(1) Item 21--PA. Record planned cruise PA.

(2) Item 22--FAT. Record forecasted FAT.

(3) Item 23--Vne KIAS. Record the cruise Vne derived from the airspeed operating limits chart.

(4) Item 24--Cruise Speed (IAS and TAS). Record the cruise IAS and TAS derived from the appropriate cruise chart.

(5) Item 25--Cruise Torque. Record the predicted cruise torque derived from the appropriate cruise chart.

(6) Item 26--Cruise Fuel Flow. Record the predicted fuel flow derived from the appropriate cruise chart.

e. Weight Computation (Item 27). Use this area to record any additional information appropriate for the mission.

NOTE: The same PPC will suffice for consecutive takeoffs and landings when the load or environmental conditions have not increased significantly (5 degrees Celsius, 500 feet PA, or 200 pounds).

REFERENCES:

AR 95-1
FM 1-203
TM 55-1520-248-10

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	FAT ②
TAKEOFF GWT ③	LOAD ④
CALIBRATION FACTOR	FUEL ⑤

	DUAL ENG	SINGLE ENG CAL	SINGLE ENG IND
MAX TORQUE AVAIL			⑥
CONT TORQUE AVAIL			⑦
GO/NO-GO TORQUE (OGE/IGE)			
PREDICTED HOVER TORQUE			⑧
HOVER OGE TORQUE			⑨
MAX ALLOWABLE GWT (OGE/IGE)			⑩
MAX R/C OR ENDURANCE IAS			⑪
MAX RANGE IAS			⑫
SINGLE-ENG CAPABILITY IAS (MIN/MAX)			

VALIDATION FACTOR ____________________

SAFE PEDAL MARGIN YES______ NO______

ARRIVAL

PA ⑬	FAT ⑭
LANDING GWT ⑮	

	DUAL ENG	SINGLE ENG CAL	SINGLE ENG IND
MAX ALLOWABLE GWT (OGE/IGE)			⑯
MAX TORQUE AVAIL			⑰
HOVER IGE TORQUE			⑱
HOVER OGE TORQUE			⑲

SAFE PEDAL MARGIN YES______ NO______

DA FORM 4887-R, MAY 87

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

FUEL MANAGEMENT

(20) FUEL/TIME

START ____________/____________

STOP ____________/____________

BURNOUT ________________________ Z

RESERVE ________________________ Z

CONSUMPTION RATE ______________ LB PER HR

LONGITUDINAL CYCLIC TRIM

RET VNE KIAS	PROG VNE KIAS

CRUISE DATA

PA (21)	FAT (22)	VNE (23) KIAS

	DUAL ENG	SINGLE ENG
CRUISE SPEED	______IAS ______TAS	(24) IAS (24) TAS
CRUISE TORQUE		(25)
CRUISE FUEL FLOW		(26)

OPTIONAL DATA

(27) 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:

PAGE 2, DA FORM 4887-R, MAY 87

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

TASK 1005

TASK: Perform preflight inspection.

CONDITIONS: In an OH-58D helicopter and given TM 55-1520-248-CL.

STANDARDS:

1. **Aviator/P*.**

a. Without error, perform the preflight inspection, to include weapon systems if installed, according to TM 55-1520-248-CL.

b. Correctly enter appropriate information on DA Form 2408-12 (Army Aviator's Flight Record) and DA Form 2408-13 (Aircraft Inspection and Maintenance Record).

2. **Aerial Observer/P.**

a. Read the checklist, in the correct sequence, to the aviator or P*.

b. Without error, perform those duties directed by the aviator or P*.

c. Correctly make appropriate entries on applicable logbook forms.

3. **Crew.** Correctly perform crew coordination actions.

DESCRIPTION:

1. **Aviator/P*.** Using TM 55-1520-248-CL, verify all preflight checks. Correctly enter the appropriate information on DA Forms 2408-12 and 2408-13. Perform the crew member briefing as outlined in TM 55-1520-248-CL.

2. **Aeroscout Observer/P.** Using TM 55-1520-248-CL, assist the PC in verifying all preflight checks. Perform those checks directed by the PC as outlined in TM 55-1520-248-10. Record appropriate information on DA Forms 2408-12 and 2408-13.

NOTE 1: TC 1-204 contains details about preflight inspection at night.

NOTE 2: The PC will ensure that the proper weapon systems are installed for the assigned mission.

REFERENCES:

Aircraft logbook
AR 95-1
DA Pamphlet 738-751
TC 1-204
TM 55-1520-248-10
TM 55-1520-248-CL

TASK 1007

TASK: Perform engine-start, run-up, hover, and before-takeoff checks.

CONDITIONS: In an OH-58D helicopter and given TM 55-1520-248-CL.

STANDARDS:

1. Aviator/P*. Without error, perform procedures and checks according to TM 55-1520-248-CL.

2. Aeroscout Observer/P.

a. Read the checklist, in the correct sequence, to the aviator.

b. Without error, perform procedures and checks according to TM 55-1520-248-CL.

c. Without error, perform those duties directed by the aviator.

d. Correctly make appropriate entries on applicable logbook forms.

3. Crew. Correctly perform crew coordination actions.

DESCRIPTION:

1. Aviator/P*. Start the engine according to TM 55-1520-248-CL, and accomplish aircraft system checks in the appropriate sequence. Ensure that appropriate information is recorded on applicable aircraft logbook forms.

2. Aeroscout Observer/P. In the absence of a fireguard, the AO\P may perform fireguard duties as outlined in the unit SOP. As required, accomplish aircraft system checks in the appropriate sequence. Assist the P* by reading the checklist and adjusting any instruments and avionics as directed. When directed by the aviator, record information on applicable aircraft logbook forms.

NOTE: TM 55-1520-248-10 contains details about procedures outlined in TM 55-1520-248-CL.

REFERENCES:

AR 95-1
DA Pamphlet 738-751
TM 55-1520-248-10
TM 55-1520-248-CL
Unit SOP

TASK 1011

TASK: Perform straight-and-level flight.

CONDITIONS: In an OH-58D helicopter with an IP

STANDARDS:

1. Obtain appropriate airspeed between 60 and 125 knots, ±15 KIAS.

2. Obtain a safe altitude of at least 300 feet above the highest obstacle +200 feet, -100 feet.

3. Maintain heading control ±15 degrees.

4. Maintain aircraft in trim.

DESCRIPTION:

1. Straight-and-level flight is flight in which a constant airspeed, altitude, and direction are maintained. Upon assuming the controls, immediately obtain an attitude to achieve an airspeed of 60 to 125 knots. Frequently cross-check the airspeed indicator for verification.

2. Choose an altitude which is at least 300 feet above the highest obstacle. Maintain a constant altitude with the collective. Frequently cross-check the altimeter for verification. The frequency of collective movements will depend on the level of turbulence. When the air is smooth, fewer collective corrections are required. Maintain selected altitude within +200 feet, -100 feet. Remember to verify the aircraft's trim condition after adjusting the collective. Once altitude and airspeed have been established, maintain the aircraft’s heading ±15 degrees.

3. To adjust for straight flight, select a reference line or point to fly toward. Adjust pedals to maintain trim. Make cyclic corrections to turn the aircraft, and establish the aircraft in a level attitude on a straight ground track to the reference point. Aligning the aircraft with a ground reference when a crosswind exists will result in drifting or uncoordinated flight. Therefore, the aircraft will need to be "crabbed" into the wind to maintain ground track to the reference point. Develop a cross-check that includes scanning outside the aircraft to verify the ground track and aircraft’s attitude. Use the standby flight instruments or VSD to help verify the aircraft’s attitude. Scan the instruments and displays quickly and frequently.

REFERENCES:

FM 1-203
FM 1-240

TASK 1012

TASK: Perform turns, climbs, and descents.

CONDITIONS: In an OH-58D helicopter with an IP.

STANDARDS:

1. **<u>Turns.</u>**

a. Properly clear the aircraft.

b. Maintain aircraft in trim.

c. Maintain selected airspeed ±15 KIAS.

d. Maintain selected bank angle ±10 degrees.

e. Maintain altitude ±200 feet.

f. Roll out on desired heading ±15 degrees.

2. **<u>Climbs and Descents.</u>**

a. Properly clear the aircraft.

b. Maintain aircraft in trim.

c. Maintain selected airspeed ±15 KIAS.

d. Maintain rate of climb or descent ±200 FPM.

e. Maintain heading control ±15 degrees.

DESCRIPTION:

1. **<u>Turns.</u>** A turn is a maneuver used to change the direction of flight. The three types of turns are shallow (15-degree bank), medium (30-degree bank), and steep (45-degree bank).

a. Before beginning the turn, clear in the direction of the turn, above, below, and at your flight level. Ensure that the area is clear of any aircraft that could interfere with safe execution of the turn. Practice turns are normally done with a medium bank and involve a 90-degree change in heading unless otherwise specified. While looking to clear the area, pick out some object to use as a guide point for the completion of the turn.

b. When the area is cleared, apply a slight pressure on the cyclic in the direction of the turn. This is the only control movement necessary to start the turn. Do not use the antitorque pedals to assist the turn. When the desired angle of bank is reached, neutralize the cyclic to stop the roll; otherwise, the bank will continue to increase. To aid in learning to feel the proper pressure, practice using a slight pressure on the cyclic and roll into the turns slowly. It is important to maintain a constant altitude and airspeed during the turn. This can best be done by holding a constant attitude using cockpit reference points and the horizon as a guide. By keeping these references in the same relative position throughout the turn, a constant attitude, altitude, and airspeed will be maintained. Cross-check by occasionally glancing at the standby flight instruments or VSD. Continue to clear the area while turning. Throughout the turn, the angle of bank should be held constant with the cyclic, just as it was to keep the aircraft level during straight-and-level flight (Task 1011).

c. To recover from a turn, use the cyclic the same as for an entry, except apply pressure in the opposite direction. Because the helicopter will continue to turn as long as there is any bank, start the roll out before reaching the desired heading. This allows the helicopter to turn during the time it takes to roll from the banked attitude to a level attitude. As the helicopter becomes level, the cyclic must be neutralized to prevent entering a turn in the opposite direction. Upon completion of the turn, the aircraft should be aligned with the previously selected guide point and in straight-and-level flight.

2. **<u>Climbs and Descents.</u>** A climb or descent is a maneuver to change the aircraft's altitude while a constant airspeed and heading are maintained. Before beginning a climb or descent, clear the aircraft at your flight level for other aircraft in the vicinity. Clear above and below and to the left and right of the aircraft.

a. To initiate a climb or descent, apply pressure on the collective to establish the desired power change. Simultaneously apply the required pedal pressure to maintain the aircraft in trim (left pedal for climbs and right pedal for descents). During the climb or descent, continue to cross-check airspeed and heading control.

b. To return to straight-and-level flight, lead the desired altitude by at least 50 feet. Adjust the collective to obtain the power setting for cruise flight. During power changes, adjust the aircraft's trim. Continue cross-checking the standby flight instruments or VSD while looking for other aircraft.

REFERENCE:

FM 1-203

TASK 1016

TASK: Perform hover power check.

CONDITIONS: In an OH-58D helicopter with performance planning information available and power assurance check completed.

STANDARDS:

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

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

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. While near the intended takeoff point and in the direction of takeoff, the P* will maintain a stabilized 2-foot hover and the P will monitor the aircraft instruments and note the mast torque. Do not exceed any aircraft limitation. The P will compare the torque value obtained with the predicted maximum torque available and announce the results to the P*. Depending on the torque differential, the following maneuver or task restrictions may apply.

a. **Below 5 percent.** Shallow and normal approaches to large improved landing areas and normal takeoffs may be performed. Ensure that adequate room exists for takeoff with minimum or existing power. The destination must also allow a normal or shallower-than-normal approach to a surface which will permit a descent to the ground if necessary.

b. **From 5 to 9 percent.** Normal approaches and takeoffs may be performed.

c. **From 10 to 14 percent.** Steep approaches and instrument takeoffs may be performed.

d. **15 percent or more.** Maneuver or task restrictions do not apply.

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

NOTE 1: Anytime the load or environmental conditions increase significantly (5 degrees Celsius, 500 feet PA, or 200 pounds), additional hover power checks must be performed and, if necessary, all values recomputed.

NOTE 2: When the mission dictates single-pilot operation, the above duties are performed by the P*.

REFERENCES:

TC 1-204
TM 55-1520-248-10

TASK 1017

TASK: Perform hovering flight.

CONDITIONS:

1. **Aviator/P*.** In an OH-58D helicopter with before-takeoff check completed and aircraft cleared.

2. **Aeroscout Observer/P*.** In an OH-58D helicopter with before-takeoff check completed and aircraft cleared; with an IP.

STANDARDS:

1. Aviator/P*.

a. Takeoff to a hover.

(1) Establish a hover altitude of 3 feet, ±1 foot.

(2) Maintain heading ±10 degrees.

(3) Do not allow drift to exceed 1 foot.

(4) With the aid of TM 55-1520-248-CL, perform the hover checks in the correct sequence.

b. **Hovering flight.** Maintain a constant rate of movement for existing conditions, not to exceed that of a brisk walk.

c. **Hovering turns.**

(1) Maintain a constant rate of turn, not to exceed 22.5 degrees per second (90 degrees in 4 seconds).

(2) Maintain position over pivot point ±2 feet.

d. **Landing from a hover.**

(1) Maintain heading ±10 degrees.

(2) Execute a smooth and controlled descent with drift minimized at touchdown.

2. **Aeroscout Observer/P*.**

a. **Takeoff to a hover.**

(1) Establish a hover altitude of 3 feet, ±2 feet.

(2) Maintain heading ±20 degrees.

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

(4) With the aid of TM 55-1520-248-CL, perform the hover checks in the correct sequence.

b. **Hovering flight.** Maintain a constant rate of movement for existing conditions, not to exceed that of a brisk walk.

c. **Hovering turns.**

(1) Maintain a constant rate of turn, not to exceed 22.5 degrees per second (90 degrees in 4 seconds).

(2) Maintain position over pivot point ±5 feet.

d. **Landing from a hover.**

(1) Maintain heading ±20 degrees.

(2) Execute a smooth and controlled descent with drift minimized at touchdown.

3. **Crew.** Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* will announce his intent to perform a specific hovering flight maneuver and will remain focused outside the aircraft. He will announce when he terminates the maneuver. He will perform the following actions.

a. **Takeoff to a Hover.** With collective fully down, place the cyclic in a neutral position. Increase the collective with a smooth, positive pressure until the aircraft becomes light on the skids. Apply pressure and counterpressure on the pedals to ensure the aircraft is free to ascend. While maintaining heading with the pedals, coordinate the cyclic for a vertical ascent. As the aircraft leaves the ground, check for proper control response and aircraft CG. Upon reaching the desired hover altitude, perform the hover check according to TM 55-1520-248-CL.

b. **Hovering Flight.** Adjust the cyclic to maintain a stationary hover or to move in the desired direction of flight. Maintain altitude with the collective and heading with the pedals. The rate of movement should be appropriate for existing conditions. Should circumstances dictate velocities in excess of an apparent brisk walk, increase hover altitude and remain within sideward or rearward velocity limitations as specified in TM 55-1520-248-10. To return to a stationary hover, apply the cyclic in the opposite direction while maintaining altitude and heading. Closely monitor the pedals if heading hold is used during hovering flight.

c. Hovering Turns. Clear the aircraft. Apply pressure to the desired pedal to begin the turn. Use pressure and counterpressure on the pedals to maintain a constant rate of turn. Coordinate cyclic control to maintain position over the pivot point while maintaining altitude with the collective. Turning around the nose of the aircraft or the pilot's seat provides the best turn reference and awareness. However, turns other than about the mast will increase the turn radius proportionately. Heading hold may be used to maintain a constant rate of turn.

d. Landing From a Hover. From a stabilized hover, decrease the collective to begin a gradual descent to touchdown. Make necessary corrections with the pedals and cyclic to maintain a constant heading and position. Upon 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. Reduce the collective to the full-down position, and neutralize the pedals and cyclic.

NOTE 1: Accomplish doppler calibration if the hover bob-up mode is required.

NOTE 2: Refer to TM 55-1520-248-10 for details about procedures outlined in TM 55-1520-248-CL.

2. The CPO/P will assist in clearing the aircraft and will provide adequate warning of obstacles, unusual drift, or altitude changes. He will announce when his attention is focused inside the cockpit.

NIGHT OR NVG CONSIDERATIONS:

1. Clear the aircraft before turning. This should be done by the P* to prevent drift caused by looking over his shoulder while on the controls. VSD hover or hover bob-up symbology may be used as an aid to avoid drift.

2. Proper scanning techniques are necessary to avoid spatial disorientation.

REFERENCES:

FM 1-203
TC 1-204
TM 55-1520-248-10
TM 55-1520-248-CL

TASK 1018

TASK: Perform a normal takeoff.

CONDITIONS:

1. **Aviator/P*.** In an OH-58D helicopter with hover power and before-takeoff checks completed and aircraft cleared.

2. **Aeroscout Observer/P*.** In an OH-58D helicopter with hover power and before-takeoff checks completed and aircraft cleared; with an IP.

STANDARDS:

1. **Aviator/P*.**

a. Initiate takeoff from an appropriate hover altitude ±l foot when taking off from a hover.

b. Maintain takeoff heading ±10 degrees.

c. Maintain ground track alignment with takeoff direction without deviation.

d. Maintain aircraft in trim above 50 feet.

e. Accelerate to desired airspeed ±10 knots.

f. Maintain rate of climb ±100 FPM.

g. Maintain takeoff power until reaching desired airspeed for mode of flight.

2. **Aeroscout Observer/P*.**

a. Maintain heading control and ground track within ±15 degrees.

b. Maintain appropriate airspeed ±15 KIAS.

c. Maintain appropriate rate of climb ±200 FPM.

d. Level off at proper altitude +200 feet, -100 feet.

3. **Crew.** Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* will remain focused outside the aircraft throughout the maneuver. He will announce whether the takeoff is from the ground or from a hover and his intent to abort or alter the takeoff. He will perform the following actions.

a. **From the Ground.** Select reference points to maintain ground track. With the cyclic in the neutral position, increase the collective until the aircraft becomes light on the skids. Apply pressure and counterpressure to the pedals to ensure the aircraft is free to ascend. While maintaining heading with the pedals, continue increasing the collective until the aircraft leaves the ground. As the aircraft leaves the ground, apply forward cyclic as required to accelerate through ETL at an altitude that is appropriate for the terrain and to avoid obstacles. As the aircraft reaches ETL, adjust the cyclic to obtain the desired climb attitude (approximately 60 KIAS) and to maintain ground track. Position the collective to establish the desired rate of climb (approximately 500 FPM) and use the pedals to maintain heading aligned with ground track below 50 feet and in trim above 50 feet.

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 altitude with the collective. Continue to apply forward cyclic as required to accelerate through ETL at an altitude that is appropriate for the terrain and to avoid obstacles. As the aircraft reaches ETL, adjust the cyclic to obtain the desired climb attitude (approximately 60 KIAS) and to maintain ground track. Position the collective to establish the desired rate of climb (approximately 500 FPM), and use the pedals to maintain heading aligned with ground track below 50 feet and in trim above 50 feet.

NOTE: Closely monitor the pedals if heading hold is used during takeoff.

2. The P will announce when ready for takeoff and will remain focused outside the aircraft to assist in clearing and to provide adequate warning of obstacles. He will announce when his attention is focused inside the cockpit.

NIGHT OR NVG CONSIDERATIONS:

1. If sufficient illumination 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 does not exist to view obstacles, he should perform an altitude-over-airspeed takeoff until the aircraft passes through an altitude which will ensure obstacle clearance. Obstacles may be physical or visual (visual because of the inability to see them). The takeoff may be performed from a hover or from the ground.

NOTE: Treat visual obstacles, such as shadows, the same as physical obstacles.

2. If more than hover power is used for takeoff, maintain that power setting until approximately 10 knots prior to reaching climb airspeed. Then adjust power as required to establish the desired rate of climb and airspeed. Instruments should be cross-checked by the P.

3. Reduced visual references during the takeoff and throughout the ascent at night 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 establishing a crab angle to maintain the desired ground track.

REFERENCES:

FM 1-202
FM 1-203
TC 1-204
TM 55-1520-248-10
TM 55-1520-248-CL

TASK 1022

TASK: Perform traffic pattern flight.

CONDITIONS: In an OH-58D helicopter; given altitudes, airspeeds, traffic pattern headings, and ground track; with aircraft cleared.

STANDARDS:

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

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

3. Maintain aircraft in trim.

4. Maintain airspeed ±10 KIAS.

5. Maintain altitude ±100 feet.

6. Maintain ground track alignment without deviation.

7. Without error, complete the before-landing check according to TM 55-1520-248-CL.

8. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* will remain focused outside the aircraft during the maneuver. He will announce whether the takeoff is from the ground or from a hover and his intent to abort or alter the takeoff. He will perform the following actions.

a. Maneuver into position to enter the downwind leg midfield at a 45-degree angle, at traffic pattern altitude, and at the proper airspeed. A straight-in, base-leg, or crosswind entry may be used if approved by ATC. On downwind, complete the before-landing check. Prior to turning base, reduce power as required to reduce airspeed and initiate a descent. If performing a straight-in or a base-leg entry, reduce airspeed at a point comparable to that for a normal approach. Turn base and final leg, as appropriate, to maintain the desired ground track. 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 60 KIAS on crosswind and base legs and 80 KIAS on downwind leg.

2. The P will announce when ready for takeoff and will remain focused outside the aircraft to assist in clearing and to provide adequate warning of obstacles. He will announce when his attention is focused inside the cockpit.

REFERENCES:

DOD FLIP
FM 1-203
TM 55-1520-248-10
TM 55-1520-248-CL
Unit SOP

TASK 1023

TASK: Perform fuel management procedures.

CONDITIONS: In an OH-58D helicopter with an air navigational computer or manual calculator.

STANDARDS:

1. Aviator/P*/PC.

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

b. Correctly perform an in-flight fuel consumption check 30 to 60 minutes after level-off or entry into mission profile.

c. Initiate an alternate course of action if actual fuel consumption varies from the planning value and the flight cannot be completed with the required reserve.

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

2. Aeroscout Observer/P.

a. When requested by the PC, verify that the required amount of fuel is onboard at the time of takeoff, and correctly perform an in-flight fuel consumption check.

b. Inform the PC of predicted burnout and reserve entry time.

c. Inform the PC, without delay, if information derived from the in-flight checks dictates an alternate course of action.

d. Frequently monitor fuel quantity and consumption rate for the duration of the flight, and update the PC on burnout and reserve entry time.

3. Crew. Correctly perform crew coordination actions.

DESCRIPTION:

1. Aviator.

a. Before-takeoff fuel check. 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/revise the mission.

b. Initial airborne fuel reading. After the aircraft has leveled off or entered mission profile and appropriate power is set, record the total fuel quantity and the time of reading.

c. Fuel consumption check. With the aircraft in mission/cruise profile, 30 to 60 minutes after performing the initial airborne fuel reading, record the remaining fuel and time of reading. Compute and record the rate of consumption, burnout, and reserve entry time. Determine if the remaining fuel is sufficient to complete the flight with the required reserve. If the fuel quantity is inadequate, initiate an alternate 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 fuel quantity is adequate to complete the flight.

2. Aeroscout Observer.

a. Before-takeoff check. Determine the total fuel on board, and compare it with the mission fuel requirements determined during premission planning. If the fuel amount is inadequate, inform the aviator.

b. Initial airborne fuel reading. After the aircraft has leveled off or entered mission profile and the appropriate power is set (verified with PC), record the total fuel quantity and the time of reading.

c. Fuel consumption check. With the aircraft in mission/cruise profile, 30 to 60 minutes after performing the initial airborne reading, record the remaining fuel and time of reading. Compute and record the rate of consumption, burnout, and reserve entry time. Determine if the remaining fuel is sufficient to complete the flight with the required reserve. If the fuel quantity is inadequate, inform the PC so he can initiate an alternate 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 fuel amount is adequate to complete the flight. Update the PC on burnout and reserve entry time.

REFERENCES:

AR 95-1
FM 1-240
TM 55-1520-248-10

TASK 1024

TASK: Perform emergency procedures for actual or simulated NVG (ANVIS) failure.

CONDITIONS: In an OH-58D helicopter under actual or simulated NVG conditions and given an oral or a visual cue that the NVG have failed.

STANDARDS:

1. Correctly identify or describe indications of impending NVG failure.

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

3. Correctly perform crew coordination actions.

DESCRIPTION: Impending NVG failure may be indicated by illumination of the 30-minute low-voltage warning indicator. It also may be indicated by one or both tubes flickering or blanking.

a. **Aviator/P*.** If the NVG fail, perform one of the following procedures, as applicable.

(1) During NOE or contour flight, with a copilot, and with the CPO cyclic engaged--

(a) Immediately announce "goggle failure" and begin a climb at a rate that will ensure obstacle avoidance.

(b) Transfer the flight controls.

(c) Attempt to restore NVG power.

(d) If NVG power is restored, continue the mission. If it is not restored, lock the ANVIS in the up position and revise or abort the mission.

(2) During NOE or contour flight, with a copilot/observer, and with the CPO cyclic disengaged--

(a) Immediately announce "goggle failure" and begin a climb at a rate that will ensure obstacle avoidance.

(b) Look underneath the goggles and use aircraft lighting as appropriate to make the transition to unaided night flight.

(c) Attempt to restore NVG power by selecting alternate battery.

(d) If NVG power is restored, continue the mission. If it is not restored, lock the ANVIS in the up position and revise or abort the mission.

(3) During low-level flight or flight conducted at higher altitude, use the procedure described in (2) above. A climb is not required.

b. **Aeroscout Observer/P.** If the NVG fail, perform the following procedure:

(1) Immediately announce "goggle failure."

(2) Attempt to restore NVG power.

(3) Advise the P* of restored vision or of continued failure.

NOTE: NVG tube failure is infrequent and usually provides ample warning. Only occasionally will a tube fail completely in a short time. Rarely will both tubes fail at the same time. There is no remedy for in-flight tube failure.

REFERENCES:

TC 1-204
TM 11-5855-263-10

TASK 1025

TASK: Navigate by pilotage and dead reckoning.

CONDITIONS: In an OH-58D helicopter without the use of avionics; given appropriate maps, plotter, computer, and flight log.

STANDARDS:

1. Maintain orientation within 300 meters.

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

3. Navigate to the final destination within 100 meters.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. Aviator/P*/PC.

a. After obtaining current weather forecasts, plan the flight by marking the route and appropriate checkpoints. Compute the time, distance, and heading for each leg of the flight route.

b. During the flight, use both pilotage and dead reckoning to maintain the position of the aircraft. Perform a ground speed check as soon as possible by computing the actual time required to fly a known distance. Adjust estimated times for subsequent legs of the route using actual ground speed. Determine correction for winds, if necessary, so that ground speed and heading can be computed for flight on the remaining legs. Make heading corrections to maintain the desired course (ground track).

2. Aeroscout Observer/P.

a. Assist the P*/PC in obtaining weather forecasts and planning the flight. Mark the route and appropriate checkpoints and compute the time, distance, and heading for each leg of the flight route.

b. During the flight, use both pilotage and dead reckoning to assist the P* in maintaining the aircraft's position. Perform a ground speed check as soon as possible by computing the actual time required to fly a known distance. Adjust estimated times for subsequent legs of the route using actual ground speed. Determine correction for winds, if necessary, so that ground speed and heading can be computed for flight on the remaining legs. Inform the P* of required adjustments 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 in the night or NVG environment. TC 1-204 contains details about night and NVG navigation.

REFERENCES:

Aeronautical charts
FM 1-240
TC 1-204

TASK 1027

TASK: Perform before-landing check.

CONDITIONS: In an OH-58D helicopter and given TM 55-1520-248-CL.

STANDARDS:

1. **Aviator/P*.** Without error, perform the before-landing check according to TM 55-1520-248-CL.

2. **Aeroscout Observer/P.**

a. Read the appropriate check in TM 55-1520-248-10, in the correct sequence, to the P*.

b. Without error, perform the before-landing check according to TM 55-1520-248-CL.

c. Without error, perform those duties directed by the P*.

3. **Crew.** Correctly perform crew coordination actions.

DESCRIPTION:

1. **Aviator/P*.** Using TM 55-1520-248-CL, verify the before-landing check in the appropriate sequence.

2. **Aeroscout Observer/P.** Using TM 55-1520-248-CL, perform the before-landing check or assist the P* in verifying them.

NOTE: TM 55-1520-248-10 contains details about procedures outlined in TM 55-1520-248-CL.

NIGHT OR NVG CONSIDERATIONS: The aeroscout observer or P may assist in performing the before-landing check without the aid of TM 55-1520-248-CL.

REFERENCES:

AR 95-1
TM 55-1520-248-10
TM 55-1520-248-CL

TASK 1028

TASK: Perform VMC approach.

CONDITIONS:

1. Aviator/P*. In an OH-58D helicopter with the before-landing check completed.

2. Aeroscout Observer/P*. In an OH-58D helicopter with the before-landing check completed; with an IP.

STANDARDS:

1. Aviator/P*.

a. Select a suitable landing area.

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

c. Establish entry airspeed ±10 KIAS.

d. Maintain heading control and ground track alignment with landing direction ±10 degrees.

e. Maintain the appropriate approach angle and rate of closure.

f. Execute a smooth and controlled termination to a hover or to the ground.

2. Aeroscout Observer/P*.

a. Select a suitable landing area.

b. Establish the proper altitude to clear obstacles on final approach, and maintain altitude ±200 feet.

c. Establish entry airspeed ±15 KIAS.

d. Maintain heading control and ground track alignment with landing direction ±20 degrees.

e. Maintain the appropriate approach angle and rate of closure.

f. Execute a smooth and controlled termination to a hover or to the ground.

3. **Crew.** Correctly perform crew coordination actions.

DESCRIPTION:

1. **To a Hover.** Determine an approach angle which allows safe obstacle clearance while descending to the intended point of landing. Once the approach angle is intercepted (on base or final), adjust the collective as necessary to establish and maintain the angle. Maintain entry airspeed until 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 by maintaining the aircraft in trim when above 50 feet and aligning the aircraft with the landing direction when below 50 feet.

2. **To the Ground.** Proceed as for an approach to a hover, except continue the descent to the ground. Make the touchdown with minimum ground movement. After ground contact, ensure that the aircraft remains stable with all movement stopped. Smoothly reduce the collective to the full-down position, and neutralize the pedals and cyclic.

NOTE 1: Airspeed indications below 20 knots are unreliable.

NOTE 2: For training, 60 KIAS is recommended for entry airspeed.

NOTE 3: Do not attempt approaches with an angle greater than 12 degrees unless OGE power capability exists.

NIGHT OR NVG CONSIDERATIONS: Altitude, apparent ground speed, and rate of closure are difficult to estimate at night. 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 40 to 45 knots until apparent ground speed and rate of closure appear to be increasing. Progressively decrease the rate of descent and forward speed until termination.

REFERENCES:

FM 1-202
FM 1-203
TC 1-204
TM 55-1520-248-10
TM 55-1520-248-CL

TASK 1030

TASK: Perform a shallow approach to a running landing.

CONDITIONS:

1. **Aviator/P*.** In an OH-58D helicopter with the before-landing check completed.

2. **Aeroscout Observer/P*.** In an OH-58D helicopter with the before-landing check completed; with an IP.

STANDARDS:

1. **Aviator/P*.**

a. Select a suitable landing area.

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

c. Establish entry airspeed ±10 KIAS.

d. Maintain the proper approach angle to clear obstacles.

e. Maintain heading control and ground track alignment with landing direction ±10 degrees.

f. Execute a smooth and controlled termination.

2. **Aeroscout Observer/P*.**

a. Select a suitable landing area.

b. Establish the proper altitude to clear obstacles on final approach, and maintain altitude ±200 feet.

c. Establish entry airspeed ±15 KIAS.

d. Maintain the proper approach angle to clear obstacles.

e. Maintain heading control and ground track alignment with landing direction ±20 degrees.

f. Execute a smooth and controlled termination.

3. **Crew.** Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* will remain focused outside the aircraft during the maneuver. He will--

a. On final approach, determine an approach angle which allows safe obstacle clearance to arrive at the intended point of landing. Once the approach angle is intercepted, adjust the collective as necessary to establish and maintain the angle.

b. Maintain entry airspeed until apparent ground speed and rate of closure appear to be increasing.

c. Control the rate of descent at touchdown with the collective. Maintain aircraft attitude and landing alignment with the cyclic and heading with the pedals. The touchdown speed may vary from above, at, or below ETL as dictated by landing area conditions.

d. After ground contact, ensure the aircraft remains stable as the collective is lowered to reduce ground run. Once the aircraft has come to a complete stop, reduce the collective to the full-down position and neutralize the pedals and cyclic.

NOTE 1: Airspeed indications below 20 knots are unreliable.

NOTE 2: For training, 60 KIAS is recommended for entry air-speed.

2. The P will remain focused outside the aircraft to assist in clearing and to provide adequate warning of obstacles or traffic. He will announce when his attention is focused inside the cockpit.

NIGHT OR NVG CONSIDERATIONS: Altitude, apparent ground speed, and rate of closure are difficult to estimate at night. 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, reduce airspeed to approximately 40 to 45 knots until apparent ground speed and rate of closure appear to be increasing. Progressively decrease the rate of descent and forward speed until termination.

REFERENCES:

FM 1-202
FM 1-203
TC 1-204
TM 55-1520-248-10/CL

TASK 1031

TASK: Perform confined area operations.

CONDITIONS: In an OH-58D helicopter.

STANDARDS:

1. Prior to the approach--

a. Establish entry altitude ±100 feet.

b. Establish entry airspeed ±10 KIAS.

c. Properly perform a high reconnaissance if altitude permits.

2. During the approach--

a. Maintain ground track alignment with the selected approach path without deviation.

b. Maintain a constant approach angle.

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

d. Properly perform a low reconnaissance.

e. Execute a smooth and 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. Perform a hover power check as required and complete the before-takeoff check without error.

c. Properly clear the aircraft.

4. Prior to clearing obstacles--

a. Maintain heading ±10 degrees.

b. Maintain ground track without deviation.

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 aircraft in trim.

d. Maintain ground track alignment with selected takeoff path without deviation.

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 suitability of the terrain throughout the approach and landing, 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 will announce any deviation from the tentative flight path.

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. On final approach, perform a low reconnaissance. The crew will continuously confirm the suitability of the selected landing area. Evaluate obstacles which constitute a possible hazard, and confirm the suitability of the departure path selected during the high reconnaissance. If a successful landing is doubtful, initiate a go-around before reducing airspeed below ETL or before descending below the obstacles. After touchdown, reposition the aircraft if instability is detected. After landing and before takeoff or movement in the landing area, perform a ground reconnaissance to determine the suitability of the area for ground operations or to formulate the takeoff plan. (The ground reconnaissance may be performed from the cockpit.) Formulate the takeoff plan by evaluating the wind, obstacles, and shape of the area. Select the route to the takeoff point, and ensure adequate main and tail rotor clearance while maneuvering. For takeoff over an obstacle, it may be necessary to move the aircraft as far downwind from the obstacle as possible. Complete the before-takeoff check and, if required, perform a hover power check. Clear the aircraft during takeoff. Use power as necessary to clear the obstacle safely while maintaining a constant ground track and climb angle.

NOTE 1: Depending on the simulated/actual threat or type of terrain flight being conducted, this maneuver may be initiated from either a straight-in or a circling pattern.

NOTE 2: Hover OGE power is required for confined area operations.

NIGHT OR NVG CONSIDERATIONS:

1. Confined areas are more difficult to evaluate at night because of low contrast. Success requires a knowledge of the various methods of determining the height of obstacles.

2. Before conducting confined area operations, ensure that the searchlight is extended to the desired position. If the searchlight is used, night vision will be impaired for several minutes. Therefore, exercise extra caution if flight is resumed before full dark adaptation is reached.

REFERENCES:

FM 1-203
TC 1-204
TM 55-1520-248-10

TASK 1032

TASK: Perform slope operations.

CONDITIONS: In an OH-58D helicopter.

STANDARDS:

1. Maintain heading cross slope, upslope, or downslope ±5 degrees.

2. Do not exceed a l-foot drift.

3. Execute a smooth, controlled descent and touchdown.

4. Execute a smooth, controlled ascent.

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* will select a suitable area for slope operations. The degree of slope chosen should not be so great as to create a need for large cyclic inputs to accomplish the landing. The P* should be aware of the common tendency to become tense and overcontrol while performing slope landings. He will--

a. After selecting the area, establish the aircraft cross slope, upslope, or downslope. Prior to initiating the descent, note the aircraft's attitude indicator to prevent exceeding aircraft slope limitations.

b. Reduce the collective until the upslope skid or skids contact the ground. Continue reducing the collective until the entire weight of the aircraft is resting firmly on the ground.

c. As the collective is reduced, apply cyclic in the upslope direction. If cyclic or aircraft slope limitations are reached before the aircraft is firmly on the ground, return to a hover. Then move to an area where the slope is less steep and repeat the maneuver.

d. For takeoff, adjust the cyclic into the slope, then increase the collective while adjusting the cyclic to maintain the aircraft's position on the slope. Maintain heading with the pedals. When the aircraft attains a normal attitude, smoothly bring it to a hover.

NOTE: Before conducting slope operations, the P* must understand dynamic rollover characteristics.

2. The P will assist the P* by providing warning of obstacles, unusual drift, or altitude changes. He will confirm suitability of the intended landing area. The P will announce when his attention is focused inside the cockpit.

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

REFERENCES:

FM 1-203
TC 1-204
TM 55-1520-248-10

TASK 1033

TASK: Perform terrain flight mission planning.

CONDITIONS: Prior to flight in an OH-58D helicopter; given a mission briefing, navigational maps, navigational computer, and other materials as required.

STANDARDS:

1. **Aviator/PC.**

a. Correctly analyze the mission.

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

c. Select appropriate terrain flight modes.

d. Select appropriate primary and alternate routes.

e. Properly extract data required for the navigation system.

f. Obtain and evaluate the weather briefing.

g. Conduct a thorough crew member briefing.

2. **Aeroscout Observer.**

a. Assist the PC in performing a map or photo reconnaissance.

b. Correctly plot primary and alternate routes, waypoints, checkpoints, and known hazards to flight, including enemy and friendly positions.

c. Properly extract data required for the navigation system.

3. **Crew.** Correctly perform crew coordination actions.

DESCRIPTION:

1. **Aviator.** Analyze the mission in terms of METT-T. Assess the terrain, weather, mission requirements, and enemy and friendly situations. Coordinate primary and alternate routes, terrain flight modes, and movement techniques with the aeroscout observer. Verify time, distance, and fuel requirements. Ensure

the map or overlay being used has sufficient information annotated to complete the mission. Extract data required for the navigation system such as hazards, checkpoints, observation posts, and enemy and friendly positions. Review contingency procedures. Conduct a thorough crew member briefing on all aspects of the mission.

2. <u>Aeroscout Observer.</u> After receiving the mission briefing, assist the aviator in analyzing the enemy and friendly situation, current and forecast meteorological conditions, and in conducting the map or photo reconnaissance. Prepare a map with required information, to include primary and alternate routes, time and distance tick marks, waypoints, checkpoints, and hazards to flight. Extract data required for the navigation system such as hazards, checkpoints, observation posts, and enemy and friendly positions. Compute required data such as ground track and magnetic heading. Complete the flight planning by listing all necessary data on the flight log. Ensure the map is properly folded for ease of handling in the aircraft.

NIGHT OR NVG CONSIDERATIONS: More detailed flight planning is required when the flight is conducted in reduced visibility, at night, or under NVG. TC 1-204 contains details about night and NVG navigation.

REFERENCES:

FM 1-112
FM 1-203
TC 1-204
Unit SOP

TASK 1034

TASK: Perform terrain flight takeoff.

CONDITIONS: In an OH-58D helicopter with hover takeoff checks completed and aircraft cleared.

STANDARDS:

1. Maintain takeoff heading ±10 degrees.

2. Maintain 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: Determine the direction of takeoff by analyzing the tactical situation, the wind, the long axis of the takeoff area, and the lowest obstacles. Select reference points to assist in maintaining the takeoff flight path. Coordinate the cyclic and collective as necessary to attain a constant angle of climb that will ensure obstacle clearance. Maintain heading with the pedals. Once obstacles are cleared, smoothly adjust the flight controls to make the transition to terrain flight.

NOTE: Hover OGE power is required for terrain flight takeoff.

NIGHT OR NVG CONSIDERATIONS:

1. Treat visual obstacles the same as physical obstacles.

2. Maintain proper scanning techniques to avoid becoming spatially disoriented.

REFERENCES:

FM 1-203
TC 1-204
TM 55-1520-248-10

TASK 1035

TASK: Perform terrain flight.

CONDITIONS: In an OH-58D helicopter and given a mission briefing and required maps and materials.

STANDARDS:

1. **Aviator/P*.**

a. During NOE flight--

(1) Fly as close to the earth's surface as vegetation, obstacles, and ambient light will permit.

(2) Maintain airspeed appropriate for the terrain, weather, and ambient light.

b. During contour flight--

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

(2) Maintain airspeed appropriate for the terrain, enemy situation, weather, and ambient light.

(3) Maintain aircraft in trim.

c. During low-level flight--

(1) Maintain altitude ±5O feet.

(2) Maintain airspeed ±10 KIAS.

(3) Maintain aircraft in trim.

2. **Aeroscout Observer/P.**

a. During NOE flight--

(1) Know the en route location within 200 meters.

(2) Identify all checkpoints without error.

(3) Locate the final objective within 100 meters.

b. During contour or low-level flight--

(1) Know the en route location within 500 meters.

(2) Identify all checkpoints without error.

(3) Locate the final objective within 100 meters.

3. **<u>Crew.</u>** Correctly perform crew coordination actions.

DESCRIPTION:

1. **<u>Aviator.</u>** Use the correct mode of terrain flight (NOE, contour, low–level, or a combination) to accomplish the mission. See FM 1-114, FM 1–116, FM 1-400, and TC 1-201 for a description of terrain flight modes.

2. **<u>Aeroscout Observer.</u>** During the flight, use selected terrain features and dead reckoning to navigate accurately to the objective. Do not rely on man-made features as a primary means of navigation. Perform a ground speed check, if appropriate, as soon as possible, then adjust the estimated time en route for subsequent legs. If required, use offset update to maintain flight in the appropriate flight mode. Advise the P* of all checkpoints, air control points, or any known hazards along the flight route. Also inform the P* of heading corrections necessary to maintain the desired course. Use all available terrain for cover and concealment, and look far enough ahead of the aircraft to avoid surprises.

NOTE 1: If the area permits, navigate at least 20 kilometers during NOE flight training or 40 kilometers during contour or low-level flight training.

NOTE 2: Hover OGE power is required for NOE/contour flight.

NIGHT OR NVG CONSIDERATIONS:

1. More detailed flight planning is required when the flight is conducted in reduced visibility, at night, or under NVG. TC 1-204 contains details about night and NVG navigation.

2. Proper scanning techniques must be used to ensure obstacle avoidance.

3. Airspeed and altitude limitations listed in TC 1-210 must not be exceeded.

REFERENCES:

FM 1–114
FM 1-116
FM 1-203
FM 1-240
FM 1-400
FM 21-26
TC 1-201
TC 1–210

TASK 1036

TASK: Perform hover OGE check.

CONDITIONS: In an OH-58D helicopter with OGE hover power available, aircraft heading into the wind, and aircraft cleared.

STANDARDS:

1. Do not allow drift to exceed 10 feet during the ascent, descent, or while at a hover.

2. Maintain heading ±10 degrees.

3. Establish a hover altitude of 50 feet, or above surrounding obstacles, ±10 feet.

4. Maintain a constant rate of turn, not to exceed 22.5 degrees per second (90 degrees in 4 seconds), while performing the required 360-degree left pedal turn.

5. Correctly determine if aircraft power and controllability are sufficient.

6. Do not exceed 200 FPM during the vertical descent.

7. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* will remain focused outside the aircraft and will acknowledge all drift and obstacle clearance instructions given by the P. He will--

a. Vertically ascend to 50 feet or above surrounding obstacles, whichever is higher.

b. Constantly monitor TGT, mast torque, and aircraft instruments while not exceeding aircraft limitations.

c. Execute a 360-degree left pedal turn while constantly checking aircraft power and controllability. If using heading hold, closely monitor the pedals. The hover or hover bob-up mode is normally used during the maneuver.

d. Terminate the maneuver at an IGE hover, on the ground, or as required.

NOTE 1: An OGE check should be made any time aircraft controllability and power is in doubt.

NOTE 2: The position box is not adequate for obstacle avoidance and should not be used as the sole position reference.

2. The P will provide drift and obstacle information to the P* and will note the maximum MAST TORQUE, TGT, and ENG TORQUE values observed. He will warn the P* if it appears any aircraft limitation will be exceeded.

NIGHT OR NVG CONSIDERATIONS: If possible, select an area with good ground contrast and several reference points at the same or greater height as the OGE hover. This will aid in maintaining a constant altitude and position over the ground while making turns with the NVG.

NOTE: Doppler calibration should be performed prior to night hover bob-up flight.

REFERENCES:

FM 1-203
TC 1-204
TM 55-1520-248-10

TASK 1037

TASK: Perform NOE deceleration.

CONDITIONS: In an OH-58D helicopter with hover power check completed.

STANDARDS:

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

2. Maintain tail rotor clear of all obstacles.

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

4. Correctly perform crew coordination actions.

DESCRIPTION:

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

a. Initially increase the collective to maintain the altitude of the tail rotor. (The need to initially increase the collective is reduced when the maneuver is initiated at higher airspeeds.)

b. Consider variations in terrain and obstacles when determining tail rotor clearance.

c. Apply aft cyclic to slow to the desired airspeed or to bring the aircraft to a full stop while adjusting the collective to maintain the altitude of the tail rotor.

d. Maintain heading with the pedals and make all control movements smoothly. If the attitude of the aircraft is changed too much or too abruptly, the P* will have difficulty returning the aircraft to a level attitude, and over-controlling may result.

NOTE 1: Closely monitor the pedals if heading hold is used during the maneuver.

NOTE 2: Hover OGE power is required for NOE deceleration.

2. The P will provide adequate warning to avoid obstacles detected in the flight path and will announce when his attention is focused inside the cockpit.

NIGHT OR NVG CONSIDERATIONS: Maintain proper scanning techniques to ensure obstacle avoidance and tail rotor clearance.

REFERENCES:

FM 1-203
TC 1-204
TM 55-1520-248-10

TASK 1038

TASK: Perform terrain flight approach.

CONDITIONS: In an OH-58D helicopter with before-landing check completed.

STANDARDS:

1. Maintain a constant approach angle to clear obstacles.

2. Maintain ground track aligned with the selected approach path without deviation.

3. Maintain appropriate rate of closure.

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

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* will remain focused outside the aircraft to ensure aircraft clearance throughout the approach and landing. In addition, he will--

a. Initiate the approach from a straight-in or modified pattern depending on the tactical situation, wind, long axis of the landing area, lowest obstacles, and arrival path.

b. Upon sighting the intended point of touchdown, maneuver the aircraft as required (straight-in or circle) to intercept the desired approach path.

c. Adjust the airspeed as necessary, and keep the landing area in sight at all times.

d. Start the approach upon intercepting an angle which ensures obstacle clearance and maintain ground track aligned with the selected approach path.

e. Progressively decrease the rate of descent and forward speed, using the collective and cyclic, as necessary, to the intended point of landing. The decision to terminate at a hover, to the ground with zero forward speed, or with a run-on landing will depend on aircraft loading and environmental conditions. A go-around should be made prior to descending below obstacles or decelerating below ETL. It should also be made if visual reference with the touchdown area is lost.

NOTE 1: Movement over areas of limited contrast, such as water, snow, or desert, tends to cause spatial disorientation. Seek hover areas which provide adequate contrast. If disorientation occurs, apply sufficient power and execute a takeoff. If takeoff is not feasible, attempt to maneuver the aircraft forward and down to the ground to limit the possibility of touchdown with sideward or rearward movement.

NOTE 2: Hover OGE power is required for terrain flight approach.

2. The P will provide adequate warning to avoid obstacles detected in the flight path and will announce when his attention is focused inside the cockpit.

NIGHT OR NVG CONSIDERATIONS: At some locations the surrounding terrain or vegetation may have very low contrast. This may degrade perception with the NVG during the approach.

REFERENCES:

FM 1-203
TM 55-1520-248-10

TASK 1041

TASK: Perform NVG (ANVIS) PM and operational checks.

CONDITIONS: In an OH-58D helicopter with ANVIS.

STANDARDS:

1. Without error, perform PM and operational checks on the ANVIS according to TM 11-5855-263-10.

2. Properly operate the aircraft's ANVIS power source.

3. Correctly perform crew coordination actions.

DESCRIPTION: Before flight, perform PM and operational checks on the ANVIS according to instructions in TM 11-5855-263-10. Connect the battery pack to the aircraft's power source, turn on one battery, and apply aircraft power. Then turn off or disconnect the aircraft's power source, and check that the NVG battery assumes the load instantaneously.

REFERENCES:

TC 1-204
TM 11-5855-263-10
TM 55-1520-248-10

TASK 1043

TASK: Perform MMS operations.

CONDITIONS: In an OH-58D helicopter or in a CPT.

STANDARDS:

1. Correctly configure the MMS.

2. Correctly perform airborne calibration when required.

3. Correctly operate the equipment in all modes without assistance.

4. Correctly perform crew coordination actions.

DESCRIPTION: The CPO will configure the MMS according to instructions in TM 55-1520-248-10. He will adjust the TIS for ambient temperature, perform the preflight and boresight checks, and enter the appropriate data. He will ensure that laser codes are entered per the SOI or unit SOP. He will also select the appropriate sensor (TVS or TIS) and the proper field of view (wide, narrow, or 2X) to search for, detect, and acquire targets. He will use the LRF/D to range to a target, locate a target, designate a target, or offset update the navigation system. He will use the prepoint mode as an aid in maintaining orientation. The P* will maintain aircraft orientation and provide local security during MMS operations.

NOTE 1: The P* (right seat) may override the CPO'S (left seat) use of the MMS by pressing the FXD FWD switch located on the cyclic grip controls.

NOTE 2: Target designation, target locate, and navigation system offset update cannot be accomplished in the ranging mode.

REFERENCE:

TM 55-1520-248-10

TASK 1044

TASK: Operate navigation system.

CONDITIONS: In an OH-58D helicopter.

STANDARDS:

1. Correctly prepare the navigation system for operation.

2. Without error, align, calibrate, and update the system, as required.

3. Correctly perform crew coordination actions.

DESCRIPTION: During premission planning, the crew members determine the navigation data required for entry into the system. The P*/P uses the WAYPOINT and FLIGHT PLAN pages to enter the required waypoints and construct the flight plan. During aircraft run-up, he accesses the NAV ALIGN page and enters the appropriate data. The P*/P may use either the NORMAL or FAST alignment mode to align the system.

NOTE: When the mission dictates single-pilot operation, the above duties are performed by the P*.

REFERENCE:

TM 55-1520-248-10

TASK 1045

TASK: Operate communications system.

CONDITIONS: In an OH-58D helicopter.

STANDARDS:

1. Correctly configure and operate the aircraft's communications system without assistance.

2. Correctly perform crew coordination actions.

DESCRIPTION: The communications system consists of five communication radios. Each crew member must be able to properly configure and operate each radio as required. Crew members may be required to enter a frequency into memory, manually set a radio for operation, change a stored or manual frequency, set Up the FM transceiver for high power, homing, or retransmitting. They may also be required to place the Have Quick I/II or SINCGARS into an operational status.

REFERENCE:

TM 55-1520-248

TASK 1046

TASK: Perform emergency AHRS approach.

CONDITIONS: In an OH-58D helicopter during simulated IMC.

STANDARDS:

1. **Aviator/P*.**

a. Without error, determine the highest obstruction in the area of operations.

b. Select a suitable recovery area.

c. Select an appropriate IAF and MAP.

d. Maintain airspeed of 90 knots, ±10 KIAS, en route and 60 knots, ±10 KIAS, during the final approach.

e. Maintain altitude within ±100 feet.

f. Maintain heading within ±10 degrees in the pattern and within ±5 degrees during the final approach.

g. Arrive at the MDA prior to reaching the MAP.

2. **Aeroscout Observer/P.**

a. Without error, enter appropriate waypoints into the navigation system.

b. Without error, request, acknowledge, and record ATC information.

c. Properly use the TIS to assist the P* in identifying the landing area.

3. **Crew.** Correctly perform crew coordination actions.

DESCRIPTION:

1. Prior to flight, the P*, with the aid of the P, performs a thorough map reconnaissance to determine the highest obstruction in the area of operations. He then selects the largest area of unobstructed flat terrain to use as the recovery area. (This could vary from an airfield to the largest open terrain in the area.) The P* determines the minimum safe altitude by adding 1,000 feet to the highest obstruction altitude. He selects the MDA by adding 200 feet to the highest known obstacles within 2 kilometers of the landing area. He then selects the IAF and the MAP and has the P enter appropriate information into the navigation system.

2. After completing immediate IMC recovery procedures (ASR/PAR unavailable), the P* starts a climb to the minimum safe altitude and turns to the IAF. The P makes the appropriate radio calls and sets the transponder to EMERGENCY. He then enters the IAF and MAP waypoints if he has not previously entered them. At approximately 5 kilometers, the P* adjusts the aircraft's ground track to cross the IAF on the selected final approach course. When over the IAF, the P* reduces airspeed to 60 KIAS and starts the final descent. The P*/P should frequently cross-check the vertical situation display and standby instruments for errors in the navigation system. If radar is available, the P can use it to update the navigation system.

3. During the descent the CPO should place the MMS mode select switch to FWD or PREPOINT with TIS and WFOV selected. He may be able to use the TIS to assist the P* in identifying the landing area. The P* should control the rate of descent to arrive at the MDA prior to reaching the MAP.

WARNING

Flight into IMC has not been demonstrated in the aircraft. The procedure should only be used during training in simulated IMC or during a military contingency when a GCA is not available.

NIGHT OR NVG CONSIDERATIONS: The P may be able to see the landing area with the ANVIS during conditions of light obscuration.

REFERENCE:

Unit SOP

TASK 1047

TASK: Perform analog throttle operation.

CONDITIONS: In an OH-58D helicopter with an IP, during the day only.

STANDARDS:

1. Maintain task standards (heading, altitude, and airspeed) as described for Tasks 1018, Perform a normal takeoff, and 1028, Perform VMC approach.

2. Maintain the throttle in the full-open position.

3. On downwind with before-landing check completed, place the NORM-ANLG BACK UP switch to the ANLG BACK UP position.

4. Correctly perform crew coordination actions.

CAUTION

In the analog mode, the governor reset (RPM trim switch), collective anticipation, start temperature limiting, and RPM surge protection are inactive.

DESCRIPTION:

1. While on downwind with the before-landing check completed, the P will place the NORM-ANLG BACK UP switch to the ANLG BACK UP position. The P* will maintain the throttle in the full-open position throughout the maneuver. The P* will execute a VMC approach. After landing, with the before take-off check completed, the P* will execute a normal take-off. On downwind, the P will place the NORM-ANLG BACK UP switch to the NORM position.

2. After completion of the initial maneuver, the following maneuvers may also be accomplished in the analog mode.

a. Task 1016, Perform hover power check.

b. Task 1017, Perform hovering flight.

c. Task 1018, Perform a normal takeoff.

d. Task 1022, Perform traffic pattern flight.

e. Task 1028, Perform VMC approach.

f. Task 1030, Perform a shallow approach to a running landing.

g. Task 1031, Perform confined area operations.

h. Task 1032, Perform slope operations.

i. Task 1046, Perform emergency AHRS approach.

j. Task 1047, Perform analog throttle operation.

k. Task 1050, Perform hovering autorotation.

l. Task 1052, Perform simulated engine failure at a hover.

m. Task 1075, Perform instrument takeoff.

n. Task 1078, Perform unusual attitude recovery.

o. Task 1081, Perform nonprecision approach (GCA).

p. Task 1082, Perform precision approach (GCA).

q. Task 2005, Perform FM radio homing.

r. Task 2006, Perform VAPI approach.

NOTE: Maneuvers requiring OGE capability will not be performed while operating in the ANLG BACK UP mode.

CAUTION

When switching from normal to analog and from analog to normal, the aircrew will notice a momentary drop in Nr/Np in powered flight (collective applied). A minimum of 500 feet AHO will be maintained when switching between operational modes.

REFERENCES:

FM 1-203
TM 55-1520-248-10

TASK 1048

TASK: Perform simulated SCAS malfunction.

CONDITIONS: In an OH-58D helicopter with an IP; with the before-landing check completed; during the day only.

STANDARDS:

1. Maintain task standards (heading, airspeed, and altitude) as described for Tasks 1022, Perform traffic pattern flight; 1028, Perform VMC approach; and 1030, Perform a shallow approach to a running landing.

2. Maintain a constant approach angle.

3. Correctly perform crew coordination actions.

DESCRIPTION: The P* will begin the maneuver while on downwind by pressing the SCAS release switch on the cyclic to disengage the SCAS. The P* will adjust airspeed as necessary to attain the most comfortable level of control movements. He will continue the traffic pattern until intercepting a shallow approach angle and then decrease the collective as required to establish and maintain the selected angle. He will maintain airspeed until apparent ground speed and rate of closure appear to be increasing. At this time, he will progressively decrease the rate of descent and forward speed to facilitate termination of the approach. Termination of the approach may be either to the ground or to a hover, as appropriate. If to a hover, the aircraft will be landed prior to reengaging the SCAS. The P will assist the P* as necessary during the approach.

REFERENCES:

FM 1-203
TM 55-1520–248-10

TASK 1050

TASK: Perform hovering autorotation.

CONDITIONS: In an OH-58D helicopter with an IP: aircraft heading into the wind; in an approved touchdown area; with the MMS stowed and aircraft cleared.

STANDARDS:

1. Establish an entry altitude of 3 feet, ±1 foot.
2. Maintain heading ±10 degrees.
3. Maintain position over ground ±1 foot.
4. Execute a smooth and controlled descent and touchdown.
5. Correctly perform crew coordination actions.

DESCRIPTION: From a stabilized 3-foot hover, the P* will retard the throttle to engine idle stop. (While retarding the throttle, do not raise or lower the collective.) He will simultaneously apply right pedal to maintain heading, and adjust the cyclic to maintain position over the ground. As the helicopter settles, he will apply sufficient collective to make a smooth descent and touchdown. He will not stop the descent by overapplying the collective, and must be alert for lateral or rearward drift. When the helicopter is resting firmly on the ground, he will smoothly lower the collective to the full-down position while simultaneously neutralizing the pedals and cyclic. The P will assist the P* as necessary throughout the maneuver.

NOTE: Do not use heading hold during this maneuver.

NIGHT OR NVG CONSIDERATIONS: This is an NVG-prohibited training task.

REFERENCES:

FM 1-203
TM 55-1520-248-10

TASK 1052

TASK: Perform simulated engine failure at a hover.

CONDITIONS: In an OH-58D helicopter with an IP; in an approved touchdown area; with the MMS stowed; at hover altitude.

STANDARDS:

1. Recognize the emergency, determine the appropriate corrective action, and perform, from memory, all immediate action procedures described in TM 55-1520-248-CL.

2. Maintain heading ±10 degrees.

3. Do not allow lateral drift to exceed 3 feet.

4. Execute a smooth, controlled descent and touchdown.

5. Correctly perform crew coordination actions.

DESCRIPTION: 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 over a smooth or prepared surface, the P* will adjust the cyclic to attain a landing attitude while avoiding a tail-low condition. He will make ground contact with some forward speed. If the IP initiates the maneuver while the aircraft is over a rough area, the P* will use partial or full deceleration with touchdown speed as close to zero as possible. When the helicopter is resting firmly on the ground, the P* will smoothly lower the collective to the full-down position while simultaneously neutralizing the pedals and cyclic. The P will assist the P* as necessary.

NOTE 1: Refer to TM 55-1520-248-10 for details about procedures outlined in TM 55–1520-248-CL.

NOTE 2: Do not use heading hold during this maneuver.

NIGHT OR NVG CONSIDERATIONS: This is an NVG-prohibited training task.

REFERENCES:

AR 95-1
FM 1-203
TM 55-1520-248-10
TM 55-1520-248–CL

★TASK 1053

TASK: Perform simulated engine failure at altitude.

CONDITIONS: In an OH-58D helicopter with an IP; MMS stowed; minimum altitude of 1200-foot AGL; and termination as directed (power recovery or terminate with power).

STANDARDS:

1. Recognize the emergency, determine the appropriate corrective action, and perform or simulate as required, from memory, all immediate action procedures described in TM 1-1520-248-CL.

2. Select a suitable landing area.

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

4. Correctly perform crew coordination actions.

★**DESCRIPTION:** Upon detecting engine failure, the P* will lower the collective to maintain rotor RPM within limits while simultaneously adjusting the pedals to trim the aircraft. He will select a suitable landing area. He will also use turns and vary the airspeed (between minimum rate of descent and maximum glide), as necessary, to maneuver the aircraft for a safe landing at the intended landing area. The final approach should be generally into the wind. The P* will call out rotor RPM, gas producer, and aircraft in trim. He will also simulate setting the EMER COMM switch to EMERGENCY and making a Mayday call to the appropriate agency. He will complete or simulate emergency procedures outlined in TM 1-1520-248-CL; if time permits, the P* will direct the P to verify the procedures. The crew should plan each forced landing as continuing to the ground. Before reaching 400 feet AGL with the aircraft in a safe autorotative profile, the IP will begin smoothly advancing the throttle to the full open position and will state one of the two commands described below.

★**a.** **Power recovery**. Upon receiving the command "Power recovery," the P* will maintain trim with pedals and continue autorotative descent as the IP confirms normal operating RPM by throttle pressure with springback and by visually checking that the NP RPM is at 100 percent. When operating RPM has been confirmed, the P* will apply sufficient collective to establish a normal climb. The P* will complete the recovery prior to reaching 200 feet AGL.

★**b.** **Terminate with power**. Upon receiving the command "Terminate with power," the P* will continue the autorotative descent. Before reaching 100 feet, the IP will confirm normal operating RPM with throttle pressure with springback and visually checking that the NP RPM is at 100 percent. The P* will trim the aircraft with the pedals, and continue autorotative descent. During the final portion of the approach, he will apply sufficient power and collective pitch to decrease the rate of descent to zero at 3 to 5 feet AGL with the aircraft in a landing attitude. The airspeed at this point should be the same as if an actual touchdown were to be effected. He will maintain proper trim throughout the maneuver with the pedals, and maintain an altitude of 3 to 5 feet until the aircraft is brought to a stationary hover.

NOTE 1: Normal engine RPM must be established before passing through 100 feet AGL.

NOTE 2: Do not use heading hold during this maneuver.

★**NOTE 3:** If time permits during the descent, the IP will announce, “throttle confirmed” when he is certain that the engine is back to operating RPM.

NIGHT OR NVG CONSIDERATIONS: This is an NVG-prohibited training task.

REFERENCES:

AR 95-1
FM 1-203
★TM 1-1520-248-10
★TM 1-1520-248-CL

★TASK 1056

TASK: Perform manual throttle operations (FADEC)

WARNING

"Underspeed below 95% NR can cause unrecoverable rates of descent during final approach. Instructor Pilots must be prepared to take corrective action anytime it becomes apparent the standards will be exceeded."

CONDITIONS: In an OH-58D(R) helicopter with an IP, with the MMS off, during the day only, winds 20 knots or less, maximum gust spread of 10 knots, and no more than light turbulence.

CAUTION

Manual throttle operations with winds greater than 10 knots and or a gust spread greater than 5 knots can be very difficult depending upon the experience of the IP and the pilot.

STANDARDS:

1. Recognize the emergency and determine the appropriate corrective action.

2. Perform or simulate, from memory, all immediate action procedures outlined in TM 1-1520-248-CL.

3. Maintain RPM (NR/NP) 100% ± 5%.

4. Smoothly coordinate throttle and collective controls.

CAUTION

In the Manual mode, NP governing, NG governing, TGT limiting, engine torque limiting, limit override logic, engine surge detection/avoidance, and flameout detection/autorelight are not available. Smooth and coordinated throttle and collective adjustments are required to prevent engine overspeed, underspeed, overtemperature, surges, or compressor stall. Closely monitor NR, NP, NG and TGT.

DESCRIPTION:

Crew Actions.

a. The crew must divide their attention to maintain airspace surveillance, obstacle avoidance, and maintain RPM within limits. The IP will inform the P* of all obstacles and will confirm aircraft clearance during all turns. The IP will provide adequate warning for corrective action if maximum engine operating limits may be exceeded. The IP/P will manipulate the FADEC AUTO/MANUAL push-button switch as required and acknowledge any intent to deviate from the planned maneuver.

b. The P* will coordinate with the P for manipulation of the FADEC AUTO/MANUAL switch.

c. The P will perform as directed by the P* when switching to and from the AUTO and MANUAL position. During the maneuvers he will provide obstacle avoidance and announce when he is focused inside the aircraft.

PROCEDURES:

1. Switching from Automatic to Manual Mode on the Ground. While the aircraft is on the ground with the throttle reduced to idle and the collective full down, the IP/P will press the FADEC AUTO/MANUAL button to the MANUAL position. The P* will adjust the throttle to 100% NR. He will bring the aircraft to a stabilized hover while adjusting the throttle carefully to maintain RPM.

CAUTION

When switching from Automatic to Manual mode the aircrew may notice either an increase or a decrease in NR/NP. When switching from Automatic to Manual mode at a hover/in flight the aircraft will be positioned over a suitable forced landing area. When switching from Automatic to Manual mode in flight, maintain an altitude that will ensure obstacle clearance should there be a decrease in NR/NP.

2. Switching from Automatic to Manual Mode in Flight (Failed Fixed Simulation). While the aircraft is at a stationary hover or in level flight with cruise/hover power applied, the IP will announce “FADEC FAIL.” The P* will react to the FADEC failure by reducing the throttle as appropriate for the conditions and maintain the collective position. The P will then press the FADEC AUTO/MANUAL button to the MANUAL position. The P* will then smoothly adjust the collective as necessary to gain control of the RPM. He will adjust the throttle and collective as necessary to maintain RPM.

3. Switching from Automatic to Manual Mode in Flight (Failed to Manual Simulation). While the aircraft is at a stationary hover or in level flight with cruise/hover power applied, the IP/P will press the FADEC AUTO/MANUAL button to the MANUAL position. The P* will react to the FADEC audio tone by immediately reducing the throttle as appropriate for the conditions and smoothly adjust the collective as necessary to gain control of the RPM, then adjust the throttle and collective as necessary to maintain RPM.

CAUTION

Switching from manual to automatic mode in flight should not be accomplished with the NR below 96%. This prevents rapid torque increases, which may exceed limitations.

4. Switching from Manual to Automatic Mode. Switching the FADEC to the Automatic mode may be performed on the ground, (with the throttle reduced to idle and the collective full down), at a hover or in flight. To switch to the Automatic mode press the FADEC AUTO/MANUAL button to the AUTO position. Confirm that the AUTO legend on the button is illuminated then adjust the throttle to the full open position while ensuring that the FADEC system operates properly and maintains 100% NR.

NOTE 1: In the manual mode the collective is the most effective means of controlling NR due to reduced throttle response rates.

NOTE 2: In case of an actual in-flight emergency that requires FADEC MANUAL mode operation, the crew must use the procedures in TM 1-1520-248-10 or TM 1-1520-248-CL.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training. Training will be conducted in the OH-58D(R) helicopter according to appendix A. Only the following maneuvers may be performed while conducting FADEC Manual mode training/ evaluations:

a. Hovering flight.

b. VMC takeoff.

c. VMC approach.

d. Running landing (as described in Appendix A).

2. Evaluation. Crewmembers must demonstrate proficiency to terminate with a VMC approach and may be assessed to terminate with a running landing.

REFERENCES:

FM 1-203
TM 1-1520-248-10
TM 1-1520-248-CL

TASK 1067

TASK: Perform aerial observation.

CONDITIONS: In an OH-58D helicopter or described orally in a classroom environment.

STANDARDS:

1. Use 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 crew is primarily concerned with detection, identification, location, and reporting. Because the crew may be hampered by aircraft maneuvers, they must devote their efforts to visually observing the terrain within the time available.

a. **Detection.** Detection requires determination that an object or an 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.** Determining the exact location of targets is the objective of the mission. Depending on the nature of the targets, the aeroscout observer may be able to locate the center of mass or the boundaries of the entire area with the LRF/D.

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. The ATHS should be used as the primary means for reporting information. (Task 1085 discusses the procedure for transmitting messages with the ATHS and Task 1092 shows the standard format for a voice 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 visual search is to detect objects or activities on the ground. The ability of a crew member 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, airspeed, terrain and meteorological conditions, and visual cues.

a. Altitude. Higher altitudes offer greater visibility with less detail. Lower altitudes are usually used because of survivability considerations.

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

c. Terrain and meteorological conditions. The size and details of the area that can be effectively covered largely depend on the type of terrain, such as dense jungle or barren wasteland. 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 will differ from the color of natural foliage. Color cannot be detected with the MMS.

(2) Texture. Smooth surfaces, such as glass windows or canopies, will shine when reflecting light. Rough surfaces will not.

(3) Shadows. Man-made objects cast distinctive shadows characterized by regular shapes and contours, as opposed to the random patterns which occur naturally. The TIS LEVEL may be increased to search in shadows.

(4) Trails. Trails leading into an area should be observed for cues as to the type and quantity of traffic, and how recently it passed. Vehicle trails, especially at night, can often be detected with the TIS for some time after a vehicle has passed.

(5) Smoke. Smoke should be observed for color, smell, and volume. The CPO can use the TIS to determine the cause of the smoke.

(6) **Movement and light.** The most easily detectable sign of enemy activity is movement and, at night, light. Movement may include disturbance of foliage, snow, soil, or birds.

(7) **Obvious sightings.** The enemy is skillful in the art of camouflage. The P*/P must be aware that obvious sightings may be intentional because of high concentrations of antiaircraft weapons.

(8) **Heat.** Heat, especially at night, is normally a sign of man–made objects. The CPO can use the TIS to detect heat from standoff ranges and through obscurations.

3. The techniques that provide systematic methods for conducting visual aerial observation, with or without the use of the MMS, are motive and stationary. The technique used will depend on the altitude flown and the terrain encountered.

a. **Motive technique.** This technique is used when the aircraft is operating at terrain flight altitudes and at airspeeds of generally 10 KIAS or faster. The entire area on either side of the aircraft is divided into two major sectors: the nonobservation sector and the observation work sector. The nonobservation sector is the area where the crew member'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, the acquisition and recognition 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 crew member 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.

b. **Stationary technique.** This technique is used at NOE altitudes with the helicopter hovering in a concealed position. When using the stationary technique, the crew member 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. He 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.

4. During terrain flight the CPO can use the MMS to clear terrain and detect targets. Depending on the factors of METT-T, the P* may initially unmask the aircraft so the CPO can quickly scan the area for obvious sightings. After the CPO has scanned the area, the P* should remask the aircraft, move to a new position, and unmask only the MMS. (Task 1090 describes masking and unmasking procedures.) Once the MMS is unmasked the CPO should scan the area using the WFOV feature of the TVS or TIS.

a. In scanning the area, the CPO should--

(1) Concentrate on avenues of approach while periodically scanning adjoining terrain. (The prepoint mode can be used to aid orientation.)

(2) Select mutually supportive fields of view when working with other aircraft. This will ensure coverage of “dead spaces” that may exist in front of the aircraft because of the depression limit of the MMS.

(3) Use the MMS at maximum ranges to increase reaction time and survivability and to enhance early development of the situation.

b. The MMS has four search capabilities which the P should use to the fullest advantage. They are--

(1) **Forward-manual search.** The TIS WFOV WHOT/BHOT is normally used to initially scan the desired viewing area for obvious enemy sightings.

(2) **Area track.** This allows the CPO to stabilize the MMS for viewing likely avenues of approach or target areas.

(3) **Prepoint mode.** Prepoint mode allows the CPO to concentrate on specific points on avenues of approach while periodically scanning the adjoining terrain. It can also be used as an aid in orienting the MMS. The MMS can prepoint to any waypoint stored in the waypoint list.

(4) **Search mode.** This is used to search large open areas, target areas, or avenues of approach in a predetermined search pattern.

c. The crew can use three techniques to display the MMS sensors on the MFDs. They are--

(1) **Single screen.** The crew member can use any of the MMS modes/sensors as desired. The TIS is the quickest mode for detecting targets which give off heat.

(2) **Dual screen daytime.** One MFD should be in the TIS mode and properly adjusted for maximum target detection. The other MFD should be in the TVS mode. This allows the crew member to maintain battlefield orientation with one MFD while searching for hot spots with the other. This technique is especially useful when searching for targets in dense vegetation.

(3) **Dual screen nighttime.** Both MFDs may be operated in the TIS mode. This keeps two sets of eyes looking at the battlefield and gives the P* another altitude reference while masking.

NOTE 1: The P* can use the MMS mode, hover/hover bob-up, heading hold, visual references, ADSS, or any combination to maintain position.

NOTE 2: The CPO can use the AVTR to record information or the freeze–frame mode of the TIS to study a specific point of interest from a standoff or masked position.

NIGHT OR NVG CONSIDERATIONS: The P* must use a constant scan to ensure that he does not become fixated on the MFD.

REFERENCES:

FM 1-114
FM 1-116
FM 1-203
FM 1-402
FM 17-95
TB MED 524
TM 55-1520-248-10

TASK 1068

TASK: Perform or describe emergency procedures.

CONDITIONS: In an OH-58D helicopter with an IP, in a CPT, or orally in a classroom environment; given a specific emergency condition.

STANDARDS:

1. Aviator. Without error, perform or describe the appropriate emergency procedures according to TM 55-1520-248-10.

2. Aeroscout Observer.

a. Without error, set avionics to the appropriate frequency and the transponder to the appropriate code.

b. Read the appropriate checklist procedure in the correct sequence, if time permits.

c. Without error, perform those duties directed by the aviator.

3. Crew. Correctly perform crew coordination actions.

DESCRIPTION:

1. Aviator. Perform or describe the appropriate emergency procedures as outlined in TM 55-1520-248-10. Request appropriate emergency assistance as described in the AIM.

2. Aeroscout Observer. When an emergency occurs, tune the avionics to the appropriate frequency and set the transponder to the appropriate code. Inform the controlling agency of the nature of the emergency. If time permits, locate the appropriate procedure in the checklist. Upon the P*'s request, read the procedure to him. Perform any other duties requested by the P*.

NOTE 1: Those emergency procedures that cannot be practiced in the aircraft will be performed in the CPT or discussed orally.

NOTE 2: A thorough crew briefing is the most effective means of defining cockpit responsibilities during an emergency.

REFERENCES:

TM 55-1520-248–10
TM 55-1520–248-CL

TASK 1075

TASK: Perform instrument takeoff.

CONDITIONS: In an OH-58D helicopter; simulated IMC; with hover power and before-takeoff checks completed.

STANDARDS:

1. Correctly set attitude indicator.
2. Maintain required takeoff power ±2 percent torque.
3. Maintain accelerative climb attitude ±l bar width.
4. Maintain takeoff heading ±10 degrees.
5. Maintain aircraft in trim after ETL.
6. Maintain appropriate rate of climb ±100 FPM.
7. Correctly perform crew coordination actions.

DESCRIPTION:

1. From the Ground. The P* will align the aircraft with the desired takeoff heading. He will set the attitude indicator for takeoff (approximately 4 degrees nose high). With the cyclic in neutral position, he will smoothly increase the collective until the aircraft becomes light on the skids. He will use outside visual references to prevent movement of the aircraft, and check controls for proper response. The P* should apply pressure and counterpressure to the pedals to ensure the aircraft is free to ascend. While referring to the flight instruments, he will smoothly increase the collective to obtain takeoff power. As the collective is increased, he will cross-check the attitude and heading indicators to ensure a proper attitude (approximately 4 degrees nose high) and constant heading. When takeoff power is reached and the altimeter shows a positive climb, he will adjust to level pitch attitude for the initial acceleration. He will maintain heading with the pedals until airspeed increases (generally 20 to 30 KIAS), and then make the transition to coordinated flight. Upon approaching climb airspeed (approximately 60 KIAS) , the P* will adjust controls as required to maintain desired climb airspeed. The P will assist the P* by warning of drift or excessive roll of the aircraft. The P will verify climb and airspeed and assist the P* as necessary to prevent fixation and spatial disorientation.

2. <u>From a Hover.</u> On the runway or takeoff pad, the P* will align the aircraft with the desired takeoff heading. He will set the-attitude indicator for takeoff (approximately 4 degrees nose high) and will check the controls for the proper response. The P* will establish the aircraft at a 3-foot hover. He will initiate the takeoff by smoothly and steadily increasing the collective until takeoff power is reached. He will simultaneously adjust pitch attitude as necessary to establish initial accelerative climb attitude. The P* will visually maintain runway clearance and alignment on takeoff until the aircraft accelerates through ETL. At that time, he will direct his attention to the flight instruments and establish an instrument cross-check. The P will verify climb and airspeed and assist the P* as necessary to prevent fixation and spatial disorientation.

NOTE 1: Takeoff power will normally be 10 percent above mast torque required for hover.

NOTE 2: Cross-check the VSD with the standby flight instruments throughout the maneuver.

REFERENCES:

AR 95-1
FM 1-203
FM 1-240
TC 1-204
TM 55-1520-248-10
TM 55-1520-248-CL

TASK 1078

TASK: Perform unusual attitude recovery.

CONDITIONS: In an OH-58D helicopter with a UT, an IP, or an IE; simulated IMC; with standby flight instruments or a fully operational VSD.

STANDARDS:

1. Correctly analyze aircraft attitude.

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. **P*.** Upon detecting an unusual attitude, the P* 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. Trimming the aircraft.

2. **P.** The P will assist the P* by--

a. Monitoring the flight instruments.

b. Warning the P* of an unusual attitude during hooded or IMC flight.

c. Warning the P* of traffic or obstacles.

NOTE: Cross-check the VSD with the standby flight instruments throughout the maneuver.

REFERENCES:

AR 95-1
FM 1-240
TM 55-1520-248-10

Task 1079

TASK: Perform radio communication procedures.

CONDITIONS: In an OH-58D helicopter or in a CPT with two-way radio communications established.

STANDARDS:

1. Without error, adjust avionics to the proper frequencies.

2. Establish radio contact with the appropriate ATC facility.

3. Use correct radio communication procedures and phraseology per the DOD FLIP, when communicating with ATC facilities.

4. Acknowledge each radio communication with ATC by using the correct aircraft call sign.

5. Acknowledge and comply with instructions to change frequencies.

6. Correctly perform crew coordination actions.

DESCRIPTION: Set and adjust avionics as required, and monitor them continuously. When required, establish communications with the appropriate facility. Monitor the frequency before transmitting. Transmit pilot reports, tactical 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, position, or altitude. Use radio communication procedures and phraseology as appropriate for the area of operations.

REFERENCES:

AIM
DOD FLIP
Unit SOP

TASK 1080

TASK: Perform procedures for two-way radio failure.

CONDITIONS: In an OH-58D helicopter or in a classroom environment.

STANDARDS:

1. **Aviator/P*.** Implement correct procedures for two-way radio failure.

2. **Aeroscout Observer/P.** Implement correct procedures for two-way radio failure as directed by the aviator.

3. **Crew.** Correctly perform crew coordination actions.

DESCRIPTION:

1. **Aviator.**

a. **VFR conditions.** If two-way radio failure occurs in VFR conditions or if these conditions are encountered after the failure, continue the flight under VFR. Land as soon as practicable per procedures in the AIM, DOD FLIP, and unit SOP.

b. **IMC.**

(1) If two-way radio failure occurs while operating in the NAS, adjust the transponder and continue the flight according to instructions in the AIM.

(2) If two-way radio failure occurs while operating outside CONUS, comply with ICAO rules or applicable host country regulations.

2. **Aeroscout Observer.** Upon determining the loss of two-way radio communications, assist the P* by performing duties as requested. Duties may include attempting contact on an alternate frequency or radio and transmitting the appropriate transponder code.

NOTE: To confirm two-way radio failure, channel Up and down, reset on original frequency, and attempt communication. If failure still exists, check for audio distribution unit failure. If confirmed, use FM-1. If not confirmed, follow the procedures described in 1. above.

REFERENCES:

AIM
DOD FLIP

TASK 1081

TASK: Perform nonprecision approach (GCA).

CONDITIONS: In an OH-58D helicopter; simulated IMC; with appropriate DOD FLIP; approach clearance received; and before-landing check completed.

STANDARDS:

1. **Aviator/P*.**

a. Execute the approach according to AR 95-1, FM 1-240, and DOD FLIP.

b. Maintain airspeed ±10 KIAS.

c. Maintain altitude ±100 feet.

d. Maintain heading ±5 degrees.

e. Comply with descent minimums prescribed for the approach.

f. Execute correct missed approach procedure immediately upon reaching the MAP if a landing cannot be accomplished.

2. **Aeroscout Observer/P.**

a. Without error, request, acknowledge, and record ATC information.

b. Without error, program the navigation system to the appropriate approach waypoints with the aid of the DOD FLIP.

c. Provide the P* with correct approach minimums as listed in the appropriate DOD FLIP.

3. **Crew.** Correctly perform crew coordination actions.

DESCRIPTION: The P* will perform the approach as described in FM 1-240. The P will assist the P* by tuning the avionics to the proper frequencies and providing radar instrument approach minimums listed in the DOD FLIP. The P maintains communications with ATC and records ATC information when appropriate. He programs the navigation system with waypoints so the approach can be completed or a missed approach executed in case of lost communications. The P must be alert for other aircraft in the vicinity and inform the P* immediately should any be sighted, using clock positions and the terms "high," "low," or "level."

NOTE 1: During the initial call, the P*/P should advise ATC that the aircraft is not equipped with NAVAID receivers.

NOTE 2: The P* and P should advise each other before changing frequencies, next waypoints, or NAV updating.

REFERENCES:

AR 95-1
DOD FLIP
FM 1-240
TM 55-1520-248-10

TASK 1082

TASK: Perform precision approach (GCA).

CONDITIONS: In an OH–58D helicopter; simulated IMC; with appropriate DOD FLIP; radar contact established with the controller; and before-landing check completed.

STANDARDS:

1. **Aviator/P*.**

a. Execute the approach according to AR 95-1, FM 1-240, and DOD FLIP.

b. Maintain airspeed ±10 KIAS.

c. Maintain altitude ±100 feet.

d. Maintain heading ±5 degrees.

e. Make immediate heading and altitude corrections issued by ATC.

f. Comply with descent minimums prescribed for the approach.

g. Execute correct missed approach procedure immediately upon reaching the MAP if a landing cannot be accomplished.

2. **Aeroscout Observer/P.**

a. Without error, request, acknowledge, and record ATC information.

b. Without error, program the navigation system to the appropriate missed approach waypoints with the aid of the DOD FLIP.

c. Provide the P* with correct approach minimums as listed in the appropriate DOD FLIP.

3. **Crew.** Correctly perform crew coordination actions.

DESCRIPTION: The P* will perform the approach as described in FM 1-240. The P will assist by tuning avionics to the proper frequencies and providing radar instrument approach minimums listed in the DOD FLIP. The P maintains communications with ATC and records ATC information when appropriate. He programs the navigation system with waypoints to use in case of lost communications or a missed approach. The P must be alert for other aircraft in the vicinity and inform the P* immediately should any by sighted, using clock positions and the terms “high,” “low,” or “level.“

NOTE 1: During the initial call, the P*/P should advise ATC that the aircraft is not equipped with NAVAID receivers.

NOTE 2: The P* and P should advise each other before changing frequencies, next waypoints, or NAV updating.

REFERENCES:

DOD FLIP
FM 1-240
TM 55-1520-248–10

TASK 1083

TASK: Perform or describe inadvertent IMC procedures\VHIRP.

CONDITIONS: In an OH-58D helicopter; simulated IMC; or orally in a classroom environment.

STANDARDS:

1. **Aviator/P*.**

   a. Maintain proper aircraft control, and make the transition to instrument flight immediately.

   b. Initiate a climb immediately.

   c. Without error, comply with local vertical helicopter instrument recovery procedures.

2. **Aeroscout Observer/P.**

   a. Monitor the attitude indicator and immediately alert the P* of any unusual attitude condition.

   b. Without error, tune avionics to appropriate frequency and set transponder to appropriate code.

   c. Without error, request ATC assistance, acknowledge and record appropriate information.

   d. Properly program the navigation system, if time permits.

3. **Crew.** Correctly perform crew coordination actions.

DESCRIPTION:

1. **Aviator/P*.** If inadvertent IMC is encountered, proceed as follows.

   a. Level the wings on the attitude indicator.

   b. Maintain heading; turn only to avoid known obstacles.

   c. Adjust torque to climb power.

   d. Adjust airspeed to climb airspeed.

   e. Complete the procedure per local regulations and policies.

2. Aeroscout Observer/P. When the P* announces "I am IMC," immediately check the attitude indicator to determine whether the aircraft is level. If the aircraft is not level, immediately alert the P* by announcing "The aircraft is not level." Continue to assist the P* by programming the navigation system, tuning the avionics, and contacting the appropriate ATC facilities as outlined in the unit SOP. Maintain required communications with ATC, and record ATC information when appropriate. Monitor instruments as directed by the P*.

NOTE 1: During the initial call the P*/P should advise ATC that the aircraft is not equipped with NAVAID receivers.

NOTE 2: The P* and P should advise each other before changing frequencies, next waypoints, or NAV updating.

REFERENCES:

AR 95-1
AR 95-10
DOD FLIP
FM 1-203
FM 1-240
TC 1-204
Unit SOP

★TASK 1085

TASK: Perform digital communication operations (ATHS or IDM)

CONDITIONS: In an OH-58D helicopter.

STANDARDS:

1. Configure the ATHS/IDM for desired operation.

2. Access, review, and delete received ATHS/IDM messages as needed.

3. Transmit artillery and air missions, reports, movement or free text messages.

4. Zeroize, transmit bulk data and configure and use authentication tables.

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew Actions.

a. The P* is primarily responsible for obstacle avoidance and clearing the aircraft.

b. The P (left seat) will operate the system and announce when focused inside the cockpit.

2. Procedures. Configure the ATHS/IDM according to the unit SOP and operate according to the Operator’s Manual.

NIGHT OR NVG CONSIDERATIONS: A thorough crew briefing should be conducted prior to NVG operations, crew coordination is crucial. When operating the ATHS/IDM the P must not distract the P* to the point he focuses his attention away from flying the aircraft. The P should momentarily assist the P* with obstacle avoidance and clearing the aircraft and announce when doing so.

REFERENCES:

Unit SOP
Operator’s Manual

TASK 1087

TASK: Perform or describe downed aircraft procedures.

CONDITIONS: In an OH-58D helicopter, in a tactical environment, or orally in a classroom environment.

STANDARDS:

1. Without delay, zeroize all data in the MFK and ATHS.

2. Without delay, remove, secure, or destroy critical items such as maps, SOI, ordnance, and special equipment.

3. Properly administer first aid to injured personnel.

4. Accurately report the situation using the prescribed elements of information.

5. From memory, know the procedure for destroying the aircraft.

6. Correctly perform crew coordination actions.

DESCRIPTION: The actions to be taken by the crew of a downed aircraft will depend on the intensity of the threat and the capabilities of the aviation unit. In combat operations, the recovery of downed aircraft is secondary to mission accomplishment by the total force.

a. **Low-threat environment.** If the aircraft is downed in a low-threat environment, the crew should--

(1) Zeroize frequencies, navigational data, laser codes, and IFF information in the MFK and clear all data entries in the ATHS.

(2) Remove, secure, or destroy critical items such as classified material, ordnance, and sensitive equipment.

(3) Administer first aid to injured personnel.

(4) Use the fastest means available to report the situation to the aviation unit commander. Elements of information to include in the report are--

(a) Identification.

(b) Location.

(c) Personnel injured and personnel able to continue the mission.

(d) Condition of the aircraft.

(e) Evidence of NBC contamination.

(f) Enemy situation, to include the air defense threat.

(g) Accessibility to the downed aircraft.

(h) Intentions.

(5) Assist in the recovery operation.

b. **High-threat environment.** If the aircraft is downed in a high-threat environment, the crew should accomplish the actions described in paragraph a. In addition, the crew should--

(1) Secure the immediate area around the aircraft.

(2) Prepare the aircraft for destruction on order or as specified in the unit SOP in the absence of orders.

(3) Move to a rendezvous point or follow the escape and evasion plan outlined in the unit SOP.

REFERENCES:

FM 1-400
TM 55-1520-248-10
TM 750-244-1–5
Unit SOP

TASK 1090

TASK: Perform masking and unmasking.

CONDITIONS: In an OH-58D helicopter with hover power check completed.

STANDARDS:

1. **Aviator/P*.**

a. Perform a thorough map reconnaissance of the desired observation area.

b. Correctly mask the aircraft from enemy visual and electronic detection.

c. Ensure that exposure of the aircraft does not exceed ten seconds during the unmasking.

d. When using the MMS, unmask the MMS only.

e. Maintain sufficient distance behind obstacle to allow for safe maneuvering.

f. Move to a new location, if available, before subsequent unmasking.

2. **Aeroscout Observer/P.**

a. Perform a thorough map reconnaissance of the desired observation area.

b. Properly monitor instruments as directed by the aviator.

c. Properly clear the aircraft.

d. Immediately alert the P* of aircraft drift during hover.

3. **Crew.** Correctly perform crew coordination actions.

DESCRIPTION: The P*/P should perform a thorough map reconnaissance to identify natural and man-made features en route and when hovering at the desired observation area. During masking and unmasking, the P*/P must clear the aircraft directly below if descending vertically or in the flight path if moving laterally. (Task 1067 describes visual search techniques.)

a. **Masking in flight.** The P*, assisted by the P on the map, flies to the objective. While navigating, the P informs the P* of routes that provide concealment from enemy visual observation or electronic detection. The P* must maintain orientation at all times. The P should look far enough ahead on the map for hazards and alert the P* of any shown on the map well in advance of reaching them.

b. **Unmasking in flight.** The P* should keep exposure time to a minimum to prevent enemy visual observation or electronic detection. The P* and P must be aware that gun dish radar can lock on a target within two to nine seconds. The P assists the P* by timing the exposure to ensure it is kept to a minimum.

c. **Unmasking at a hover (vertically).**

(1) The P* performs a hover power check, if required, to ensure power is available to unmask. The P assists the P* by monitoring aircraft instruments. The P* applies collective until sufficient altitude is obtained to see over the mask while not exceeding aircraft limitations. The P* should 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, he should ascend at a safe distance from the mask to allow the aircraft to descend and remask rapidly in case it is detected or fired on. The P* should be aware of a common tendency to move forward or rearward while masking and remasking vertically.

(2) The P* should not expose the aircraft for more than ten seconds before descending to a masked condition. Exposure time for the MMS is not restricted. To maintain the MMS in an unmasked position, the P* can use the MMS mode on his MFD, hover bob-up, heading hold, visual references, or any combination. He can also follow directions given by the P.

d. **Unmasking at a hover (laterally).** Sometimes unmasking can be accomplished by moving laterally from the mask. The P* should hover the aircraft sideward to provide the smallest silhouette possible to enemy observation or fire. He should not unmask the aircraft for more than ten seconds. The P assists the P* by timing the exposure and advising him of any obstacles observed from the left side of the aircraft.

NOTE 1: Lateral unmask is not a desired method in this aircraft and should only be used when other methods are impracticable.

NOTE 2: If box drift is experienced during hover bob-up mode, the crew should perform doppler calibration.

NOTE 3: Hover OGE power is required for masking and unmasking.

NIGHT OR NVG CONSIDERATIONS: At night, it is difficult for the P* to maintain a constant position over the ground when hovering above 25 feet without helicopter lights. Because visual references are fewer at night, the P* will rely heavily on the P for clearing the aircraft and maintaining the aircraft's position over the ground.

REFERENCES:

FM 1-203
TC 1-204
TM 55-1520-248-10

TASK 1091

TASK: Perform tactical communication procedures and electronic counter-countermeasures.

CONDITIONS: **In an OH-58D helicopter with SOI.**

STANDARDS:

1. **Aviator/P*.**

   a. Properly operate aircraft avionics.

   b. Maintain radio discipline at all times.

   c. Correctly use SOI.

   d. Correctly recognize and respond to enemy EW actions.

2. **Aeroscout Observer/P.**

   a. Properly operate aircraft avionics.

   b. Maintain radio discipline at all times.

   c. Correctly use SOI.

   d. Correctly recognize and respond to enemy EW actions.

   e. Correctly use the ATHS to transmit digital communications per the unit SOP.

3. **Crew.** Correctly perform crew coordination actions.

DESCRIPTION:

1. **Voice Communication.** Voice communication in a tactical environment should only be used when absolutely necessary. If voice communication is required, the best method is to operate in the secure voice mode. To eliminate confusion and reduce transmission time, the P*/P must use approved communication words, phrases, and must transmit information clearly, concisely, and slowly enough to be understood by the receiving station. (Ideally, transmissions should be kept under ten seconds.) A unit or an individual must not be identified by name during non-secure radio transmissions.

2. **Digital Communication.** If the enemy is not jamming, the AO/P should use the lowest FM power setting required, the lowest block selection (single), and the highest baud rate (1200). If

jamming is experienced or anticipated, the CPO\P should use the ATHS for communicating.

3. Communication Considerations.

a. Authentication. The P*/P 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 P*/P must keep accurate and detailed records of any MIJI incidents suspected to be intentional interference. He must use a secure communication means to report the incident as soon as possible.

c. SIF/IFF usage. During radio checks, the P*/P should select the appropriate transponder mode on the selector and test the system. He should monitor the SIF/IFF reply indications during the flight.

d. Antijamming procedures. To overcome jamming, the AO/P should reconfigure the ATHS; that is, change the block selection to double and the baud rate to 1200. In addition, he should use high frequency, Have Quick 1/11, or should change the FM power setting to HIGH. Changes must be coordinated with other aircraft per the unit SOP to ensure uninterrupted reception.

4. Radio Silent Operations. Future combat operations may require crews to fly missions without the use of radios. Alternate means of communication are briefly described below.

a. 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.

b. 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: The P*\P must adhere to positive flight-following procedures during tactical operations per the appropriate flight coordination center and unit SOP.

REFERENCES:

FM 1-103
FM 1–400
TM 11-5895–1199–12
TM 55-1520–248-10
Unit SOP

TASK 1092

TASK: Transmit a tactical report (voice).

CONDITIONS: In an OH-58D helicopter or in a classroom environment and given sufficient information to compile a tactical report.

STANDARDS:

1. Correctly transmit appropriate report using proper format.

2. Correctly perform crew coordination actions.

DESCRIPTION: The P*/P must be able to provide timely, concise reports. To save time, reduce confusion, and ensure completeness, information should be reported according to an established format. Standard formats for four different types of reports are given below.

a. **Spot report.** A spot report is used to report information about the enemy and area of operations.

(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 P*/P must submit a BDA following naval gunfire, artillery fire (if requested), or a tactical air strike.

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. (These may be omitted; however, they may contain additional information such as the direction the enemy may have taken in leaving the target area.)

c. **Enemy shelling, bombing, or NBC warfare activity report.** The P*/P must submit this report following enemy shelling, bombing, or NBC warfare activity.

ALFA: From (unit call sign) and type of report.
BRAVO: Position of observer (grid coordinates in code).
CHARLIE: Azimuth of flash, sound, or groove of shell (state which) or origin of flight path of missile.
DELTA: Time from (date-time of attack).
ECHO: Time to (for illumination time).
FOXTROT: Area attacked (either azimuth and distance from observer in code or grid coordinates in the clear).
GOLF: Number and nature of guns, mortars, aircraft, or other means of delivery, if known.
HOTEL: Nature of fire (barrage, registration, and so on) or NBC-1 type of burst (air or surface) or type of toxic agent.
INDIA: Number and type of bombs, shells, rockets, and so on.
JULIETT: Flash-to-bang time in seconds.
KILO: If NBC-1, damage (in code) or crater diameter.
LIMA: If NBC-1, fireball width immediately after shock wave (do not report if data was obtained more than five minutes after detonation).
MIKE: If NBC–1, cloud height (state top or bottom) ten minutes after burst.
NOVEMBER: If NBC-1, cloud width ten minutes after burst.

NOTE: State units of measure used, such as meters or miles. For additional information, see FMs 3-12 and 3-100. As a minimum, an NBC-1 report requires lines A, B, C, D, H, and J and either L or M.

d. <u>Meaconing, intrusion, jamming, and interference report.</u> Once jamming is discovered, the P*\P must report the interference as soon as practicable to higher headquarters.

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 (UHF, VHF, FM, 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 percent of transmission blockage).
Line 10: Operator's name and rank.
Line 11: Remarks (list anything else that may be helpful in identifying or locating source of interference, and send it to higher headquarters by an alternate, secure means).

NOTE: Encryption is only required if information is transmitted over nonsecure means.

REFERENCES:

FM 1-112
FM 1-114
FM 1-116
FM 1-400
FM 3-12
FM 3-100
FM 17-95
FM 34-1

TASK 1094

TASK: Identify major US or allied equipment and major threat equipment.

CONDITIONS: In a tactical or 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 NATO nomenclature per FM 1-402.

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. Identify major US or allied equipment expected to be in the area of operations while looking at the actual equipment or when shown photographs or mock-ups of the equipment.

2. Identify major threat equipment expected to be in the area of operations while looking at the actual equipment or when shown photographs or mock-ups of the equipment. Identify equipment by NATO nomenclature.

REFERENCE:

FM 1-402
Unit SOP

TASK 1095

TASK: Operate aircraft survivability equipment.

CONDITIONS: In an OH-58D helicopter or in a CPT equipped with ASE; during a tactical flight in a simulated threat environment.

STANDARDS:

1. Correctly prepare equipment for operation.

2. Without error, perform self-test check if required.

3. Without delay, identify the threat from the visual display or audio warning.

4. Properly operate the equipment.

5. Correctly perform crew coordination actions.

DESCRIPTION: Perform or simulate operational and employment procedures and precautions for the AN/APR-39(V)1, AN/APR-39A(V)1, APR-44, and AVR–2. These include preflight inspection; turn-on, self-test, and operational checks; mission employment doctrine and operating procedures; partial failure alternatives; indication or signal interpretation; and shutdown procedures.

NOTE: Refer to the technical manuals listed below for details about the operation of ASE currently on the aircraft.

REFERENCES:

TM 11-5841–283–12
TM 55–1520–248–10

TASK 1096

TASK: Perform actions on contact.

CONDITIONS: In an OH-58D helicopter in a simulated tactical environment.

STANDARDS:

1. Aviator/P*. Use the correct actions on contact consistent with the tactical situation.

2. Aeroscout Observer/P. Properly assist the P* in performing the actions on contact.

3. Crew. Correctly perform crew coordination actions.

DESCRIPTION:

1. If crew members make contact with the enemy without being observed or taking fire, they should--

a. Immediately deploy to a covered and concealed position from which they can observe or direct fire.

b. Attempt to determine location through target locate, if time permits.

c. Continue to maintain observation with the MMS.

d. Report the situation per the unit SOP.

e. Develop the situation as required.

f. Choose a course of action. (The commander normally determines the course of action based on the immediate situation and the mission.)

2. If first contact results in the helicopter being observed or fired upon, crew members should--

a. Immediately deploy to cover or take the appropriate evasive action. (Task 2008 describes evasive maneuvers.)

b. Attempt to determine location through target locate, if time permits. If possible, they should capture sightings on the freeze-frame mode of the TIS.

c. Employ suppressive fire, if available.

d. Take the actions as described in paragraphs 1c through 1f.

REFERENCES:

FM 1-112
FM 1-114
FM 1-116
FM 17-95
Unit SOP

TASK 1097

TASK: Negotiate wire obstacles.

CONDITIONS: In an OH-58D helicopter in a simulated tactical environment.

STANDARDS:

1. Aviator/P*.

a. Locate and accurately estimate the height of wires.

b. Determine the best method to negotiate the wire obstacle.

2. Aeroscout Observer/P. Assist the P* in locating and estimating the height of wires.

3. Crew. Correctly perform crew coordination actions.

DESCRIPTION:

1. Aviator/P*. Locate wires and accurately estimate the amount of available clearance between them and the ground to determine the method of crossing. Locate guy wires and supporting poles. Overfly wires at poles, if possible. Before crossing, identify the highest wire. Cross near a pole to aid visual perception. However, ensure lateral clearance from guy wires and poles. When underflying wires, maintain minimum clearance (hover height plus 25 feet) and ground speed (no greater than that of a brisk walk).

2. Aeroscout Observer/P. Use a map to alert the P* of possible wire hazards. Advise the P* of a wire obstacle at least 500 meters before reaching it, then assist him in accurately estimating the height of the wire obstacle.

NOTE 1: The P* and P must maintain proper scanning techniques to ensure obstacle avoidance and aircraft clearance. When underlying wires, the P can use the MMS and radar altimeter as aids in determining whether sufficient clearance exists.

NOTE 2: The P may dismount and act as a ground guide during this task.

NIGHT OR NVG CONSIDERATIONS:

1. This task should not be performed while using the NVG unless the location has been checked during daylight conditions and all hazards identified.

2. Wires are difficult to detect with the NVG.

REFERENCES:

TC 1-201
TC 1-204
Unit SOP

TASK 1098

TASK: Perform after-landing tasks.

CONDITIONS: In an OH-58D helicopter or in a CPT.

STANDARDS:

1. **Aviator/P*.** Without error, perform after-landing tasks according to TM 55-1520-248-10.

2. **Aeroscout Observer/P.**

a. Read the checklist to the aviator in the correct sequence.

b. Without error, perform those duties directed by the aviator.

c. Properly shut down or secure the appropriate systems.

3. **Crew.** Correctly perform crew coordination actions.

DESCRIPTION:

1. **Aviator/P*.** Accomplish after-landing tasks as required, including engine shutdown and before-leaving aircraft checks. Close the flight plan; if required, complete a DA Form 2696-R (Operational Hazard Report).

2. **Aeroscout Observer/P.** Using the checklist, assist the P* with after-landing checks by reading the checklist in the correct sequence. Perform those duties directed by the P* as outlined in TM 55-1520-248–10. Properly shut down or secure the appropriate systems.

NOTE: TM 55–1520-248–10 contains details about procedures outlined in TM 55–1520-248-CL.

REFERENCES:

AR 95-1
AR 385-95
TC 1-204
TM 55-1520-248-10
TM 55-1520-248–CL

TASK 1099

TASK: Operate Mark XII IFF System.

CONDITIONS: In an OH-58D helicopter, equipped with the Mark XII IFF System; during tactical flight; given a mission briefing, to include SOI information.

STANDARDS:

1. Correctly prepare system for operation.

2. Correctly perform self-test check.

3. Correctly classify IFF/XPDR defects relative to the mission.

4. Correctly operate the equipment without assistance.

5. Correctly perform crew coordination actions.

DESCRIPTION: Perform or simulate the operational and employment procedures and precautions for the Mark XII IFF System. These include preflight inspection; turn-on, self-test, and operational checks; mission employment doctrine and operating procedures; partial failure alternatives; indication or signal interpretation; and shutdown procedures.

NOTE: Refer to TM 11-5895-1199-12 for details about the Mark XII IFF System.

REFERENCES:

TM 11-5895-1199-12
TM 55-1520-248-10

TASK 1114

TASK: Operate 2.75-inch rocket system.

CONDITIONS: In an OH-58D helicopter on an approved range or simulated tactical environment with weapons initialization procedures completed.

STANDARDS:

1. Correctly place the system into operation.

2. Correctly engage the target.

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. **Rocket Engagements.** The CPO\P* will announce "rocket engagement," "ready to engage," and "engagement complete." He will confirm the appropriate actions by the other crew member in the MMS\WEAPONS VSD. The crew member not engaging the target will monitor the position of the aircraft to ensure that it is clear of all obstacles.

a. To engage the target, the CPO\P* will place the ACP in the STBY\ARM mode and use the WEAPONS SELECT switch to select the appropriate side of the aircraft from which the rockets will be launched. The first select will make the system operational with the WEAPONS VSD, and the second select will display the SPARSE WEAPONS VSD. The rocket pitch cue will be displayed and cue will be based on laser, auto, or manual range entry. The laser range used for the pitch attitude cueing will also be displayed. (The cueing that is displayed is only valid for the MK-66 rocket with heavy munitions. The display will read "LT" for light or "HVY" for heavy next to the munitions on the WEAPONS SETUP page.) If no laser range is available, then the P*/P must determine an accurate range to the target either by using pre-point/ATHS or the NAV system. He must also determine the correct pitch attitude adjustment for the range being fired.

b. The CPO\P must acquire and track the target with the MMS while maintaining the LOS reticle on the target. Use of the LRF/D causes the pitch attitude cueing on the rocket SPARSE WEAPONS VSD to update. The best firing solution is met when the rocket steering cursor (I bar) overlays the LOS reticle and the aircraft symbology aligns with the PITCH CUEING.

c. To fire the rockets, the P* will lift the protective cover over the firing switch and press it to the second detent. The selected number of rockets will fire from the specified zone(s). If the system is not armed when the firing switch is pressed, the advisory "WEAPON NOT ARMED" will display on the MFD. If the trigger is released before the selected quantity is fired, firing stops and the RRU resets for the next salvo. The P* will release the switch when the target is neutralized or the selected quantity of rockets has been fired. To deselect ROCKETS select another weapon system or place the MASTER SWITCH in the STBY/OFF mode.

2. Pilot's Display Unit.

a. The P* may use the PDU to engage tarqets, if desired. The P*/P must place the ACP to an ARMED position, then the P* selects the rocket system. If the center of the PDU display is used for alignment and the horizontal bars are used for range cueing, the P* may remain "heads-up" while engaging targets.

b. The CPO/P will verify that the system is ARMED, the MODE/FUZE/ZONE information is correct, and makes changes as necessary. The CPO/P will provide adequate warning to avoid obstacles in the flight path. He will announce whether he is focused inside or outside the aircraft.

c. The P* will position the aircraft to align it with the symbology on the PDU and announce when he is ready to engage the target.

WARNING

Firing of any weapon system may cause the ANVIS to momentarily shut down. The P* should be aware of this and use flight symbology as necessary to aid in maintaining aircraft position and control.

NOTE 1: Use of the laser range input will vary depending on the range setting selected in FUZE. If the setting is AUTO, the laser range will remain boxed for five seconds and the last laser range will be used. If the fuze is set to a range, such as 5,000 meters, then the system will use the valid laser range for five seconds then default to the preset range.

NOTE 2: Live fire need not be used to complete this task.

NOTE 3: Figure 6-8 shows a sample of crew actions during a typical rocket engagement.

REFERENCES:

TC 1-140
TM 55-1520–248–10

CPO/P	P*
Using the MMS.	Flying the aircraft.
TARGET SIGHTED	
The CPO/P will set up the rockets by using the WEAPONS page and the WEAPONS BIT/SETUP page. The CPO/P either acquires the target on the MMS or receives an ATHS/VOICE target handover. He alerts the P* for either a DIRECT or an INDIRECT engagement.	
The CPO/P checks to ensure that the ACP is ARMED and lases the target so that the appropriate symbology is displayed. He changes the MODE/FUSE/ZONE information as required.	The P* ensures that the ACP is either in the STBY position or the ARMED position. The P* selects a weapons display and the rockets by placing the WEAPONS SELECT switch as appropriate. The P* will fly to the MMS LOS cue to align the aircraft with the target.
The CPO/P ensures that track is maintained and the laser range information is correct to the target. If the target is an ATHS/VOICE handover, he transmits a response to the requester.	The P* will verify that the MODE/FUSE/ZONE information is displayed on the SPARSE WEAPONS VSD.
TARGET ENGAGED	
The CPO/P continues to lase as necessary to update the range and rocket pitch cue, advises the pilot of any adjustments, and provides obstacle clearance.	The P* verifies that the system is armed and the range and rocket pitch cue are displayed. He maneuvers the aircraft to align it with the MMS LOS cue and/or places the rocket reticle (PDU) on the target. Based upon preselected information, the P* presses the WEAPONS FIRE switch to the second detent to fire the rocket.

Figure 6-8. Sample of a typical rocket engagement

TASK 1119

TASK: Perform firing position operations.

CONDITIONS: In an OH-58D (Kiowa Warrior) helicopter 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 maintain visual reference outside the aircraft to ensure that the aircraft is clear or all obstacles and will maintain orientation toward the target. He will announce any maneuver/movement prior to execution.

2. The P will direct the P* to position the aircraft to maintain visual reference on the target by announcing, "Slide right," "Slide left," "Come up," or "Come down." If visual contact can be maintained, he will announce "Hold."

3. The crew will use crew coordination actions as outlined in Task 1031 (Perform confined area operations) and Task 1090 (Perform masking and unmasking).

4. The crew will enter the firing position, engage the enemy, leave the firing position without being detected, and reposition the aircraft to an alternate firing position. Selection of the firing position should be based on the following considerations.

a. **Background.** The firing positions should be located so that the helicopter will not be silhouetted.

b. **Range.** The firing position should be located so that the kill zone is within the last one third of the weapon range.

c. **Altitude.** The firing position should be level with or higher than the target area, if possible.

d. **Sun or full moon.** The firing position should be located so that the sun or full moon is 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 surrounding the firing position should allow the helicopter to remain masked.

g. **Rotor wash.** The location of the firing position should be such that the effect of rotor wash on surrounding debris, trees, snow, and dust is reduced.

h. **Maneuver area.** The area surrounding the firing position should permit easy ingress and egress.

i. **Field of fire.** The firing position should permit target visibility throughout the kill zone.

NOTE 1: Live fire is not needed to complete this task.

NOTE 2: Hover OGE power is required for firing position operations.

REFERENCES:

FM 1–112
FM 1-114
FM 1-116
TM 55–1520-248-10

TASK 1130

TASK: Operate data transfer system.

CONDITIONS: In an OH-58D (Kiowa Warrior) in a training/tactical environment or hot cockpit.

STANDARDS:

1. Correctly install DTS cartridge.
2. Correctly load/store required mission data.
3. Correctly perform crew coordination actions.

DESCRIPTION: The P*/P will verify that the DTS cartridge is installed, will access the DATA TRANSFER page on the MFD, and will load or store the correct mission data.

NOTE: After loading mission data, the P*/P should verify NAV ALIGN and mission data for accuracy.

REFERENCE:

TM 55–1520-248–10

TASK 1131

TASK: Operate airborne video tape recorder.

CONDITIONS: In an OH-58D (Kiowa Warrior) helicopter with recorder installed.

STANDARDS:

1. Correctly install video tape.
2. Correctly record the selected video.
3. Correctly play back the selected video.
4. Correctly perform crew coordination actions.

DESCRIPTION: During the preflight, ensure that a video tape is correctly loaded into the recorder. The CPO/P will select the appropriate mode on the recorder (ZOOM, REC, PLAY, or REWIND) and select video source to be recorded. The CPO/P will announce "VIDEO PLAYBACK" to the P* and the P* will acknowledge. When the mission is complete, the tape will be rewound and MANUAL UNTHREAD accomplished before the aircraft is shut down. The video tape should be removed from the recorder on postflight.

REFERENCE:

TM 55-1520-248-10

TASK 1132

TASK: Perform ADSS operational checks.

CONDITIONS: In an OH-58D (Kiowa Warrior) helicopter and given TMs 55-1520–248-10 and 55-1520-248-CL.

STANDARDS:

1. Without error, perform checks according to TMs 55-1520-248-10 and 55–1520-248-CL.

2. Correctly perform crew coordination actions.

DESCRIPTION:

1. Accomplish ADSS operational checks in the appropriate sequence. These checks include activating the system, accomplishing the self-test, adjusting brightness, and selecting declutter level.

2. The P/P* will announce any subsequent adjustment of the declutter level.

REFERENCES:

TM 55-1520-248-10
TM 55-1520-248–CL

TASK 1139

TASK: Select appropriate weapon system.

CONDITIONS: In an OH-58D (Kiowa Warrior) helicopter.

STANDARDS:

1. Correctly identify the target.

2. Select the appropriate weapon system to neutralize the target.

3. Correctly perform crew coordination actions.

DESCRIPTION: The P/P* will announce which weapon system is most appropriate for the type of target that has been acquired and identified. Verify weapon system and status selected on the NORMAL/SPARSE WEAPONS VSD.

REFERENCES:

FM 1-402
TC 1-140
TM 55–1520-248-10

TASK 1140

TASK: Operate Hellfire missile system.

CONDITIONS: In an OH-58D (Kiowa Warrior) helicopter on an approved range or in a simulated tactical environment with weapons initialization completed.

STANDARDS:

1. Correctly select the appropriate missile delivery mode (LOBL or LOAL).

2. Correctly select the appropriate designation techniques (autonomous or remote).

3. Correctly select the proper firing mode (manual, normal, rapid, or ripple).

4. Correctly engage targets with the Hellfire missile system based on the operational parameters of the missile and the tactical situation.

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. The CPO\P will announce when he is ready to engage, from which side the missile will be launched, and whether the target is a single target or multiple targets. He will also announce each firing and when the engagement is completed.

2. The P* will acknowledge that CPO/P is ready to engage the target and will announce when he remasks or repositions the aircraft.

a. For an autonomous missile engagement, the CPO/P will track the target with the MMS. He will use the TIS/TVS NFOV, as desired, and designate the target by pressing the laser switch. (RNG cannot be used to designate a target.) In LOBL, primary coded missiles will slave to the MMS LOS when the LRF\D is armed on the same code as the primary coded missiles. For LOAL autonomous missile engagements, lasing before the missile is launched may be undesirable. As a minimum, the target location should be manually entered into the NAV system/DIR WPT or the MMS prepointed so that the constraints symbology will be accurate for the target location. The range to the target may be obtained by the using prepoint, HSD DIR WPT, or ATHS. The P* will maneuver the aircraft so that the HMS is within launch constraints and will verify with the CPO/P that all engagement conditions are met before the missile is launched.

b. For remote missile engagements, the CPO/P will coordinate with the remote designator to ensure that the maximum offset angles, safety zone, laser code, and laser-on time re quirements can be met. He will prioritize the appropriate missile code for the remote designator and prepoint to the target to provide constraints information for the Hellfire symbology. LOBL/LOAL considerations are the same as for autonomous missile launches. The P* will position the aircraft so that the HMS is within launch constraints. He will then verify with CPO/P that all engagement conditions are met before the missile is launched.

(1) <u>Rapid fire</u>.

(a) The firing of multiple missiles (in flight simultaneously) with the same laser code is called rapid fire. Rapid fire is used to service multiple targets quickly. These engagements may be employed for autonomous or remote engagements and for LOBL or LOAL engagements.

(b) If two or more missiles are loaded with the primary code, the P* may launch the next missile after eight seconds have elapsed. The CPO/P will need to determine the time of flight, maximum delay, laser turn-on time, and laser-on-target time. The P* may launch a third missile when the minimum launch separation time has elapsed.

(c) During rapid fire engagements, the RHE will automatically replenish (select, spin-up, and encode missiles) the primary code until the inventory is exhausted. The RHE will also save a minimum of one or maximum of three missiles on the alternate missile channel code.

(2) <u>Ripple fire.</u>

(a) The firing of multiple missiles (in flight simultaneously) with two separate laser codes is called ripple fire. Ripple fire engagements require two laser designators. It is employed during autonomous and remote or double-remote missions using LOBL, LOAL, or some combination thereof. As with any remote Hellfire engagement, close coordination is required with the remote designator (air or ground). This coordination will ensure that the LASER offset angle, designator safety zone, laser code, and laser-on-time requirements are met.

(b) Ripple fire engagements can be accomplished automatically if RIPL is selected as the launch mode. In ripple fire engagements, prioritization of the initial missile code is vitally important. The primary and alternate coded missile are automatically reversed without any action from the P*/P after each missile is launched. The P*/P is alerted to the current primary channel and the next missile to be launched when the missile symbology boxes the primary code of the next missile to be fired. Until the inventory is exhausted, the missiles are automatically replenished through the normal protocol in the RHE.

NOTE 1: The P*/P may deselect the missile system by placing the WEAPON SELECT switch to the other weapon system installed on the aircraft or by placing the ACP in STBY or OFF and selecting another display.

NOTE 2: Live fire need not be used to complete this task.

NOTE 3: Figure 6–9 shows a sample of crew actions during a typical Hellfire engagement.

WARNING

Firing of any weapon system may cause the ANVIS to momentarily shut down. The P* should be aware of this and use flight symbology as necessary to help maintain aircraft position and control.

REFERENCES:

TC 1-140
TM 55-1520-248-10

CPO/P	**P***
Using the MMS.	Flying the aircraft.
TARGET SIGHTED	
The CPO/P will set up the missiles and the laser designator by using the WEAPONS page and WEAPONS BIT/SET-UP page. The CPO/P either acquires the target on the MMS or receives an ATHS/VOICE target handover and alerts the P* to an AUTONOMOUS or a REMOTE engagement.	The P* should ensure that the ACP is either in the STBY position or the ARMED position. The P* selects a weapons display and a Hellfire missile by appropriately placing the WEAPONS SELECT switch.
	Once the SPARSE WEAPONS VSD is selected, the P* verifies CONSTRAINT/LAUNCH/DELIVERY modes.
The CPO/P checks to ensure that the ACP is ARMED and lases or prepoints the target so that the appropriate symbology is displayed. He changes the CONSTRAINT/LAUNCH/DELIVERY modes as required.	During LOBL engagements, an "X" appears to show where the seeker is pointing in the TRK mode. When the MMS and seeker symbols are coincident inside the constraints box, the box will become solid, indicating "IN CONSTRAINTS." A dashed box indicates "OUT OF CONSTRAINTS". The LOAL constraints box will be smaller than the LOBL constraints box. The P* will position the aircraft so that the MMS LOS cue is in the center of the LOAL constraints box.
The CPO/P ensures that track is maintained (LOBL), lases at the appropriate time, and ensures that the MMS is prepointed to the correct target (LOBL). If the target is an ATHS/VOICE handover, he transmits a response back to requester.	
TARGET ENGAGED	
The CPO/P continues to lase as necessary, advises the pilot of any adjustments, and provides obstacle clearance.	The P* verifies SYSTEM ARMED MISSILE TRK and presses the WEAPON FIRE SWITCH to the second detent to fire the missile. If constraints are not met, the P* may elect to use CONSTRAINTS ORIDE to launch the missile.

Figure 6-9. Sample of a typical Hellfire engagement

TASK 1143

TASK: Perform weapons initialization procedures.

CONDITIONS: In an OH-58D (Kiowa Warrior) helicopter.

STANDARDS:

1. Correctly prepare the selected weapon system(s) for operation.

2. Correctly determine the status of the desired weapon system(s).

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* or P will initialize the weapon system. This procedure will provide the operational status and permit each weapon to be fired. The crew will determine what effect a weapon system malfunction will have on the assigned mission. Weapons initialization procedures are as follows.

a. Armament Control Panel. To activate the weapon systems, either the STBY position or the ARM position must be selected. However, the weapons can be fired only when the ARM position is selected. The MASTER switch (OFF, STBY, ARM) controls STBY or ARM power to the weapon systems.

b. <u>WEAPONS ORIDE Key.</u> The WEAPONS ORIDE line address key on the GROUND SETUP page overrides the ground safety inhibit (WOG switch).

WARNING

The weapons systems will fire with the WEAPONS ORIDE ON when the WPN FIRE switch is pressed.

c. <u>WEAPONS Page.</u> The WEAPONS PAGE is selected using the WEAPONS SEL switch on the pilot's cyclic or the WPN/ASE switch on the CPO auxiliary control panel.

(1) <u>Rockets.</u> The ROCKET FUSE DISTANCE line address key toggles between contact data, airburst data, and auto data, which is entered via the MFK. The CHANGE ZONE key will box the selected zone (either A, B, or ALL). The types of rockets are selected by accessing the WEAPON BIT/SETUP page and entering the appropriate code for the type of munitions.

(2) **Gun.** The number of rounds to be loaded is entered by pressing the ROUNDS ENTER line address key and entering the number on the MFK.

(3) **Hellfire missile system.** The WEAPONS BIT/SETUP page is accessed and BIT is accomplished by pressing the HELLFIRE BIT. The HELLFIRE BIT symbol is boxed the entire time the system is being tested. If RHE GO is displayed and no error messages are seen under the missile symbol, the HMS has successfully passed the BIT. If any launcher fails the BIT, the LAUNCHER FAIL message is displayed and an “X” appears over the missile symbols. Missile BIT failure codes are displayed below that missile symbol. The MISSILES PER code is entered on this page from the MFK. The PRI/ALT codes are entered through the MFK from the WEAPONS page.

(4) **ATAS.** The WEAPON BIT/SETUP page is accessed and the BIT is accomplished by pressing ATAS BIT. The symbol is boxed the entire time the system is being tested. An unsuccessful BIT will be indicated if IEA NO GO is displayed. If the launcher fails the BIT, the LAUNCHER FAIL message is displayed and an “X” appears over the missile symbols. A successful BIT will cause the message IEA GO with missile symbols to display if missiles are present. The display indicates IEA GO message with blank spaces if the launcher is good but no missiles are present.

REFERENCE:

TM 55-1520-248-10

TASK 1147

TASK: Operate .50-caliber machine gun.

CONDITIONS: In an OH-58D (Kiowa Warrior) helicopter on an approved range or in a simulated tactical environment with weapons initialization procedures completed.

STANDARDS:

1. Correctly place the system into operation.

2. Correctly engage the target using the appropriate techniques.

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. <u>Gun Engagements.</u>

a. The P* will announce "gun engagement," "ready to engage," and "engagement complete." The CPO/P will confirm the appropriate actions by the P* in the MMS/WEAPONS VSD. The CPO/P will monitor the position of the aircraft to ensure that it is clear of all obstacles.

b. The CPO/P* will ensure that the ACP is either in the STBY or ARMED position and the GUN switch is in the ARMED position. The P* will select the gun by placing the WEAPONS SELECT switch to the side of the aircraft on which the machine gun is installed. This will cause the WEAPONS VSD for the .50-caliber machine gun to display. Range data will be displayed if the CPO/P has lased the target, and valid information will remain boxed for five seconds. Alignment of the MMS LOS cue with the center line of the SPARSE WEAPONS VSD tells the pilot where the CPO/P is tracking the target. The machine gun is fired by employing the WEAPONS FIRE switch on the pilot's cyclic. Pressing the WEAPONS FIRE switch to the first detent causes the machine gun to fire until the burst limit is reached. Pressing the WEAPONS FIRE switch to the second detent causes the machine gun to fire until the trigger is released, the gun fails, or the ammunition supply is depleted. To deselect the machine gun, select another weapon system with the WEAPON SELECT switch or place the MASTER SWITCH in the STBY/OFF position.

2. Pilot's Display Unit.

The LOS reticle is the pilot’s aiming reticle in a heads-up situation. The gun reticle is boresighted to the .50-caliber machine gun at 1,000 meters. The pilot should attempt to verify the range to the target and place the reticle over the target.

WARNING

Firing of any weapon system may cause the ANVIS to momentarily shut down. The P* should be aware of this and use flight symbology as necessary to aid in maintaining aircraft position and control.

NOTE 1: Live fire need not used to complete this task.

NOTE 2: Figure 6-10 shows a sample of crew actions during a typical machine gun engagement.

REFERENCE:

TM 55-1520-248-10

CPO/P	P*
Using the MMS.	Flying the aircraft.
TARGET SIGHTED	
The CPO/P will set up the machine gun by using the WEAPONS page. The CPO/P either acquires the target on the MMS or receives an ATHS/VOICE target handover. He alerts P* to the engagement.	
The CPO/P checks to ensure that the ACP is ARMED and lases or prepoints to the target so that the P* can orient to the MMS LOS. The CPO/P ensures that track is maintained and the laser range information is correct to the target. If the target is an ATHS/VOICE handover, he transmits a response back to the requester.	The P* ensures that the ACP is either in the STBY position or the ARMED position. The P* selects a weapons display and the machine gun by placing the WEAPONS SELECT switch to the left. The P* should fly to the MMS LOS cue to align the aircraft with the target being tracked.
TARGET ENGAGED	
The CPO/P continues to lase as necessary to update the range to the target. He advises the pilot of any adjustments and provides obstacle clearance.	The P* verifies that the system is armed and range is displayed (if laser range available). He maneuvers the aircraft to align it with the MMS LOS cue and/or places the gun reticle (PDU) on the target. He presses the WEAPON FIRE switch to the first detent for a controlled burst or to the second detent for continuous fire.

Figure 6-10. Sample of a typical machine gun engagement

TASK 1148

TASK: Operate air-to-air Stinger system.

CONDITIONS: In an OH-58D helicopter on an approved range, with weapons initialization procedures completed or with a CFT in a simulated tactical environment.

STANDARDS:

1. Correctly place the system into operation.

2. Correctly engage the target.

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. MMS ATAS Engagements. The CPO/P will announce "ATAS engagement, " "ready to engage," and "engagement complete." The CPO\P will confirm the appropriate actions by the other crew member in the MMS\WEAPONS VSD. The crew member not engaging the target will monitor the position of the aircraft to ensure that it is clear of all obstacles.

a. To engage targets, the CPO/P will place the ACP in the STBY\ARM mode and use the WEAPONS SELECT switch to the appropriate side of the aircraft on which ATASs are installed. The first select makes the system operational with the WEAPONS VSD, and the second select displays the SPARSE WEAPONS VSD. The pilot should maneuver the aircraft to place the MMS LOS cue inside the field of view outline (acquisition reticle). Once the target is verified in acquisition reticle, the P* will press the MISSILE ACTIVATE switch on the pilot's cyclic. He will verify that in 3.5 seconds the missile cools down with a corresponding "growl" in audio and that the message ACTIVE is displayed and MISSILE SELECTED is solid on the MFD. The CPO/P should lase the target to determine if the target is within operational weapons range.

b. If the target is within operational parameters, the p* will press the WEAPONS FIRE switch to the first detent; this will uncage the missile seeker. If the seeker acquires the target, the track reticle will replace the fixed reticle and the superelevation cue will display. The P* should continue to maneuver the aircraft to keep the track reticle in the middle of the display. If the track reticle nears the edge of the MFD and starts to flash, the seeker is nearing its FOV limits. The P* should immediately maneuver toward the track reticle so that it is kept in the middle of the display.

c. To fire the ATAS, the trigger is pressed to the second detent. The selected missile will fire and the SPARSE WEAPONS VSD missile symbology will disappear; then the next missile to fire will go "solid" and start to cool down. To interrupt the sequence, the MISSILE ACTIVATE switch is pressed. The ACTIVE display goes away and missile activation is deselected. If the system is not armed when the firing switch is pressed, the advisory "WEAPON NOT ARMED" will display on the MFD. If the first detent is released before the selected missile is fired, the missile will recage and cease tracking on an active target. To deselect the ATAS, another weapon system is selected or the MASTER SWITCH is placed in the STBY/OFF position.

2. Pilot's Display Unit.

a. The P* may use the PDU to engage targets, if desired. The CPO/P must place the ACP to an ARMED position. The P* selects the ATAS system. Using the 20-degree fixed reference and the acquisition reticle, the P* will maneuver the aircraft until the symbology is steady over the target. He then presses the MISSILE ACTIVATE switch and listens for a low growl which indicates that the missile is cooling. Then the missile symbology will box in. If a target is within track parameters, pressing the WEAPONS FIRE switch to the first detent will cause the acquisition reticle to be replaced by the track reticle and the superelevation cue will be displayed. Pressing the WEAPONS FIRE switch to the second detent will cause the missile to fire if a track reticle is displayed.

b. The CPO/P will verify that the system is ARMED and change the UNCAGE mode, if necessary. He will give adequate warning to avoid obstacles detected in the flight path and announce whether his attention is inside or outside the aircraft.

c. The P* will position the aircraft to align with the symbology on the PDU and announce, "Engaging."

WARNING

Firing of any weapon system may cause the ANVIS to momentarily shut down. The P* should be aware of this and use flight symbology as necessary to aid in maintaining aircraft position and control.

NOTE 1: Live fire is not needed to complete this task.

NOTE 2: Figure 6-11 shows a sample of crew actions during a typical ATAS engagement.

REFERENCE:

TM 55-1520-248-10

CPO/P	P*
Using the MMS.	Flying the aircraft.
TARGET SIGHTED	
The CPO/P acquires the target on MMS or receives an ATHS/VOICE target handover and alerts the P* to an engagement. The CPO/P checks to ensure that the ACP is ARMED and lases the target as necessary to provide accurate range information. The CPO/P ensures that track is maintained and that the laser range information is correct to the target. If the target is an ATHS/VOICE handover, he transmits a response back to requester.	The P* should ensure that the ACP is either in the STBY or ARMED position. The P* selects a weapons display and the ATAS by placing the WEAPONS SELECT switch as appropriate. He should fly to the MMS LOS cue (♦) until the cue is inside the acquisition reticle (MFD) or until the acquisition reticle (PDU) is stable on the target. If the target is within range, the P* presses the MSL ACTVT button and monitors the audio to determine if the missile is cooling and ACTIVE is displayed below ARMED. If the target is within acquisition requirements, the P* presses the WEAPONS FIRE switch to the first detent to uncage the missile. If the missile is tracking the target, the track reticle will replace the fixed reference on the MFD or it will replace the acquisition reticle on the PDU and the SUPER-ELEVATION cue will display. If the missile is tracking the correct target, the MMS LOS cue and TRACK RETICLE will be coincidental.

Figure 6-11. Sample of a typical ATAS engagement

CPO/P	P*
Using the MMS.	Flying the aircraft.
TARGET ENGAGED	
The CPO/P continues to lase as necessary to update the range, advises the pilot of any adjustments, and provides obstacle clearance.	The P* verifies that the system is armed. He also verifies that the tracking reticle, superelevation cue, and laser range (if available) is displayed. He maneuvers the aircraft to align with the MMS LOS cue, adjusts aircraft attitude to the SUPER-ELEVATION cue, and presses the WEAPON FIRE switch to the second detent to fire the missile.

Figure 6-11. Sample of a typical ATAS engagement (continued)

★TASK 1806

TASK: Perform video image crosslink operation (VIXL)

CONDITIONS: In an OH-58D equipped with VIXL.

STANDARDS:

1. Capture and save the desired image to the VIXL list.

2. Transmit the desired VIXL image.

3. Receive a VIXL image.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew Actions.

a. The P* is responsible for obstacle avoidance and clearing the aircraft. He will announce any maneuver or movement prior to execution.

b. The P will operate the MMS/VIXL system. He will announce when his attention is focused inside the cockpit. Duties permitting he will assist the P* in clearing the aircraft.

2. Procedures.

a. Complete a VIXL setup prior to transmitting an image (if not already done). When the MMS is on the desired image, press the image capture button. Store the image. If desired, review the image prior to transmission. Notify the receiving station of the intent to transmit. Send the image.

b. Complete a VIXL setup prior to receiving an image (if not already done). Place the radio into secure mode and activate the enable mode when directed by the sending station. View the image and advise the sender.

CAUTION
When operating the VIXL the P must not distract the P* away from flying the aircraft.

NIGHT OR NVG CONSIDERATIONS: A thorough crew briefing should be conducted prior to NVG operations, crew coordination is crucial. When maneuvering the aircraft to maintain the MMS on target the P* must consider obstacles and other aircraft. The P should momentarily assist the P* with obstacle avoidance and clearing the aircraft and announce when doing so.

REFERENCE:

Operator’s Manual

TASK 2004

TASK: Perform pinnacle or ridgeline operation.

CONDITIONS: In an OH-58D helicopter with before-landing check completed.

STANDARDS:

1. **High Reconnaissance.**

   a. Establish entry altitude ±100 feet.

   b. Establish entry airspeed ±10 KIAS.

2. **Approach.**

   a. Without deviation, maintain ground track alignment with the selected approach path.

   b. Maintain a constant approach angle.

   c. Maintain an appropriate rate of closure.

   d. Properly perform a low reconnaissance.

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

3. **Takeoff.**

   a. Without error, perform a hover power check and complete a before–takeoff check.

   b. Properly clear the aircraft.

   c. Perform an airspeed-over-altitude takeoff while maintaining heading ±10 degrees.

   d. Maintain appropriate airspeed ±10 KIAS.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will assist the P* in performing the high reconnaissance on the windward side of the pinnacle or ridgeline when practical. Upon approaching the area, evaluate the overall suitability of the landing site. Select a flight path, airspeed, and altitude that will provide the best observation. Determine if the landing site is suitable, locate obstacles, and estimate the effects of the wind. The P* will plan the approach to the forward one-third of the landing area. Depending on the wind, density altitude, load, and forced landing areas, the approach angle can vary from a shallow to a steep angle. The P* will remain focused outside the aircraft and perform a low reconnaissance on final approach to confirm information gained during the high reconnaissance and, when surface conditions permit, land to the ground. The P* will execute a go-around if the low reconnaissance reveals that a safe landing cannot be made. The P will confirm suitability of the area, assist in clearing the aircraft and provide adequate warning of obstacles. The P will announce when his attention is focused inside the aircraft.

2. After touchdown, conduct a stability check before lowering the collective to the full-down position. Accomplish this by slowly moving the cyclic and pedals while lowering the collective. If movement is detected, reposition the aircraft. Clear the aircraft, and execute an airspeed-over-altitude takeoff. If the takeoff requires clearing obstacles, do not use an angle of climb which is greater than that required to clear them. Use power as necessary to clear the obstacles safely while maintaining a constant angle of climb and ground track. After clearing the obstacles, adjust attitude to gain forward airspeed.

3. The P* will announce his intention to takeoff and the P will perform a before-takeoff check and announce when ready for takeoff. The P* will then execute an airspeed-over-altitude takeoff. If the takeoff requires clearing obstacles, do not use an angle of climb which is greater than that required to clear them. Use power as necessary to clear the obstacles safely while maintaining a constant angle of climb and ground track. After clearing the obstacles, adjust attitude to gain forward airspeed. On take-off, the P will remain focused outside the aircraft to assist in clearing and to provide adequate warning of obstacles. He will announce when his attention is focused inside the aircraft.

NOTE: Hover OGE power is required for pinnacle or ridgeline operation.

REFERENCES:

FM 1-202
FM 1-203
TM 55-1520–248–10
Unit SOP

TASK 2005

TASK: Perform FM radio homing.

CONDITIONS: In an OH-58D helicopter in a tactical environment.

STANDARDS:

1. **Aviator/P*.**

   a. Correctly perform FM radio homing.

   b. Correctly identify station passage.

2. **Aeroscout Observer/P.**

   a. Correctly configure the FM-2 for homing.

   b. Correctly identify the station tuned.

3. **Crew.** Correctly perform crew coordination actions.

DESCRIPTION: During FM homing, the P configures the FM-2 transceiver for homing and tunes and identifies the appropriate station. The P* tracks to the station by keeping the steering indicator centered on the VSD and obtaining a continuous increase on the signal strength indicator. While homing on the centered bar, the P* should frequently make 10- to 15-degree turns (always in the same direction) to identify the signal. When the P* turns the aircraft to the right or left and the steering indicator moves in the same direction as the turn, the aircraft has passed the station. The P* should then continue the turn and attempt to identify the station visually or verify his position.

NOTE: When the mission dictates single-pilot operation, the above duties are performed by the aviator.

REFERENCES:

FM 1-203
TM 55–1520-248–10

TASK 2006

TASK: Perform VAPI approach.

CONDITIONS: In an OH-58D helicopter at night with before-landing check completed.

STANDARDS:

1. Establish entry altitude ±100 feet.

2. Establish entry airspeed ±10 KIAS.

3. Maintain ground track alignment with the landing direction without deviation.

4. Maintain descent within the green light beam.

5. Maintain an appropriate rate of closure.

6. Correctly perform crew coordination actions.

DESCRIPTION: The P* will locate the glide slope indicator beam and intercept the glide slope. If the glide slope indicator is in amber beam, descend until the green beam appears. If it is in red beam, ascend until the green beam appears. Adjust the rate of descent to remain within the green beam. Reduce airspeed and rate of descent during the approach using peripheral vision to control the rate of closure and to prevent overshooting or undershooting the landing area. Terminate the approach as desired. The P will assist the P* by warning him of obstacles or P* fixation.

NOTE: If the aircraft is allowed to drift to the extreme lateral edge of the approach beams, the light intensity will be reduced so much that all beams will appear amber.

REFERENCES:

FM 1-203
TC 1-204

TASK 2008

TASK: Perform evasive maneuvers.

CONDITIONS: In an OH-58D helicopter in a simulated tactical environment with a tactical map.

STANDARDS:

1. **Aviator/P*.** Use the correct evasive maneuver consistent with the type of hostile fire encountered.

2. **Aeroscout Observer/P.** Properly assist the P* in performing the evasive maneuver.

3. **Crew.** Correctly perform crew coordination actions.

DESCRIPTION:

1. **Aviator/P*.**

a. When engaged by enemy fire or upon receipt of a signal indicating acquisition by enemy radar, deploy to cover and perform the appropriate evasive maneuver. The particular maneuver you will be required to perform will depend on the type of hostile fire encountered. Some pointers are given below.

(1) **Tanks and small arms.** Immediately turn away from the fire toward an area of concealment. If concealment is unavailable, make sharp turns of unequal magnitude and at unequal time intervals and small changes in altitude to provide the best protection until you are beyond the effective range of hostile weapons. If the situation permits, employ immediate suppression.

(2) **Large caliber antiaircraft fire (radar-controlled).** Execute an immediate 90-degree turn to move the helicopter away from the burst. 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 low-level or NOE altitude will reduce the danger.

(3) **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. Next, make a 60-degree bank away from the attacker. As soon as the attacker is committed to follow the bank, make a 60–degree bank in the opposite direction. The fighter pilot will then have to cease his attack to recover from the maneuver. Once the attack is broken, maneuver the helicopter to take advantage of terrain, vegetation, and shadow for concealment. Hover to avoid being attacked again. (FM 1-107 describes threat fighter methods of engagement.)

(4) **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.

(5) **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 altitude to evade it.

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

2. **Aeroscout Observer/P.** Assist the P* in performing the appropriate evasive maneuver. Report the situation per the unit SOP when requested to do so by the aviator. If the helicopter is hit by hostile fire, perform any duties directed by the aviator. These may include checking all instruments and warning/caution lights and making a Mayday or Pan radio call.

REFERENCES:

FM 1–107
FM 1–112
FM 1-114
FM 1-116
FM 1-203
FM 17–95
TM 55-1520-248-10
Unit SOP

TASK 2009

TASK: Perform multiaircraft operations.

CONDITIONS: In an OH-58D 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 being flown.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* will maintain visual reference outside the cockpit to remain clear and keep track of other aircraft. He will announce any maneuver/movement prior to execution.

2. The P will provide adequate warning to avoid traffic or obstacles detected in the flight path or identified on the map. He will inform the P* if contact with other aircraft is lost, the enemy is sighted, or if his attention is focused inside the aircraft.

3. Perform formation flight per AR 95-1, TC 1-201, TC 1–204, and the unit SOP.

NIGHT OR NVG CONSIDERATIONS: Increase the interval between aircraft to a minimum of three rotor disks and keep changes in the formation to a minimum. Both crew members must avoid fixation by using proper scanning techniques. Additional requirements are outlined in TC 1-210.

a. **Night.** During unaided night flight, formation lights, if available, as well as position lights should be used.

b. **NVG.** The P will observe other aircraft in the formation and assist in maintaining aircraft separation and obstacle clearance.

TC 1-209

REFERENCES:

AR 95-1
FM 1-107
FM 1-114
FM 1-116
TC 1-201
TC 1-204
TC 1-210
UNIT SOP

TASK 2018

TASK: Reconnoiter and recommend an LZ/PZ.

CONDITIONS: In an OH-58D helicopter in a tactical environment.

STANDARDS:

1. Perform a map or photo reconnaissance of the assigned area.

2. Recommend areas that are suitable for use as landing or pickup zones.

3. Provide accurate and detailed information to supported units.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* will remain focused outside the aircraft to provide obstacle clearance and remain oriented on the LZ\PZ.

2. The P will perform the reconnaissance by use of the MMS or visual means. The P will assist the P* in orientation and obstacle avoidance as necessary. The P will announce when he is focused inside the aircraft.

3. Criteria used in selecting LZs/PZs are tactical, technical, and meteorological. When possible, the reconnaissance should be performed in a manner that will not compromise the actual location of the LZ\PZ.

a. Tactical.

(1) Mission. The most important aspect in selecting an LZ\PZ is whether the mission can be accomplished flying to and from that location.

(2) Location. To reduce troop fatigue, the LZ/PZ should be close to the unit or objective it will support.

(3) Security. Security requirements vary depending on the general location and purpose. An aviation unit must depend to a great extent on the supported unit for active security.

b. Technical.

(1) Number of aircraft. An important factor in selecting an LZ/PZ is the number of helicopters that will be landing at the same time. It may be necessary to provide an additional landing site nearby or to land aircraft at the same site in successive flights.

(2) Landing formation. If possible, aircraft should land in the same formation as they are flying. Formations may require modification to land in restricted areas.

(3) Loads. A larger landing area and better approach and departure routes are required for fully loaded helicopters.

(4) Surface conditions. Surface conditions must be firm enough to prevent helicopters from bogging down or creating excessive dust or blowing snow (possible foreign object damage). Normally, if the ground slope is greater than 15 degrees, helicopters cannot land safely. However, they may terminate at a hover to load or unload personnel or supplies. When the ground slope is less than 7 degrees, helicopters should land sideslope. In areas where the slope is from 7 to 14 degrees, helicopters should land upslope.

(5) Size of an LZ/PZ. Helicopters require a relatively level, clear area at least 20 to 75 meters wide depending on the type of helicopter. The area around the LZ/PZ should be clear of obstacles that could cause aircraft damage. A larger LZ/PZ is required at night. The laser, target locate, and target store can be used to determine the size of an LZ/PZ.

(6) Obstacles. The approach or departure ends of LZs/PZs should be free of obstacles. Obstacles within the LZ/PZ that cannot be eliminated (for example, rocks, stumps, and holes) must be noted.

(7) Approach or departure direction. The direction of approach or departure should be over the lowest obstacles and generally into the wind, taking into account the location of enemy positions.

c. Meteorological. Prevailing meteorological conditions, including ceiling, visibility, winds, and density altitude, must be considered.

4. An LZ\PZ reconnaissance should be recorded on a work sheet. This will provide the commander a graphic illustration as well as tabulated information. The freeze-frame mode of the TIS can be used to give the commander a "picture" of the landing area. Target store can be used to record primary and secondary routes for approaches and departures.

NOTE: TC 1-204 contains details about night and NVG considerations.

REFERENCES:

FM 1-114
FM 1–116
FM 17-95
TC 1-204
TM 55-1520-248-10

TASK 2019

TASK: Perform a route reconnaissance.

CONDITIONS: In an OH-58D helicopter with a mission briefing and map reconnaissance completed.

STANDARDS:

1. Correctly perform a route reconnaissance.

2. Make an accurate and detailed report.

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P*/P conducts a route reconnaissance to obtain detailed information about a specific route and all adjacent terrain where the enemy could influence movement along the route. The reconnaissance may be oriented on a road, an axis, an air route, or a general direction of advance. The P*/P may also conduct a route reconnaissance mission--

a. To support movement of supplies or other units.

b. To develop the enemy situation ahead of a friendly force.

c. To obtain information about an enemy force moving along a specific route.

d. To locate sites for constructing hasty obstacles to impede enemy movement.

2. To perform a route reconnaissance the P*/P must know certain information about the route. This information includes--

a. **<u>Designation of route.</u>** This may consist of a name (for example, Highway 84 or Jones Road), a trace of the route, or coordinates along the route.

b. **<u>Limits of route.</u>** This may be indicated by coordinates or any definite ground reference, such as a town, bridge, or road junction.

c. **<u>Time of day route will be used.</u>** This may change the desirability of using a route. Curves and narrow roads are more critical at night than during the day.

d. Type and number of units or vehicles. This is an important factor in determining whether a route is usable. Route requirements for infantry, armor, artillery, or transportation units will be different. For example, many transportation units may pass without difficulty, but a few tanks may ruin the surface of the route.

3. When the P*/P reconnoiters ground routes, he must check roads, bridges, tunnels, underpasses, and cross-country segments. He must also classify the route.

a. Roads. The P*/P must consider many factors in classifying roads. These factors include--

(1) Surface type. The surface may be concrete, blacktop, sand, gravel, or clay.

(2) Width. The width is estimated and expressed in the number of lanes. The same road might provide two lanes for 2 1/2-ton truck traffic but only one lane for Ml tanks.

(3) Drainage. This is an important consideration if the road surface is gravel, clay, or sand. The crown height determines how effective the drainage will be. The road and ditches should be checked for standing water during wet seasons.

(4) Surface condition. Combat damage, cuts, craters, dirt slides, ruts, cracks, or excessive erosion are important surface condition elements.

(5) Grades and curves. Steep grades and sharp curves reduce the suitability of the road for usage and are likely enemy ambush sites.

(6) Drive-off capability. Shoulder condition, width, and slope determine whether vehicles can be parked off the roadway.

(7) Concealment. Trees which overhang the shoulders offer limited concealment for parked vehicles.

b. Bridges, tunnels, and underpasses. These are difficult to classify from aerial observation. In some cases, the P may have to dismount to make the classification. Bridges are reconnoitered to determine type, condition, dimensions, bypass capability, and load-carrying capacity. (FM 5-36 provides instructions on classifying bridges.) Tunnels and underpasses are reconnoitered to determine their dimensions and bypass capabilities. When possible, engineer support should be used to determine these classifications.

(1) **Constrution type and condition (steel, concrete, wood, or brick).** If the bridge has received combat damage it may need repair before use.

(2) **Length and width.** The length of one span is estimated and multiplied by the number of spans. The width is estimated and expressed in the number of lanes (for example, two lanes, 2 l/2–ton truck traffic). The P*/P can use map distance to estimate tunnel length.

(3) **Clearance.** Tunnel and underpass clearances are measured from the road surface to the lowest overhead obstruction.

(4) **Location.** The accuracy of the map should be double-checked. Target store and target locate can be used to accomplish this task.

(5) **Bypass condition.** A bypass condition should be identified regardless of the condition of the bridge, tunnel, or underpass. The three bypass conditions are bypass easy, bypass difficult, and bypass impossible.

(a) **Bypass easy.** This means that a US 2 l/2-ton, 6 x 6 truck or NATO equivalent can cross the obstacle within the immediate vicinity of the bridge without work to improve the bypass.

(b) **Bypass difficult.** This means that the obstacle can be crossed within the immediate vicinity, but some work is required to prepare the bypass. If engineer or engineer-type support is required, the bypass is considered difficult unless the unit has the organic capability or equipment to cross rapidly. For example, an armor battalion with an armored vehicle launched bridge could easily bypass a 20-foot gap by bridging it. However, if the bypassing unit is a transportation unit, the bypass is considered difficult because engineer-type support is required.

(c) **Bypass impossible.** This means that the bypass can be crossed only by repairing the existing structure, constructing a new one, or establishing a detour. A detour is an alternative route which crosses the obstacle at some distance from the original site.

c. **Cross-country segments.** The P*/P must conduct a careful reconnaissance of critical terrain (such as high-ground passes) and report any conditions that would slow traffic.

d. **Ground route classification.** A ground route is classified by width, type, and load-carrying capacity. If a large portion of the route is four-lane expressway but a small segment is two-lane gravel, the overall classification would be two-lane, limited, all-weather, medium duty. The method of expressing ground route classification is--

(1) **Width.** The width is expressed in number of lanes (width of 2 1/2-ton truck) of the narrowest portion of the route.

(2) **Type.** Road surface types are X, Y and Z.

(a) **All-weather (type X).** A type X road is, with reasonable maintenance, passable throughout the year with the volume of traffic never significantly less than the road's maximum capacity in good weather. This type of road has a waterproof surface and is only slightly affected by rain, frost, thaw, or heat. It is not closed to traffic because of weather other than snow blockage. Examples of type X are concrete or bituminous roads.

(b) **Limited all-weather (type Y).** A type Y road, with reasonable maintenance, can be kept open in bad weather to a volume of traffic which is considerably less than its normal good-weather capacity. This type of road does not have a waterproof surface and is affected by rain, frost, or thaw. Examples of type Y are crushed rock or gravel roads.

(c) **Fair weather (type Z.)** A type Z road becomes quickly impassable in bad weather and cannot be kept open by normal maintenance. It is seriously affected by rain, frost, or thaw. Examples of type Z are natural or stabilized soil, sand, clay, shell, or cinder roads.

(3) **Load-carrying capacity.** Load-carrying capacity is determined by the heaviest class of vehicles in the convoy that can use the entire route. This is normally governed by the load-bearing capacity of the weakest bridge on the route. Otherwise, it is the load-bearing capacity of the road surface.

4. The principles of an air route reconnaissance are the same as those for a ground route, except that the areas of interest are different. Movement by air is concerned primarily with the location of enemy forces, ease of navigation, location of landing sites and zones, and hazards to flight. Hazards to flight include antiaircraft areas, overwater routes, and mountainous areas.

5. A river reconnaissance is performed in the same manner as a route reconnaissance, except that a river is an obstacle to the advancement of ground elements. Considerations include width, estimated depth, flow rate, bank and bed conditions, and crossing sites.

6. The P*/P can use many acceptable methods to record information about a route. During premission planning, he can use the navigation system to enter waypoints or targets for reconnoitering the adjacent terrain and the buffer zone. He should use the MMS to clear all areas or terrain.

a. The P*/P can use the target locate or HSD target-store capability to record the locations of bypass sites or other pertinent information such as steep grades or sharp curves. He can then store significant features in the waypoint list and assign them waypoint identifiers. He can also use the freeze-frame mode of the TIS to study a specific point of interest from a standoff or masked position.

b. The P*/P can devise a work sheet to record all pertinent information corresponding to terrain features on the map and stored waypoints. This method gives an accurate and legible account of the route and does not clutter the map. A good work sheet can be invaluable during a route reconnaissance.

NIGHT OR NVG CONSIDERATIONS: A route reconnaissance conducted at night with the ANVIS is performed the same as during the day. The TIS can be used to detect any threat and to look at specific points of interest along the route.

REFERENCES:

FM 1-112
FM 1-114
FM 1-116
FM 5-36
FM 17-95
TM 55-1520-248-10

TASK 2020

TASK: Call for and adjust indirect fire.

CONDITIONS: In an OH-58D helicopter in a training or tactical environment with an artillery unit or orally in a classroom environment.

STANDARDS:

1. **Aviator/P*.**

a. Remain oriented on the target while relocating the aircraft.

b. Properly mask and unmask the aircraft as required.

2. **Aeroscout Observer/P.**

a. Accurately adjust indirect fire, using the correct call for fire.

b. Correctly use the MMS and LRF/D.

3. **Crew.** Correctly perform crew coordination actions.

DESCRIPTION:

1. **Planned Targets.** These 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.

2. **Unplanned Targets.** Targets of opportunity are normally engaged by shifting from a known point. Subsequent adjustments are made based on a reference line.

3. **Tarqet Location.** Target location is transmitted--

a. As a specific grid coordinate to the nearest 10 meters; for example, grid DR 12345678. (The target locate is the most accurate means of obtaining this information.)

b. As a known point; for example those preplanned targets using the target designator (target AB 1002).

c. As a shift from a known point: for example, from target AB 1002, OT line 030 degrees, right 400, add 400.

4. **Reference Line.** This is the GT line if the location of the artillery and its relationship to the target are known. The GT line is used when no other line is given. The reference line may also be the OT line or any other convenient reference line; for example, a magnetic heading.

5. **Call-for-Fire Elements (Conventional or Copperhead.**

a. Observer identification (appropriate call sign).

b. Warning order and method used to locate the target (adjust fire, fire–for-effect, or adjust fire Copperhead; must include laser code, grid, known point, shift from known point, LRF/D).

c. Location of target (grid coordinates, known location designator, or shift with reference line).

d. Description of target ("infantry in the open”).

e. Method of engagement (high explosive, white phosphorous, or variable time fuse).

NOTE: This element is not necessary for Copperhead missions.

f. Method of fire and control ("at my command").

NOTE: All Copperhead missions are "at my command."

6. **Procedure.**

a. **Voice.**

(1) The P*/P acquires the target and relocates the aircraft. The P locates the target and prepares and transmits the fire order, including the laser code for the Copperhead, through the field artillery channel. The P* continues to relocate the aircraft while remaining oriented on the target.

(2) Field artillery will respond with a message which should include the time of flight of the rounds. The P*/P can use this information to compute the time of impact and unmask just as the rounds impact. The P may also request “splash,” which gives him a time hack of five seconds before impact. The P will lase the target for the appropriate amount of time before the Copperhead impacts.

NOTE: The P* should not unmask the aircraft in the same place twice.

(3) If adjustment is needed, the P*/P sends in corrections using either the original adjustment line or a new adjustment line. If the P*/P uses a new adjustment line, he must inform field artillery.

(4) The procedure is continued until the target is neutralized. The P*/P sends an "end of mission" message with a BDA or an "unable to observe" message.

b. Digital.

(1) The P*/P acquires the target, and the CPO locates the target with the LRF/D and verifies the grid coordinates. He then enters the appropriate information in the field artillery mission request and transmits the request through the field artillery channel. After the CPO/P receives the "accepted" and "ready" messages from field artillery, he sends a fire command as needed. He then lases the target until the Copperhead impacts. If adjustment is needed, he sends in the necessary corrections.

(2) The CPO continues the procedure until the target is neutralized. He then sends an "end of mission" message with a BDA or an "unable to observe" message.

NOTE: The maximum separation angle for the Copperhead is 45 degrees.

7. Adjustment (MMS). The CPO can use three methods to adjust conventional artillery with the MMS. The method used will depend on the speed and accuracy required and which subsystems are operational. They are as follows.

a. ATHS automatic shift-calculation method. If all subsystems are accurate and functional, this is the best and most accurate method. After the first round has been fired, the CPO should access the SHIFT CALCULATION page of the ATHS and target locate the point of impact. The CPO then enables the shift calculation function, and the ATHS calculates the correction. The CPO verifies the adjustment required and transmits the correction to field artillery.

b. Sight-width method. This method can be used when the target locate function is not operational. It is the least accurate method of the three but is the fastest manually. To make an add or a drop correction, the CPO/P computes the difference between the range to the target and the range to the point of impact. To make a lateral correction, he calculates the field of view of the sensor. Once he determines the width of the screen in meters, he can place the target on the edge of the screen. He can then compare it with the point of impact of the round to make adjustments.

c. <u>OT-360 method.</u> To use this method, all subsystems, except the ATHS, must be accurate and functional. The CPO target-locates the point of impact. He then subtracts the casting and northing coordinates of the point of impact from the coordinates of the target.

NOTE: The OT line is always 360 degrees.

REFERENCES:

FM 1-112
FM 1-114
FM 1-116
FM 1-203
FM 6-40
TM 55-1520-248-10

TASK 2021

TASK: Transmit information using visual signaling techniques.

CONDITIONS: In an OH-58D helicopter in a training or tactical environment or orally in a classroom environment.

STANDARDS:

1. Correctly transmit a spot report or message by using the appropriate visual signaling technique.

2. Correctly perform crew coordination actions.

DESCRIPTION: The P* will remain focused outside the aircraft for clearing and keeping track of obstacles or other aircraft. He will announce any maneuver or movement prior to execution. Tactical communications may be restricted because of enemy actions, such as jamming, or imposed by friendly forces because of the tactical situation. When an alternate means of communication is necessary, the P*/P will select the appropriate visual signaling techniques to be used based on the unit SOP. Visual signaling techniques include hand-and-arm signals, light signals, brevity codes, SAM cards, and aircraft positioning or movement. The procedure selected must be known and understood by all members of the team.

REFERENCES:

FM 1-101
FM 1-114
FM 1-116
FM 21-60
Unit SOP

TASK 2040

TASK: Select a combat position.

CONDITIONS: In an OH-58D helicopter in a training or tactical environment.

STANDARDS:

1. Apply the proper criteria in selecting the OPs, battle positions, and firing positions.

2. Correctly perform crew coordination actions.

DESCRIPTION: A combat position is a specified point within the battle area which is occupied by reconnaissance/attack helicopters. The crew selects the combat position based on the tactical mission requirements. This position is a covered, concealed position that provides observation and fields of fire into an engagement area. Selection of the combat position should be based on the following considerations:

a. **Background.** Firing/observation positions should be located so that the helicopter will not be silhouetted.

b. **Range.** The combat position should be located so that the engagement area is within the last one-third of the weapon/observation range. (The CPO/P can confirm this with the LRF/D, NAV system, or ATHS.)

c. **Altitude.** If possible, the combat position should be level with or higher than the engagement area to enhance the view of the target. (This does not apply for remote Hellfire engagements.)

d. **Sun or full moon.** The combat position should be located so that the sun or full moon is behind or to the side of the helicopter.

e. **Shadow.** When possible, the combat position should be within an area covered by shadow.

f. **Concealment.** Vegetation/terrain surrounding the combat position should allow the helicopter to remain masked from threat ground and air elements.

g. **Rotor wash.** The location of the combat position should reduce the effect of rotor wash on surrounding debris, trees, snow, and dust.

h. Area to maneuver. The area surrounding the combat position should permit easy ingress and egress and provide adequate area for dispersion when multiple aircraft operate in the position.

i. Fields of fire. The combat position should be located so it provides mutually supported fields of view, designation, and fire throughout the engagement area.

NOTE 1: When the combat position is selected for Hellfire missile engagements, the P*/P should take into consideration the ceiling, visibility, and obstacles.

NOTE 2: The P*/P must consider the separation angle when selecting a combat position for target designation and engagements.

REFERENCES:

FM 1-112
FM 1-114
FM 1-116
FM 17–95
TC 1-140
TM 55-1520-248-10

TASK 2043

TASK: Perform refueling/rearming operations.

CONDITIONS: In an OH-58D helicopter.

STANDARDS:

1. Ensure that the correct refueling procedures are followed according to the operator's manual and the unit SOP.

2. Ensure that the correct rearming procedures are followed according to the operator's manual and the unit SOP.

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. The PC will ensure that the refueling/rearming check is completed according to TM 55–1520–248–CL and the unit SOP.

2. The P will read the refuel/rearm check.

3. The P*/P will announce any hazard and initiate the appropriate actions. The other crew member will acknowledge the hazard and any actions being taken.

REFERENCES:

FM 1–104
FM 10-68
TM 55-1520–248–10
Unit SOP

TASK 2054

TASK: Perform target handover to attack helicopter.

CONDITIONS: In an OH-58D helicopter in a training or tactical environment.

STANDARDS:

1. Use the proper communications procedure to accomplish a target handover to an attack helicopter.

2. Correctly perform crew coordination actions.

DESCRIPTION: The P*/P must use the proper communications procedure to alert the attack aircrew. This may include the use of voice or digital communication or an alternate means of communication. (Task 1091 describes voice and digital communications.) Whatever means is used, it must be understood by both the scout and attack aircrew.

a. **Autonomous (direct) voice engagement.** The standardized elements for autonomous voice engagement are--

(1) **Alert and target description.** This alerts the attack aircrew that a target handover is about to occur. It identifies the sender and describes the target (type, number, and activity); for example, "K13 (AH-64/OH-58D), this is K06 (OH-58D), three tanks moving west."

(2) **Target location.** The P*/P gives the direction to the target in degrees and range from the battle position. He may reference from a known point (for example, the target reference line or the engagement area), use grid coordinates, or spot with a laser. An example is "120 degrees at 2,800 meters" or "offset left 030 degrees (code) ."

(3) **Attack method.** The P*/P describes the planned scheme of maneuver, fire distribution, and maneuver for the attack; for example, "Attack targets west of north-south road."

(4) **Execution.** The P*/P gives the command to initiate the attack. The two commands are as follows.

(a) **At my command.** The attack aircrew engages when the P*\P says "fire."

(b) **When ready.** The attack aircrew fires when ready.

(5) **<u>Postattack method.</u>** The attack aircrew unmasks to evaluate the effect on the target and begins planning subsequent engagements. The P*/P describes ingress and egress routes for new positions; for example, "Move to holding area 4; on order, attack from battle position 21."

b. **<u>Remote voice engagement.</u>** The standard elements for remote voice engagement are as follows.

(1) **<u>Alert and target description.</u>** This consists of the same information described in a(1) above, except the word "remote" is included in the transmission. An example is "B29 (AH-64/OH-58D), this is B64 remote (OH-58D), three tanks moving southwest."

(2) **<u>Target location.</u>** The P*/P may reference from a laser target line if the designator position is unknown or use grid coordinates; for example, "Engagement area DOG, 030 degrees."

(3) **<u>Attack method</u>.** This includes the number of rounds, the laser code, if needed, and the time interval, as appropriate (assume 20 seconds); for example, "Three missiles, A."

(4) **<u>Execution</u>.** This tells when and how the attack is to be initiated. Remote missions are always "at my command."

NOTE: The P*/P should not give a fire command until he receives a "ready" message from the attack aircrew.

(5) **<u>Post-attack method.</u>** See a(5) above.

c. **<u>Autonomous or remote digital engagement.</u>** The procedure for an autonomous or a remote digital engagement is as follows.

(1) After locating the target with the LRF/D and verifying the grid coordinates, the CPO/P enters the appropriate mission request in the ATHS. This will be a "when ready, target" or a "when ready, ordnance" request for an autonomous engagement. It will be an "at my command, target," "at my command, ordnance," or a "remote Hellfire" request for a remote engagement. The CPO/P then transmits the appropriate request to the attack aircrew.

(2) After receiving the appropriate message from the attack aircrew, the CPO/P sends the fire command. He will lase the target if required. When the target is neutralized, he sends an "end of mission" message with a BDA or an “unable to observe” message.

NOTE: The CPO/P must consider the time of flight, laser-on time, and separation angle for all remote missions.

REFERENCES:

FM 1-112
FM 1-114
FM 1-116
TM 55-1520-248-10

TASK 2061

TASK: Reconnoiter and recommend a holding area.

CONDITIONS: In an OH-58D helicopter in a training or tactical environment.

STANDARDS:

1. Determine whether an area is suitable for use as a holding area by considering all of the following.

a. Cover and concealment.

b. Obstacles.

c. Key terrain.

d. Avenues of approach and departure.

e. Security.

2. Correctly perform crew coordination actions.

DESCRIPTION: During premission planning, the crew should select tentative areas that are suitable as holding areas. The areas should be free of sources of rotor wash signature and large enough to provide dispersion. The CPO/P can use the LRF/D to determine the length and width of the area and use the target-locate or target-store functions to locate or store coordinates for avenues of approach and departure. If the tactical situation permits, the crew should verify whether the predetermined areas are suitable for use as holding areas.

REFERENCES:

FM 1-112
FM 1-114
FM 1–116
FM 17-95
TM 55-1520-248-10

TASK 2063

TASK: Perform a security mission.

CONDITIONS: In an OH-58D helicopter in a training or tactical environment with a mission briefing and map reconnaissance completed or described orally in a classroom environment.

STANDARDS:

1. Use the five fundamentals of security to correctly perform a screen, guard, or cover mission.

2. Correctly perform crew coordination actions.

DESCRIPTION: The aeroscout mission in all security operations is reconnaissance. Air cavalry units may conduct security operations as an integral part of a larger unit's task organization.

1. Fundamentals of Security. In performing the security mission, the aircrew member must know the five fundamentals of security. They are briefly defined below.

a. Orient on the main body. A security force operates between the main body and known or suspected enemy units.

b. Perform continuous reconnaissance. A security force performs continuous and aggressive reconnaissance to gain all possible information about the enemy and the terrain. The security force––

(1) Orients on the location or movement of the reconnaissance objective.

(2) Reports all information rapidly and accurately.

(3) Retains freedom to maneuver.

(4) Gains and maintains enemy contact.

(5) Ensures that the maximum reconnaissance forces are forward.

(6) Develops the situation rapidly.

c. Provide early and accurate warning. Early warning of enemy activity includes accurate reports about the enemy's size, composition, location, movement, and special equipment. This gives the main body commander the time and information needed to seize the initiative and choose the time and place to engage the enemy.

d. **Provide reaction time and maneuver space.** A security force operates as far from the main body as possible, consistent with the factors of METT-T. It fights to ensure that the main body has adequate time and space to respond to the threat.

e. **Maintain enemy contact.** Once gained, contact is maintained to ensure a continuous flow of information about enemy activity. As in reconnaissance operations, maintaining enemy contact prevents the enemy from achieving the element of surprise.

2. Types of Security Missions. The major types of security missions that the aircrew member may help to conduct are screen, guard, and cover. Each is briefly described below.

a. **Screen.** Screen operations maintain surveillance and provide early warning by maintaining contact with enemy forces that have been encountered. A screening force impedes and harasses the enemy with organic and supporting fires and, within its capability, destroys or repels enemy patrols.

b. **Guard.** Guard operations are conducted to gain early warning, reaction time, and maneuver space to the front, flank, or rear of a moving or stationary force. A guard force reconnoiters, screens, attacks, and defends to accomplish the mission.

c. **Cover.** Cover operations give the main body information about the enemy, early warning, reaction time, and maneuver space. A covering force is a tactically self-contained security force that operates at considerable distance from the front, flank, or rear of a moving or stationary front. The mission of a covering force is to develop the situation early and defeat the enemy. If the covering force cannot defeat the enemy, it will deceive, delay, and disorganize the enemy until the force being covered can react.

REFERENCES:

FM 1–112
FM 1-114
FM 1-116
FM 17-95
TM 55-1520-248–10
Unit SOP

TASK 2065

TASK: Call for and control a tactical air strike.

CONDITIONS: In an OH-58D helicopter in a tactical environment.

STANDARDS:

1. Correctly transmit a spot report and a request for a tactical air strike.

2. Correctly perform a CAS briefing on the mission.

3. Correctly coordinate laser codes for laser-guided munitions, if applicable.

4. After the air strike, give the forward air controller or fighter-bomber an accurate BDA.

5. Correctly perform crew coordination actions.

DESCRIPTION: The P* will remain focused outside the aircraft to maintain obstacle clearance. The P will assist the P* as necessary and will announce when focused inside the cockpit. The crew will establish contact with the forward air controller on a predetermined frequency, and provide the following information.

a. Target description.

b. Target location in six-digit UTM.

c. Type of mark (laser codes and laser line, artillery, smoke, and so forth).

d. Friendly locations.

e. Requested TOT; for example, “1525 hours" or "Request support in 15 minutes”.

f. Attack sectors or timing used for coordination calls.

g. Associated threats (type and location).

h. Attack restrictions.

NOTE: Task 1085 discusses ATHS operations and Task 1092 shows the standard formats for a spot report and voice BDA.

REFERENCE:

FM 90-21

TASK 2066

TASK: Perform a zone reconnaissance.

CONDITIONS: In an OH-58D helicopter in a training or tactical environment.

STANDARDS:

1. Conduct a detailed map reconnaissance.

2. Make specific and timely reports about information obtained during the zone reconnaissance.

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. A zone reconnaissance is conducted to obtain information about natural and man-made features within specified boundaries. The purpose may be to locate suitable routes of advance for main elements (air or ground) or to find the enemy. The aircrew must reconnoiter the zone in a systematic manner.

2. After receiving the mission assignment, the P*/P should conduct a detailed map reconnaissance and select significant checkpoints for examination. He may enter these checkpoints into the WAYPOINT LIST page. He can then logically rearrange the information on the FLIGHT PLAN page.

a. The P*/P must analyze the known enemy situation according to the factors of METT-T. The P* selects the mode of terrain flight and technique of movement that will best accomplish the mission. If applicable, the P uses the ATHS to store artillery and air mission requests. The P*/P must coordinate available artillery and air support in advance.

b. The P*/P must become familiar with the frequencies and call signs of other aircraft as well as available artillery support. The P can enter these into the ATHS.

3. A zone reconnaissance is a detailed reconnaissance. Therefore, the P*/P must check--

a. Fording sites.

b. Trails for recent use.

c. Densely wooded areas for stay-behind or ambush units.

d. Bridges for condition, location, demolition, and classification.

e. Hilltops and dominant man-made features for observation posts.

4. The P* flies the planned terrain flight mode to the line of departure and crosses at the designated time and at the correct air-passage point. He flies the mission on the predetermined route or another route if required by the situation (enemy or lack of cover and concealment). The CPO/P uses the MMS at standoff ranges to clear terrain and detect possible enemy activity. The P*/P maintains navigation within specified boundaries unless authorized to cross them.

5. If enemy contact is made, the aircrew should use standard actions which are explained in Task 1096, Perform actions on contact.

6. The P*/P must report the evidence or absence of enemy activity. He must also provide specific reports about route conditions, checkpoint times, and any other information requested. The P should use the ATHS as much as possible to report information. Reports must be timely and specific.

REFERENCES:

FM 1-112
FM 1-114
FM 1-116
FM 17–95
TM 55-1520-248-10

TASK 2067

TASK: Perform an area reconnaissance.

CONDITIONS: In an OH-58D helicopter in a training or tactical environment.

STANDARDS:

1. Conduct a detailed map reconnaissance.

2. Make specific and timely reports about information obtained during the area reconnaissance.

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. An area reconnaissance is conducted when the commander desires information about a town, ridgeline, wooded area, or other feature that may be critical to the operation. The specific area to be reconnoitered is designated by a boundary line that completely encloses the area.

2. After receiving the mission, the P*/P must carefully study the factors of METT-T and conduct a detailed map reconnaissance. Emphasis should normally be placed on reaching the area quickly. He must carefully coordinate passage in and out of friendly lines and select alternate routes for the return flight. Enemy situations encountered en route must be reported and bypassed, if possible.

3. An area reconnaissance is conducted the same as a zone reconnaissance, except in the manner of movement to and from the area. (A zone reconnaissance is described in Task 2066.) The town, road junction, or other area, as well as the controlling terrain, must be thoroughly reconnoitered. Typical area objectives that may be reconnoitered include––

a. PZs and LZs.

b. Key terrain.

c. Choke points.

d. Assembly areas.

e. Field trains sites.

f. Specific areas of NBC activity.

g. Forward refueling/arming point locations.

h. Danger areas; for example, bridges, tunnels, and fords.

REFERENCES:

FM 1-112
FM 1-114
FM 1-116
FM 17-95
TM 55-1520-248–10

TASK 2082

TASK: Perform techniques of movement.

CONDITIONS: In an OH-58D helicopter 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 an 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—

a. Traveling. This technique is primarily used when enemy contact is not likely. It is the fastest method for moving a formation of aircraft but provides the least amount of security. Low–level flight and contour flight at high airspeed are 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. Because the range at which targets can be observed will be limited, the overmatching element will remain well within the effective range of its weapon systems. It remains ready to fire or maneuver, or both, to support the main elements. Contour flight is used for movement. Airspeed is generally high and varied, depending on the weather, ambient light, terrain, and threat.

c. Bounding overwatch.

(1) 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.

(2) ATHS reports and messages may be used during movement. The TIS or TVS also can be used to clear terrain at extended ranges. Overmatching elements cover the progress of bounding elements from a covered/concealed position which offers observation and fields of fire against potential enemy positions. Contour flight and NOE flight are used for movement. Airspeed during each bound is varied, depending on the availability of vegetation and terrain for concealment. If an airborne laser tracker is available on the attack helicopter, it can be used with the laser on the OH-58D for silent operations, location prompting, and target cuing.

REFERENCES:

FM 1-112
FM 1-114
FM 1-116
FM 17-95
TC 1–201
TM 55-1520-248-10

TASK 2100

TASK: Conduct an adjust-fire mission using the mast-mounted sight and airborne target handover system.

CONDITIONS: In an OH-58D helicopter in a training or tactical environment.

STANDARDS:

1. Correctly prepare and transmit an adjust-fire mission.

2. 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.

2. The CPO/P will operate the ATHS and assist the P* as necessary. The CPO/P will announce when his attention is focused inside the cockpit.

3. The CPO/P will--

a. Perform point track procedures.

b. Perform ATHS procedures. He will--

(1) Select the ATHS switch.

(2) Select ARTY REQ when the TOP MENU page displays.

(3) Select NEW when the ARTY MSN page displays.

(4) Select NEW TGT when the MSN TYPE page displays.

(5) Select N/G when the TGT DESCRIPTION page displays.

(6) Review the subscriber destination when the MSN SUM page displays.

(7) Select the MMS line-address key.

(8) Accomplish TGT LOCATE procedures.

(9) Press the ATHS key.

(10) Select TGT when the MSN SUM page displays.

(11) Select TGT when the TGT SUM STATUS page displays. He will--

(a) Enter the target description.

(b) Enter the appropriate data when the TARGET SUBTYPE page displays.

(c) Enter the appropriate data when the DEGREE OF PROTECTION page displays.

(12) Select the SEQUENCING key when the MSN SUM page displays.

(13) Select FIRE CONTROL if desired.

(14) Select SH/FZ as desired and sequence off when the FIRE CONTROL SUM page displays.

(15) Select SEND when the MSN SUM page displays.

NOTE 1: At this point, the operator is awaiting the message "ACCPTD" from the FDC. Once the ATHS receives the message "ACCPTD," review the MTO.

NOTE 2: After the round impacts, perform an adjustment and request FFE.

c. Perform adjustment 'procedures. He will--

(1) Select SHIFT when the MSN SUM page displays.

(2) Press MMS and perform round-locate procedures when the SHIFT-CALC-"C" page displays.

(3) Press the ATHS switch when the SHIFT-CALC-"C" page displays. Review RND grid and press SHIFT-CALC.

(4) Press C on the MFK, review correction, and sequence to the MSN SUM page.

(5) Select FIRE CONTROL when the MSN SUM page displays.

(6) Select CONT when the FIRE CONTROL SUM page displays.

(7) Select FFE when the FIRE CONTROL page displays.

(8) Select the SEQUENCING key when the FIRE CONTROL SUM page displays.

(9) Select SEND when the MSN SUM page displays.

(10) Await shot and splash from the FDC.

d. Perform end-of-mission procedures.

REFERENCE:

TM 55-1520-248-10

TASK 2101

TASK: Conduct a fire-for-effect mission using the mast-mounted sight and airborne target handover system.

CONDITIONS: In an OH-58D helicopter in a training or tactical environment.

STANDARDS:

1. Prepare and transmit an FFE mission.

2. 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.

2. The CPO/P will operate the ATHS and assist the P* as necessary. The CPO/P will announce when his attention is focused inside the cockpit.

3. The CPO/P will--

a. Perform point track procedures.

b. Perform ATHS procedures. He will--

(1) Select the ATHS switch.

(2) Select ARTY when the MENU page displays.

(3) Select NEW when the ARTY page displays.

(4) Select NEW TARGET when the MSN TYPE page displays.

(5) Enter N/G when the TGT DESCRIPTION page displays.

(6) Enter and review the subscriber destination when the MSN SUM page displays.

(7) Select the MMS line-address key.

NOTE: Point track procedures should be performed before target locating. If the system will not point track, manually maintain the laser hit point on the target with the LOS control.

(8) Perform TGT LOCATE procedures.

(9) Select ATHS.

(10) Select TGT when the MSN SUM page displays.

(a) Select target description and the appropriate subtype.

(b) Sequence off the target description on page 2.

(c) Enter the appropriate data when the DEGREE OF PROTECTION page displays.

NOTE: Enter the length, width, and attitude of irregularly shaped targets.

(11) Select FIRE CONTROL when the MSN SUM page displays.

(12) Select CONT when the FIRE CONTROL STATUS page displays.

(13) Select FFE when the fire control page displays.

(14) Select SH/FZ as desired when the FIRE CONTROL page displays.

(15) Enter the appropriate SH/FZ combination when the SHELL/FUZE page displays.

NOTE: Select HC/SMOKE as SH/FZ to perform an immediate smoke mission.

(16) Select the sequencing key when the FIRE CONTROL STATUS page displays.

(17) Select SEND when the MSN SUM page displays.

NOTE: Select CONTROL after ACCEPTED, SHOT, and SPLASH is received.

c. Perform end-of-mission procedures.

REFERENCE:

TM 55-1520-248-10

TASK 2102

TASK: Conduct a suppression mission using the mast-mounted sight and airborne target handover system.

CONDITIONS: In an OH-58D helicopter in a training or tactical environment and given a target number.

STANDARDS:

1. Prepare and send a suppression mission.

2. 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.

2. The CPO/P will operate the ATHS and assist the P* as necessary. The CPO/P will announce when his attention is focused inside the cockpit.

3. The CPO/P will use the following procedures.

NOTE: The aircrew must have a known point number or a target number to conduct this mission. This mission is conducted as a Quick-Fire mission.

a. Select and press the ATHS switch.

b. Select ARTY when the TOP MENU page displays.

c. Select NEW when the ARTY MSN LIST displays.

d. Select QUICK when the MSN TYPE page displays.

e. Select either KNPT or TGT NUM when the QUICK FIRE page displays.

f. Enter the appropriate data when TGT NUMBER or KNOWN POINT displays.

g. Select SEND when the MSN SUM page displays.

NOTE: Although ADJ FIRE appears at R2, because QUICK was selected, the ATHS automatically defaults to FFE and sends that to the FDC. Upon receipt of the MTO, ADJ FIRE will change to WR\FFE.

h. End the MSN when desired effects have been achieved on the target.

REFERENCE:

TM 55–1520–248–10

TASK 2103

TASK: Conduct an immediate suppression mission using the mast-mounted sight and airborne target handover system.

CONDITIONS: In an OH-58D helicopter in a training or tactical environment.

STANDARDS:

1. Prepare and conduct an immediate suppression mission.

2. 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.

2. The CPO/P will operate the ATHS and assist the P* as necessary. The CPO/P will announce when his attention is focused inside the cockpit.

3. The CPO/P will--

a. Perform point track procedures.

b. Perform ATHS procedures. He will--

(1) Select the ATHS switch.

(2) Select ARTY when the TOP MENU page displays.

(3) Select NEW when the ARTY MSN LIST page displays.

(4) Select NEW TGT when the MSN TYPE page displays.

(5) Select N/G when the TARGET DESCRIPTION page displays.

(6) Select the MMS LINE-ADDRESS key when the MSN SUM page displays.

(7) Perform TGT LOCATE procedures.

NOTE: This mission is conducted as an FFE mission with an urgent priority.

(8) Select the ATHS switch.

(9) Select FIRE CNTL when the MSN SUM page displays.

(10) Select CONT when the FIRE CONTROL SUM page displays.

(11) Select FFE when the FIRE CONTROL page displays.

(12) Select PRIORITY when the FIRE CONTROL SUM page displays.

(13) Select URGENT when the PRIORITY page displays.

(14) Select the SEQUENCING key when the FIRE CONTROL SUM page displays.

(15) Select SEND when the MSN SUM page displays.

NOTE: Select HC/SMOKE from the SH/FZ page to perform an immediate smoke mission.

REFERENCE:

TM 55-1520-248-10

TASK 2112

TASK: Call for and designate for the Copperhead laser-guided munitions.

CONDITIONS: In an OH-58D helicopter in a training or tactical environment.

STANDARDS:

1. Prepare a call-for-fire requesting Copperhead laser-guided munitions.

2. Correctly perform crew coordination actions.

DESCRIPTION:

NOTE: Before conducting a Copperhead mission, the operator must send a SIT RPT with a laser code to the FDC.

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.

2. The CPO/P will operate the ATHS and assist the P* as necessary. The CPO/P will announce when his attention is focused inside the cockpit. The CPO/P will--

a. Perform point track procedures.

b. Perform ATHS procedures. He will--

(1) Select and press the ATHS switch.

(2) Select ARTY when the TOP MENU page displays.

(3) Select NEW when the ARTY MSN LIST page displays.

(4) Select CPHD when the MSN TYPE page displays.

(5) Enter N/G when the STR page displays.

NOTE: When N/G is entered, the ATHS selects one round of CPHD. (Select the appropriate number if multiple CPHD rounds are desired.)

(6) Select NEW TGT when the TARGET POSITION SELECT page is displayed.

NOTE: Point track procedures must be accomplished prior to the following procedures.

(7) Select either the MMS line-address key when the MSN SUM page is displayed or KNPT if CPHD can be used at or near a preplanned target.

(8) Perform TGT LOCATE procedures.

(9) Press the ATHS key.

(10) Select TGT DESCRIPTION when the MSN SUM page is displayed.

(11) Select TGT when the TGT DESCRIPTION STATUS page is displayed.

(12) Select the appropriate target description when the TARGET DESCRIPTION page "1/3" is displayed.

NOTE: Scroll to page 2/3 or 3/3 for additional target descriptions, if necessary.

(13) Select the appropriate target when the TARGET SUBTYPE page is selected.

(14) Select the sequencing key when the TARGET DESCRIPTION STATUS page is displayed.

(15) Select SEND when the MSN SUM page is displayed.

NOTE: Once the ATHS operator has received the message "SHOT," a countdown will start on the MFD. During the last 20 seconds, the ATHS operator must designate the target.

c. Perform designation procedures.

(1) Select ARM on the LASER ARM/STBY/OFF switch.

(2) Press and hold the LASER FIRE switch for the last 20 seconds of the splash countdown.

d. Perform end-of-mission procedures.

NOTE: Forty-five degrees is the maximum angle for Copperhead engagements.

REFERENCE:

TM 55-1520-248-10

CHAPTER 7

MAINTENANCE TASKS

This chapter describes those maneuvers and procedures that are essential for sustaining maintenance aircrew skills. Tasks will be performed for both training and evaluation. If discrepancies are found between this chapter and TM 55-1520-248-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 the tasks listed in Chapter 5 (Figure 5-4).

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 P* (pilot on the controls), P (pilot not on the controls), PI, and CPO. During maintenance test flights, the MP will be the PC except during an evaluation conducted by an ME. Unless stated otherwise in the task description, the P* also refers to the maintenance test pilot.

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; for example, the completion of the engine start and run-up checks by the P*/P for their designated seat positions.

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 2800

TASK: Perform prior-to-maintenance test flight checks.

CONDITION: In an OH-58D helicopter and given TMs 55-1520-248-10 and 55-1520-248-CL.

STANDARDS:

1. Without error, perform the preflight inspection according to TM 55-1520-248-10/CL.

2. Correctly check and perform all items in sequence.

3. Correctly determine aircraft suitability for flight.

4. 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 MP will ensure that the preflight inspection is conducted according to TMs 55-1520-248-10 and 55-1520-248-CL. He will ensure that the appropriate information is entered on DA Forms 2408-12 and 2408-13.

2. The crew will assist the MP complete the preflight.

3. The MP will determine the maneuvers or checks necessary for the maintenance test flight. The crew will use additional publications and references as necessary. The MP will brief the crew and any supporting ground crew members concerning operation on or around the helicopter and will ensure that ground communication capability is adequate. He will stress any applicable safety considerations or procedures during the briefing.

4. The MP will ensure that a walk-around inspection is completed following preflight.

REFERENCES:

AR 95-1
AR 95-3
TM 55-1520-248-10/CL
TM 55-1520-248-MTF
TM 55-1520-248-23 series
TM 55-2840-256-23

TASK 2802

TASK: Perform before-starting engine checks.

CONDITION: In an OH-58D helicopter and given TM 55-1520-248-MTF.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-248-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. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will call out all required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MTF check sheet any normal conditions that have been marked with an asterisk or any abnormal conditions noted by the P*.

2. The P* will perform all checks as directed by the P and announce when the checks are completed.

REFERENCE:

TM 55-1520-248-MTF

TASK 2804

TASK: Perform starting-engine checks.

CONDITION: In an OH-58D helicopter and given TM 55-1520-248-MTF.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-248-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. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will announce all required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MTF check sheet any normal conditions that have been marked with an asterisk or any abnormal conditions noted by the P*.

2. The P* and P and the ground crew member(s), if available, will clear the area around the aircraft before starting the engine.

3. Before starting the engine, the crew will ensure that all appropriate internal and external lights are operational and properly set.

4. The P* will announce the initiation of the engine start and the appropriate items to be recorded during the start sequence; for example, TGT and the duration of start time.

5. The P will acknowledge any message(s) displayed on the MFD and notify the P* of the message(s).

REFERENCES:

TM 55-1520-248-10
TM 55-1520-248-MTF

TASK 2806

TASK: Perform engine run-up pilot checks.

CONDITION: In an OH-58D helicopter and given TM 55-1520-248-MTF.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-248-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. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will announce all required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MTF check sheet any normal conditions marked with an asterisk or any abnormal conditions noted by the P*.

2. The P* will perform all checks as directed by the P and announce when the checks are completed.

REFERENCE:

TM 55-1520-248-MTF

TASK 2808

TASK: Perform system checks.

CONDITION: In an OH-58D helicopter and given TM 55-1520-248-MTF.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-248-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. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will announce all required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MT.F any normal conditions marked with an asterisk or any abnormal conditions noted by the P*.

2. The P* will perform all checks as directed by the P and announce when the checks are completed.

NOTE: These checks are designed to verify the function of those items called out in the check list.

REFERENCE:

TM 55-1520-248-MTF

TASK 2810

TASK: Perform before-takeoff checks.

CONDITION: In an OH-58D helicopter and given TM 55-1520-248-MTF.

STANDARDS:

1. Without error, perform procedures and checks according to TM 55-1520-248-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. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will announce all required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MTF check sheet any normal conditions marked with an asterisk or any abnormal conditions noted by the P*.

2. The P* will perform all checks as directed by the P and announce when the checks are completed.

REFERENCE:

TM 55-1520-248-MTF

TASK 2812

TASK: Perform takeoff to a hover.

CONDITION: In an OH-58D helicopter with before-takeoff check completed.

STANDARDS:

1. Ensure that the aircraft is cleared of all obstacles.

2. Note cyclic, collective, and pedal control response.

3. Maintain a 3-foot hover altitude, ±l foot.

4. Note the center of gravity.

5. Correctly determine malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

6. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* will ensure that all control and instrument indications are normal, will announce his intention to bring the aircraft to a stationary hover, and will keep a visual reference outside the aircraft. He will then increase the collective with a smooth, positive pressure and will apply antitorque pedals as needed to maintain heading while coordinating the cyclic to achieve a vertical ascent. He will announce that the aircraft is stabilized. He will also 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. While hovering into the wind, the P* will note that the cyclic and pedal positions are normal for conditions.

2. The P will verify that all system instruments are in the normal ranges for conditions and record on the MTF check sheet any normal conditions marked with an asterisk or any abnormal conditions noted by the P*.

REFERENCE:

TM 55-1520-248-MTF

TASK 2814

TASK: Perform power assurance check.

CONDITION: In an OH-58D helicopter with takeoff-to-a-hover check completed.

STANDARDS:

1. Ensure that the aircraft is cleared of all obstacles.

2. Position the aircraft into the wind.

3. Maintain a 3-foot hover altitude, ±1 foot.

4. Record the required readings.

5. Check engine torque against power assurance chart.

6. Correctly determine malfunctions or discrepancies and apply the corrective actions\troubleshooting procedures.

7. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P* will perform the check at a stabilized 3-foot hover into the wind, will keep visual reference outside the air-Craft, and will verify that the HTR and ENG ANTI ICE are OFF. The P* will direct the P to record the FAT, TGT, PA, and engine torque. The P* will land the aircraft. He will determine if the readings are within normal limits by entering the data in the appropriate power assurance chart.

2. The P will record on the MTF check sheet any normal conditions marked with an asterisk or any abnormal conditions noted by the P*.

NOTE: All performance charts are based on an engine Operating at 100-percent efficiency. An engine that is operating at less than 100-percent efficiency may be weaker than that modeled in the computation for aircraft performance shown in the operator~s manual. The power assurance check verifies this by comparing a given TGT. to a given engine torque output. If the indicated engine torque is greater than that charted, the engine is performing above 100 percent. If the indicated engine torque is less than the charted torque, the engine is performing at less than 100-percent efficiency. Even if the aircraft engine is performing at less than 100-percent efficiency, the crew may elect to proceed with the mission. For instance, the crew may decide that an engine operating at 98-percent efficiency is adequate for the flight. In any case, a weak engine is a candidate for maintenance action or replacement. (The crew will refer to the appropriate troubleshooting procedure.)

REFERENCES:

TM 55-1520-248-10
TM 55-1520-248-MTF

TASK 2816

TASK: Perform hover power check.

CONDITION: In an OH-58D helicopter with takeoff to a hover and power assurance checks completed.

STANDARDS:

1. Ensure that the aircraft is cleared of all obstacles.

2. Position the aircraft into the wind.

3. Maintain a 3-foot hover altitude, ±l foot.

4. Record the required readings.

5. Check mast torque against the PPC.

6. Correctly determine malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

7. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will announce all required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MTF check sheet any normal conditions marked with an asterisk or any abnormal conditions noted by the P*.

2. The P* will perform the check at a stabilized 3-foot hover into the wind, will keep a visual reference outside the aircraft, and will have the P record mast torque, TGT, and NG. The P* will determine that readings are within normal limits. He will compare mast torque with the PPC and apply Task 1016, Perform hover power check, as appropriate. After checking the parking area for any indication of leaks and announcing that the check is completed, he will hover to the test-flight hover area.

REFERENCES:

TM 55-1520-248-10
TM 55-1520-248-MTF

TASK 2818

TASK: Perform hovering turns.

CONDITION: In an OH-58D helicopter.

STANDARDS:

1. Ensure that the aircraft is cleared of all obstacles.

2. Maintain a 3-foot hover altitude, ±l foot.

3. Perform turns riot to exceed the rate of 90 degrees in 4 seconds.

4. Note tail rotor response and rigging.

5. Correctly determine malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

6. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will announce all required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MTF check sheet any normal conditions marked with an asterisk or any abnormal conditions noted by the P*.

2. The P* will begin the check from a stabilized 3-foot hover into the wind and will keep a visual reference outside the aircraft. He will apply pressure on the desired pedal to begin the turn and will use pressure and counterpressure on the pedals to maintain a constant rate of turn. (The P* will note that excessive pedal positions are not required during the maneuver.) He will make hovering turns to the left and right (90 degrees to either side of the wind direction) and announce that the check is completed.

REFERENCE:

TM 55-1520-248-MTF

TASK 2820

TASK: Perform sideward flight.

CONDITION: In an OH-58D helicopter.

STANDARDS:

1. Ensure that the aircraft is cleared of all obstacles.

2. Maintain a flight path that is approximately perpendicular to the wind direction.

3. Maintain a 3-foot hover altitude, ±1 foot.

4. Limit ground speed to 5 knots.

5. Correctly determine malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

6. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will announce all required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MTF check sheet any normal conditions marked with an asterisk or any abnormal conditions noted by the P*.

2. The P* will begin the check from a stabilized 3-foot hover into the wind, keeping a visual reference outside the aircraft. He will perform sideward flight in both directions with the aircraft positioned into the wind. (The P* will note that no excessive inputs are required during the maneuver, and the desired aircraft response is achieved.) After the P* centers the cyclic, the aircraft should drift to a stop. He then announces that the check is completed.

REFERENCE:

TM 55-1520-248-MTIF

TASK 2822

TASK: Perform forward flight to ETL.

CONDITION: In an OH-58D helicopter.

STANDARDS:

1. Ensure that the aircraft is cleared of all obstacles.

2. Position the aircraft into the wind.

3. Maintain a 5-foot hover altitude, ±l foot.

4. Note cyclic and tail rotor pedal responses.

5. Correctly determine malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

6. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will announce all required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MTF check sheet any normal conditions marked with an asterisk or any abnormal conditions noted by the P*.

2. The P* will begin the check from a stabilized 5-foot hover into the wind. While keeping a visual reference outside the aircraft, he will apply sufficient forward cyclic to accelerate to ETL. (The P* will note that excessive control inputs are not required during the maneuver and that aircraft response is normal.) After ETL is achieved, he will return the aircraft to a stabilized 5-foot hover and announce that the check is completed.

NOTE: The 5-foot standard, 31 foot, is measured from the pilot station and ensures that the tail rotor does not strike the ground during the maneuver.

REFERENCE:

TM 55-1520-248-MTF

TASK 2826

TASK: Perform SCAS check.

CONDITION: In an OH-58D helicopter.

STANDARDS:

1. Ensure that the aircraft is cleared of all obstacles.

2. Position the aircraft into the wind.

3. Maintain a 5-foot hover altitude, ±1 foot.

4. Correctly determine malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will announce all required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MTF check sheet any normal conditions marked with an asterisk or any abnormal conditions noted by the P*.

2. The P* will begin the check from a stabilized 5-foot hover into the wind and will keep a visual reference outside the aircraft. He will induce pitch, roll, and yaw inputs with the SCAS system engaged. The P* will check each axis separately by inducing a control input. The control inputs should be smooth but large enough to induce a momentum to the fuselage of the aircraft. If the SCAS system is functioning properly, centering the appropriate aircraft control should cause movement to dampen almost immediately. To ensure that the system is functioning properly, the P* will disengage the SCAS and repeat the check. When the SCAS is disengaged, movement of the fuselage will usually continue after the appropriate control is centered. The p* will complete the check, return to a 3-foot hover, and announce that the check is completed.

3. The P will acknowledge the SCAS DISENG message when the P* disengages the SCAS. He will reengage the SCAS PITCH/ROIL and YAW switches when the P* announces that the check is completed.

REFERENCE:

TM 55-1520-248-MTF

TASK 2828

TASK: Perform heading hold check.

CONDITION: In an OH-58D helicopter.

STANDARDS:

1. Ensure that the aircraft is cleared of all obstacles.

2. Position the aircraft into the wind.

3. Correctly determine malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will announce all the required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MTF work sheet any normal condition marked with an asterisk or any abnormal conditions noted by the P*.

2. The P* will begin the check from a stabilized 3-foot hover into the wind and keep a visual reference outside the aircraft. He will engage heading hold and check that. the HDG HOLD displays on the MFD. The P* will guard the tail rotor pedals, bring the aircraft to a stabilized 10-foot hover, and announce to the P when the aircraft is stabilized. He will descend to a 3-foot hover. The P* will then move the SCAS heading hold ENGA/DISENG trim switch to R (right) and L (left) to change the aircraft heading at least 10 degrees to the right and at least 10 degrees to the left. The P* will apply slight pressure (left or right) to the antitorque pedals and note that heading hold disengages and the HDG HOLD message deletes from the MFD. He will then announce that the check is completed.

3. The P will verify that the heading at a 3-foot hover is within ±2 degrees of the initial heading once heading hold is engaged. After the P* announces that the aircraft is stabilized at a 10-foot hover, the P will check that the aircraft. heading is the same as it was when the aircraft was stabilized at a 3-foot hover. Aircraft heading should be maintained within ±2 degrees.

NOTE: Heading accuracy is best determined by displaying the HSD page using map offset.

REFERENCE:

TM 55-1520-248-MTF

TASK 2830

TASK: Perform power cylinder check.

CONDITION: In an OH-58D helicopter.

STANDARDS:

1. Ensure that the aircraft is cleared of all obstacles.

2. Position the aircraft into the wind.

3. Ensure that the P completes the safety briefing.

4. Maintain a 10-foot hover altitude, +5 feet, -2 feet.

5. Correctly determine malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

6. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will announce all required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MTF check sheet any normal conditions marked with an asterisk or any abnormal conditions noted by the P*.

2. The P* will begin the check from a stabilized 10-foot hover into the wind and keep a visual reference outside the aircraft. He will move the cyclic smoothly (approximately 3 inches to either side of the center) along a 45-degree line from the left-rear to the right-forward quadrant. The P* will move the cyclic several times. He will check the left servo by moving the cyclic from the right-rear to the left-forward quadrant. (The P* will note the operation of the right and left cyclic servos to ensure that movement is smooth and without restriction.) The P* will return the aircraft to a stabilized 3-foot hover and announce that the check is completed.

3. The P will hold the HYD SYS switch throughout the check and verify that the LOW HYD PRESS message does not display during the check.

NOTE: The power cylinder check is primarily a flow capacity check of the hydraulic pump.

REFERENCE:

TM 55-1520-248-MTF

TASK 2832

TASK: Perform engine response check.

CONDITION: In an OH-58D helicopter.

STANDARDS:

1. Ensure that the aircraft is cleared of all obstacles.

2. Position the aircraft into the wind.

3. Ensure that aircraft altitude does not exceed 50 feet AGL.

4. Note engine response.

5. Correctly determine malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

6. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will announce all required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MTF check sheet any normal conditions marked with an asterisk or any abnormal conditions noted by the P*.

2. The P* will begin the check from a stabilized 3-foot hover into the wind and will keep a visual reference outside the aircraft. He will make a positive increase in the collective pitch. The engine should respond smoothly and rapidly. The P* will ensure that NG increases in less than 1 second. He will reduce the collective before too much altitude is gained (50 feet). The P* will land the aircraft, reduce the throttle to the idle position, move the fuel control switch to the ANLG BACK UP position, and increase the throttle to the full-open position. The P* then moves the RPM increase/decrease switch to the plus (+) and minus (-) positions. (Nr/Np should remain constant.) He will then stabilize the aircraft at a 3-foot hover, make a positive increase in the collective pitch, and note Nr/Np. The P* will reduce the collective before too much altitude is gained (50 feet), land the aircraft, and reduce the throttle to the idle position. He will return the fuel control switch to the NORM position and increase the throttle to the full-open position. The P* will then set the Nr to 100 percent and announce that the check is completed.

NOTE 1: Nr/Np may underspeed or overspeed slightly but should begin to stabilize within two to five seconds.

NOTE 2: The purpose of the engine-response check is to test the response of the engine when a moderate power demand is placed on it.

REFERENCE:

TM 55-1520-248-MTF

★TASK 2833

TASK: Perform manual throttle operations check (FADEC)

CONDITIONS: In an OH-58D(R) helicopter, over a level surface, heading into the wind, with the MMS off.

STANDARDS:

1. Maintain aircraft heading into the wind, ± 10 degrees.

2. Smoothly coordinate throttle and collective controls.

3. Maintain a 3-foot hover ±1 foot.

4. Maintain RPM NR 100 ± 2% at a hover.

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions.

a. The MP will perform P* duties during this check. He will brief the RCM/NCM, if available, concerning any Warnings, Cautions, or Notes that may impact upon the checks to be performed. He may direct assistance from the RCM or NCM to clear the aircraft and maintain obstacle avoidance.

b. The RCM or NCM should assist the MP as directed.

2. Procedures. Land the aircraft and reduce the throttle to the engine idle position.

a. Select the MANUAL position on the FADEC AUTO/MANUAL push-button switch. Confirm that the MANUAL legend illuminates, the FADEC MANUAL warning message displays on the MFD, and the FADEC audio is heard in both headsets. Acknowledge the FADEC audio.

b. Smoothly adjust the throttle to 100% NP. Continue to carefully adjust the throttle while increasing collective to establish a stabilized 3-foot hover into the wind.

c. While at a hover, maintain NP at 100 ±2%. Note engine response and NP fluctuations.

d. Land the aircraft while continuously monitoring and maintaining RPM.

e. With the aircraft skids firmly on the ground, reduce throttle to idle while decreasing the collective to the full down position.

f. Select the FADEC AUTO/MANUAL push-button switch to the AUTO position. Confirm the AUTO legend on the switch is illuminated and FADEC MANUAL message deletes from MFD. FADEC MAINT will momentarily display on the MFD. Confirm no degrade messages display on the FADEC MONITOR page.

g. Increase the throttle to full open, and ensure that the FADEC system operates properly and maintains NP at 100%.

NOTE: In case of an actual in-flight emergency that requires FADEC MANUAL mode operation, the crew will use the procedures in TM 1-1520-248-10 or TM 1-1520-248-CL.

REFERENCES:

TM 1-1520-248-10
TM 1-1520-248-CL

TASK 2834

TASK: Perform hover/hover bob-up check.

CONDITION: In an OH-58D helicopter.

STANDARDS:

1. Ensure that the aircraft is cleared of all obstacles.

2. Position the aircraft into the wind.

3. Maintain a 3-foot hover altitude, ±1 foot.

4. Correctly determine malfunctions or discrepancies and apply the corrective actions/troubleshooting procedures.

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will announce all required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MTF check sheet any normal conditions marked with an asterisk or any abnormal conditions noted by the P*.

2. The P* will begin the check from a stabilized 3-foot hover into the wind over a readily identifiable position and will keep a visual reference outside the aircraft. He will select the hover page on the MFD, press the hover bob-up switch, note the hover position box, and stabilize the aircraft for 15 seconds. (The hover position box should remain stable.) The P* will reposition the aircraft approximately 10 to 15 feet forward, and then return it to the original position flying rearward. Once the aircraft is repositioned, he will hover the aircraft laterally either left or right 10 to 15 feet and will return the aircraft to the original position flying in the opposite direction. If the hover position box error is excessive, the P* will perform a doppler calibration and announce that the check is completed.

NOTE 1: When flight is conducted away from the position box, the velocity vector should move in the appropriate direction and the position box should move opposite the velocity vector.

NOTE 2: Navigation system accuracy can affect position-box drift and doppler calibration.

REFERENCES:

TM 55-1520-248-10
TM 55-1520-248-MTF

TASK 2836

TASK: Perform takeoff and climb check.

CONDITION: In an OH-58D helicopter.

STANDARDS:

1. Ensure that the aircraft is cleared of all obstacles.

2. Without error, perform takeoff and climb check according to TM 55-1520-248-MTF.

3. Correctly check and perform items in sequence.

4. Correctly determine malfunctions or discrepancies and apply corrective actions/troubleshooting procedures.

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will announce all required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MTF check sheet any normal conditions marked with an asterisk or any abnormal conditions noted by the P*.

2. The P* will begin the check from a stabilized 3-foot hover in the direction of takeoff and keep a visual reference outside the aircraft. During takeoff and climb, he will ensure that the radar altimeter vertical analog bar displays up to 200 feet, ±10 feet, and then disappears. The P* will note that the HI indicator flashes at 200 feet, ±10 feet. He will initiate a fuel consumption check, check for unusual vibrations, and announce that the check is completed.

REFERENCE:

TM 55-1520-248-MTF

TASK 2838

TASK: Perform control rigging check.

CONDITION: In an OH-58D helicopter.

STANDARDS:

1. Ensure that the aircraft is cleared of all obstacles.

2. Position the aircraft into the wind.

3. Maintain an airspeed of 100 KIAS, ±5 KIAS.

4. Maintain torque at 80 percent, ±2 percent.

5. Maintain the aircraft in trim.

6. Correctly determine malfunctions or discrepancies and apply corrective actions/troubleshooting procedures.

7. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will announce all required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MTF check sheet any normal conditions marked with an asterisk or any abnormal conditions noted by the P*.

2. The P* will begin the check into the wind from an altitude that will allow safe recovery and will keep a visual reference outside the aircraft. Maintaining the appropriate airspeed, torque, and trim, he will disengage the SCAS, turn the force trim on, and note that the cyclic is nearly centered laterally. The P* will relax the cyclic pressure and note that the cyclic remains in place. After completing the cyclic check, he will turn the force trim off, relax the pedal pressure, note the pedal position and response, and announce that the check is completed.

3. The P will acknowledge the SCAS disengage message when the P* disengages the SCAS. He will reengage the SCAS PITCH/ROLL and YAW switches when the P* announces that the check is completed.

NOTE: The control rigging check is designed to verify tail-rotor rigging.

REFERENCES:

TM 55-1520-248-23
TM 55-1520-248-MTF

TASK 2840

TASK: Perform autorotation RPM check.

CONDITION: In an OH-58D helicopter.

STANDARDS:

1. Ensure that the aircraft is cleared of all obstacles.

2. Position the aircraft. into the wind.

3. Complete power recovery before reaching 500 feet AGL.

4. Maintain an airspeed of 55 KIAS, ±5 KIAS.

5. Record Nr.

6. Perform correct power recovery procedure.

7. Correctly determine malfunctions or discrepancies and apply corrective actions/troubleshooting procedures.

8. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will announce all required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MTF check sheet any normal conditions marked with an asterisk or any abnormal conditions noted by the P*.

2. The P* will begin the check into the wind from an altitude that will allow safe recovery and will keep a visual reference outside the aircraft. Maintaining 55 KIAS, he will smoothly lower the collective to the full-down position and note that the main rotor does not overspeed. After ensuring that a suitable landing area can be reached, the P* will retard the throttle to the engine-idle position and note that NG is stabilized at engine idle. He will check that the Nr is within a normal operating range, the aircraft is in trim, and sufficient right pedal remains. The P* will check that no unusual vibrations occur, the engine and mast torques are at or near zero, and the rotor is stabilized at the appropriate Nr. He will then perform a power recovery by advancing the throttle to full-open and ensuring that Nr/Np is joined and stabilized before increasing the collective. The P* will establish a climb prior to reaching 500 feet and announce that the check is completed.

3. The P will acknowledge any messages that display and will notify the P*.

REFERENCE:

TM 55-1520-248-MTF

TASK 2842

TASK: Perform hydraulics-off check.

CONDITION: In an OH-58D helicopter.

STANDARDS:

1. Ensure that the aircraft is cleared of all obstacles.

2. Position the aircraft into the wind.

3. Maintain an airspeed of 80 KIAS, ±10 KIAS.

4. Ensure that the P completes the safety briefing.

5. Correctly determine malfunctions or discrepancies and apply corrective actions/troubleshooting procedures.

6. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will announce all required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MTF check sheet any normal conditions marked with an asterisk or any abnormal conditions noted by the P*.

2. The P* will begin the check into the wind from an altitude that will allow safe recovery and will keep a visual reference outside the aircraft. He will direct the P to turn the HYD SYS switch OFF. The P* will check that the cyclic control forces are normal for conditions and check controllability by entering shallow right and left turns. He will decrease and increase the collective and will check that at least 17-percent mast torque down and 83-percent mast torque up can be reached without excessive pressure or without exceeding any limitations. Upon completion, the P* will stabilize the controls, relax the pressure, and announce that the check is completed.

3. When directed to do so by the P*, the P will turn the HYD SYS switch OFF and will acknowledge the SCAS DISENG and LOW HYD PRESS messages. He will turn the HYD SYS switch to the HYD SYS position and reengage the SCAS PITCH/ROLL and YAW switches when the P* announces that the check is completed.

NOTE 1: The P* should relax control pressures before the P turns the HYD SYS switch to the HYD SYS position.

NOTE 2: The primary purpose of the hydraulics-off check is to ensure aircraft controllability.

REFERENCE:

TM 55-1520-248-MTF

TASK 2844

TASK: Perform collective anticipator check.

CONDITION: In an OH-58D helicopter.

STANDARDS:

1. Ensure that the aircraft is cleared of all obstacles.

2. Maintain an airspeed of 80 HAS, ±10 KIAS.

3. Stabilize NG at 78 percent, ±1 percent.

4. Do not exceed any limitations.

5. Correctly determine malfunctions or discrepancies and apply corrective actions/troubleshooting procedures.

6. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will announce all required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MTF check sheet any normal conditions marked with an asterisk or any abnormal conditions noted by the P*.

2. The P* will begin the check into the wind from an altitude that will allow safe recovery and will keep a visual reference outside the aircraft. While maintaining 80 KIAS, he will enter the maneuver by lowering the collective until an NG of 78 percent, ±1 percent, is reached and then allow the NG to stabilize. Once NG is stabilized, the P* will make a positive increase in the collective at a rate which will attain 85 percent mast torque in five seconds. He will then check to ensure that the Nr/Np droop does not exceed 4 percent. When the check is completed, the P* will return to the original torque value, resume normal flight, and announce that the check is completed.

NOTE 1: If the Nr/Np droop exceeds 4 percent, the P* will terminate the test flight and return to the maintenance facility for corrective action.

NOTE 2: The primary purpose of the collective anticipator check is to verify proper collective anticipation of the ESC.

NOTE 3: The five-second pull is the minimum standard. For example, if system droop is only 2 percent in a three-second pull, the system is functioning properly.

REFERENCE:
TM 55-1520-248-MTF

TASK 2854

TASK: Perform flight instruments check.

CONDITION: In an OH-58D helicopter.

STANDARDS:

1. Ensure that the aircraft is clear of all obstacles.

2. Correctly determine malfunctions or discrepancies and apply corrective actions/troubleshooting procedures.

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will announce all required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MTF check list any normal conditions that are marked with an asterisk or any or abnormal conditions noted by the P*.

2. The P* will begin the check into the wind from an altitude that will allow safe recovery and will keep a visual reference outside the aircraft. He will verify that standby instruments correlate with the vertical situation display page and will accomplish functional checks by using timed turns, climbs, and known power settings. He will announce that the check is completed.

REFERENCES:

TM 55-1520-248-10
TM 55-1520-248-MTF

TASK 2856

TASK: Perform communication checks.

CONDITION: In an OH-58D helicopter or orally.

STANDARDS:

1. Check all avionics equipment.

2. Correctly determine malfunctions or discrepancies and apply corrective actions/troubleshooting procedures.

3. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will announce all required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MTF check sheet any normal conditions marked with an asterisk or any abnormal conditions noted by the P*.

2. The P* will verify that all radios are functioning properly and will keep a visual reference outside the aircraft. He will also verify that each radio functions on at least two separate frequencies. The P* will check both FM homing and any installed secure radio equipment for proper operation. He will also check the transponder with the local ATC facility and announce that the check is completed.

NOTE: This task may be performed by the P or the P*.

REFERENCES:

TM 55-1520-248-10
TM 55-1520-248-MTF

TASK 2868

TASK: Perform before-landing check.

CONDITION: In an OH-58D helicopter.

STANDARDS:

1. Ensure that the aircraft is cleared of all obstacles.

2. Without error, perform a before-landing check according to TM 55-1520-248-MTF.

3. Correctly determine malfunctions or discrepancies and apply corrective actions/troubleshooting procedures.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will announce all required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MTF check sheet any normal conditions marked with an asterisk or any abnormal conditions noted by the P*.

2. The P* will perform all checks that are directed by the P and will announce that the checks are completed. During descent, the P* will note that the radar altimeter analog bar reappears, the LO indicator flashes, and the warning audio activates at 180 feet, ±10 feet, AGL.

REFERENCE:

TM 55-1520-248-MTF

TASK 2870

TASK: Perform after-landing check.

CONDITION: In an OH-58D helicopter.

STANDARDS:

1. Without error, perform an after-landing check according to TM 55-1520-248-MTF.

2. Correctly check and perform all items in sequence.

3. Correctly determine malfunctions or discrepancies and apply corrective actions/troubleshooting procedures.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will announce all required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MTF check sheet any normal condition marked with an asterisk or any abnormal conditions noted by the P*.

2. The P* will perform all checks that are directed by the P and will announce that the checks are completed.

REFERENCE:

TM 55-1520-248-MTF

TASK 2872

TASK: Perform engine shutdown check.

CONDITION: In an OH-58D helicopter with the after-landing check completed.

STANDARDS:

1. Without error, perform an engine shutdown check according to TM 55-1520-248-MTF.

2. Correctly check and perform all items in sequence.

3. Correctly determine malfunctions or discrepancies and apply corrective actions/troubleshooting procedures.

4. Correctly perform crew coordination actions.

DESCRIPTION:

1. The P will announce all required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MTF check sheet any normal conditions marked with an asterisk or any abnormal conditions noted by the P*.

2. The P* will perform all checks that are directed by the P and will announce that the checks are completed.

REFERENCE:

TM 55-1520-248-MTF

TASK 2874

TASK: Perform special/detailed procedures.

CONDITION: In an OH-58D helicopter with equipment installed.

STANDARDS:

1. Without error, perform special/cletailed procedures according to TM 55-1520-248-MTF.

2. Use additional reference publications as required.

3. Correctly check and perform all items in sequence.

4. Correctly determine malfunctions or discrepancies and apply corrective actions/troubleshooting procedures.

5. Correctly perform crew coordination actions.

DESCRIPTION:

1. The MP will check any additional special equipment installed in the aircraft and will demonstrate a knowledge of the system and the published operational checks. He will also demonstrate a knowledge of published charts, graphs, and work sheets. A complete check of all special/detailed procedures is not required on an evaluation. The MP may perform selected checks orally.

2. The P will announce all required checks in sequence according to TM 55-1520-248-MTF. The P will record on the MTF check sheet any normal conditions marked with an asterisk or any abnormal conditions noted by the P*.

3. The P* will perform all checks that are directed by the P and announce that the checks are completed.

REFERENCES:

TM 55-1520-248-MTF

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, crew and aircrew flight, battle-rostered crew, proficiency flight, NVG standardization, postaccident, medical, no-notice, and commander's evaluations. The flight evaluation is a primary 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 PRINCIPILES

a. The evaluation must include the examinee’s ability to perform essential hands-on tasks to the standards prescribed for each task in Chapter 6 or 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 solely on easily measured criteria; for example, airspeed or distances. Rather, they include the IP’s subjective analysis of how effectively the crew performs together to accomplish any given task or 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 judgments 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 complete a task successfully.

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. 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 proper sequencing of required follow-on actions.

g. In all phases of 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, meaningful, and planned 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 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. They are the SPs, IPs, IEs, and MEs who assist the commander in administering the ATP.

(2) The **method** used to conduct the evaluation must be based on uniform, standard objectives. In addition, it 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. Any crew member affected by the evaluation needs to know what is being performed correctly or incorrectly 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 Examination. The examinee must demonstrate a working knowledge and understanding of the subject areas presented. The evaluator will assess the examinee's knowledge during the oral examination and enter the appropriate grade on the maneuver/procedure gradeslip.

b. Flight Evaluation. Performance standards are based on an ideal situation. Grading is based on meeting the minimum standards. The evaluator must consider deviations (for example, high wind turbulence or poor visibility) from the ideal during the evaluation. If other than ideal conditions exist during the evaluation, the evaluator must make appropriate adjustments to the standards.

NOTE: During an evaluation, a task 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.

Section II. Evaluation Guidelines

8-3. CREW MEMBER AND CREW FLIGHT EVALUATION

The flight evaluation is conducted to determine the crew member’s ability to perform appropriate duties. It is administered for initial designation to the assigned duty position, when required, and at periodic intervals per AR 95-1. The evaluation sequence consists of the four phases given below. The evaluator is the final authority on the amount of time devoted to each phase. When the evaluation is administered to an evaluator or a unit trainer, the recommended procedure is for the evaluator to reverse roles with the examinee. When the evaluator uses this technique, he must ensure that the examinee understands how the role reversal will be conducted and when it will be in effect. Initial validation of an evaluator’s qualifications at a new duty station will be conducted in the aircraft.

a. <u>Phase l--Introduction.</u> In this phase, the evaluator--

(1) Introduces himself to the examinee.

(2) Reviews the examinee’s records to verify that the examinee meets all prerequisites for the rating.

(3) Ensures that the examinee has all the required equipment for the flight.

(4) Confirms the purpose of the flight evaluation, explains the evaluation procedure, and discusses the evaluation standards and criteria.

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: For UTs, the evaluation will include special emphasis on the examinee's performance in those areas in which UT duties are performed. The evaluation should ensure that the examinee can safely and effectively perform UT duties.

b. <u>Phase 2--Oral Examination.</u> The examinee must have a working knowledge and understanding of all applicable topics in the subject areas listed below. He must respond correctly to questions from topics selected by the evaluator. As a minimum, the evaluator will select two topics from each appropriate subject area. An evaluator will also 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, weapons system operations and deployment, and night mission operations and deployment do not apply to MP evaluations. Also, for MP evaluations, questions on aeromedical factors and aerodynamics will be at the discretion of the evaluator.

(1) <u>Regulations and publications (ARs 40-8, 95-1, 95-2, and 95-3; DA Pamphlet 738-751; DOD FLIP; TCs 1-140 and 1-210; TM 1-1500-328-23, and local SOPs and regulations).</u> Topics in this subject area are--

(a) ATP requirements.**

(b) SOP requirements.**

NOTE: Topics marked with an asterisk are for MPs only. Those topics marked with a double asterisk apply to AOs and AFSOs. The [I] mark Kiowa Warrior topics.

(c) DOD FLIP and maps.**

(d) VFR minimums and procedures.**

(e) IFR minimums and procedures.

(f) Aviation life support equipment.**

(g) 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.*

(l) Local airspace usage.

(m) Publications required in the aircraft.

(n) Maintenance operational check requirements.*

(o) Maintenance test flight requirements.*

(p) Maintenance test flight forms and records.*

(2) <u>Operating limitations and restrictions (TC 1-140 and TM 55-1520-248-10).</u> Topics in this subject area are--

(a) Wind limitations.**

(b) Rotor limitations.

(c) Power limitations.

(d) Engine limitations.

(e) Weather limitations.**

(f) Pressure limitations.

(g) Airspeed limitations.

(h) Temperature limitations.

(i) Flight envelope limitations.

(j) Aircraft systems limitations.**

(k) Performance chart interpretation.**

(l) Weight and balance requirements.**

[I] (m) Weapon systems limitations.

(n) Laser limitations.**

(o) Notes, Cautions, and warnings.**

(3) **Aircraft emergency procedures and malfunctions (TM 55-1520-248-10).** Topics in this subject area are--

(a) Definition of emergency terms.

(b) Emergency exits and equipment.**

(c) Engine malfunctions and restart procedures.

(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.

(l) Caution and warning emergency procedures.**

(m) Landing and ditching procedures.

(n) Auxiliary systems malfunctions.

(0) Flight controls malfunctions.

(p) Mission avionics malfunctions.

NOTE: Topics marked with an asterisk are for MPs only. Those topics marked with a double asterisk apply to AOs and AFSOs. The [I] mark Kiowa Warrior topics.

[I] **(q)** Weapon systems malfunctions.

(4) **Aeromedical factors (AR 40-8, FM 1-301, and TC 1-204).** 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 (FM 1-203 and TM 55-1520-248-10).** Topics in this subject area are--

(a) Relative wind.

(b) Total aerodynamic force.

(c) Airflow during hover.

(d) Airflow in forward flight

(e) Translating tendency.

(f) Transverse flow.

(g) Dissymmetry of lift.

(h) Retreating blade stall.

(i) Transient torque.

(j) Dynamic rollover.

(k) Settling with power.

(6) **Tactical and mission operations (FMs 1-112, 1-116, 1-400, 1-402, 25-100, 25-101, and 90-4; TCs 1-140, 1-201, 1-204, 1-210; TM 55-1520-248-10; and unit SOP).** Topics in this subject area are--

(a) Reconnaissance and security operations.

(b) Aerial observation.

(c) Attack planning and terrain analysis.

(d) Tactical formations and fire control.

(e) Target coordination and laser designation.

(f) Fire support and joint air attack operations.

(g) Tactical reports.**

(h) Evasive maneuvers.

(i) Terrain flight mission planning and safety.**

(j) Combat position selection.**

(k) Downed aircraft procedures.**

(l) Interpretation of navigational charts, maps, and tactical overlays.**

(m) Vertical helicopter instrument recovery procedures.**

(n) Identification of major US or allied equipment and major threat equipment expected to be in the area of operation.**

(o) MMS/ATHS operation.**

(7) **__OH-58 weapon system operation and deployment (FM 1-112; TC 1-140; TM 55-1520-248-10).__** Topics in this subject area are--

[I] **(a)** Hellfire weapon system (LOBL/LOAL).

[I] **(b)** .50-caliber system.

[I] **(c)** 2.75-inch rocket system.

[I] **(d)** Weapons initialization, arming, and safety.

[I] **(e)** Hellfire missile characteristics.

[I] **(f)** .50-caliber ammunition characteristics.

[I] **(g)** Hydra 70 rocket characteristics.

NOTE: Topics marked with an asterisk are for MPs only. Those topics marked with a double asterisk apply to AOs and AFSOs. The [I] mark Kiowa Warrior topics.

[I] **(h)** Ballistics.

[I] **(i)** Laser operations (range/designator).**

[I](j) Air-to-air Stinger system.

(8) <u>Night mission operation and deployment (TCs 1-140 and 1-204; TM 55-1520-248-10).</u> Topics in this subject area are--

(a) Unaided night flight.**

(b) Night vision limitations and techniques.**

(c) Visual illusion.**

(d) Use of lights (internal and external).**

(e) Types of vision.**

(f) Distance estimation and depth perception.**

(g) Dark adaption, night vision protection, and central night blind spot.**

(h) Infrared characteristics and TIS optimization.

[I] **(i)** ADSS flight symbology and modes.

(j) Aircrew night and NVG requirements.**

(k) NVG limitations and techniques.**

(l) Weapons deployment during night and NVG operations.

(9) <u>Maintenance test flight systems operations, malfunctions, and troubleshooting--(TMs 55-1520-238-MTF, 55-1520-248-MTF, 55-1520-248-23, and 55-2840-248-23).</u> Topics in this subject area are--

(a) Engine start.

(b) Instrument indications.

(c) Electrical system.

(d) Warning, caution, and advisory indications.

(e) Power plant.

(f) Mission equipment.

(g) Power train.

(h) Hydraulics system.

(i) Flight control.

(j) Rotor smoothing.

(k) Fuel system.

(l) Communication and navigation equipment.

(m) Stability and control augmentation system.

c. **Phase 3--Flight Evaluation.** This phase consists of a crew briefing, a preflight inspection; engine-start, run-up, and hover 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. When evaluating an evaluator, 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. In addition, the evaluator will conduct or have the examinee conduct a crew briefing that includes, as a minimum, the items listed below.

(a) Mission.

(b) Weather.

(c) Flight route.

(d) Performance data.

(e) Transfer of flight controls. (CPO cyclic engaged or disengaged as required.)

(f) Crew duties, to include emergency duties.

(g) Procedures for conducting simulated emergencies.

(h) Postcrash rendezvous point.

NOTE: Refer to TM 55-1520-248-10 and local directives for additional crew briefing requirements.

(2) **<u>Preflight inspection and engine-start, run-up, hover, and before-takeoff checks.</u>** The evaluator will evaluate the examinee's use of TM 55-1520-248-CL or TM 55-1520-248-MTF. He also will have the examinee properly identify at least two aircraft components and two weapon system components if installed, and discuss their functions.

(3) **<u>Flight tasks.</u>** As a minimum, the evaluator will evaluate those tasks identified in Chapter 5 as mandatory for the designated crew station and those mission or additional tasks selected by the commander for evaluation. The evaluator may randomly select for evaluation any tasks listed on the mission or additional task list established by the commander. An evaluator must demonstrate an ability to evaluate and instruct appropriate flight tasks. 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. All MTF mission tasks are mandatory for an MTF standardization evaluation.

(4) **<u>Engine shutdown and after-landing tasks.</u>** The evaluator will evaluate the examinee's use of TM 55-1520-248-CL or TM 55-1520-248-MTF.

d. **<u>Phase 4--Debriefing.</u>** During this phase, the evaluator will--

(1) Use DA Forms 4507-R, 4507-2-R (if used), 5645-A-R, 5645-B-R, (if used), 5051-12-R (if used), and 7121-R to critique the examinee's performance.

(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. (By signing the form, the examinee or trainee acknowledges that he has been debriefed. His signature does not mean that he concurs with the results.)

8-4. BATTLE-ROSTERED CREW EVALUATION

a. Battle-rostered crew evaluation is a continuous process during crew training. The evaluator must evaluate the crew's ability to perform all required crew tasks in day, night unaided, and NVG modes.

b. Evaluators must evaluate the crew during a mission to ensure that crew members perform the tasks to standards. To observe a mission, the evaluator may use any combination of the methods given below, depending on assets and aircraft capabilitties. These methods are--

(1) Observation from another aircraft as wingman during multihelicopter operations.

(2) Review of video tapes after a mission (Kiowa warrior).

(3) Debriefing and interrogation of the crew.

c. Once the crew has demonstrated proficiency in all crew tasks , both during the day and under NVG, and the unit commander is satisfied that the crew has met all standards for each task, he will certify the crew as CRL 1. The evaluator will debrief the crew and use DA Form 7121-R provided at the back of this manual to record the evaluation results. Reproduce this form locally on 5 1/2- by 8-inch paper.

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 the CRL 1 requirements stated in TC 1-210.

8-5. PROFICIENCY FLIGHT EVALUATION

This evaluation is conducted per AR 95-1. After the evaluation, the IP or SP will debrief the examinee and complete DA Forms 4507-R, 4507-2-R (if used), 5645-A-R, 5645-B-R, (if used), 5051-12-R (if used), and 7121-R per instructions in Chapter 9.

8-6. ANNUAL NVG STANDARDIZATION FLIGHT EVALUATION

This evaluation is conducted per TC 1-210, this manual, and the Commander’s Task List. After the evaluation, the IP or SP will debrief the examinee and complete DA Forms 4507-R, 4507-2-R (if used), 5645-A-R, and 5645-B-R (if used) per instructions in Chapter 9.

8-7. POSTACCIDENT FLIGHT EVALUATION

This evaluation is required by AR 95-1. After the evaluation, the IP or SP will debrief the examinee and complete DA Forms 4507-R, 4507-2-R (if used), 5645-A-R, 5645-B-R (if used), and 5051-12-R (if used) per instructions in Chapter 9.

8-8 MEDICAL FLIGHT EVALUATION

This evaluation is conducted per AR 95-1. The IP or SP, 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 the conditions under which he can perform.

b. The unit commander will then forward the memorandum and DA Forms 4507-R, 4507-2-R (if used), 5645-A-R, 5645-B-R (if used), and 5051-12-R to Commander, US Army Aviation Center, ATTN: HSXY-AER, Fort Rucker, AL 36362-5333.

8-9. NO-NOTICE EVALUATION

This evaluation is conducted per TC 1-210. After the evaluation, the evaluator will debrief the examinee and complete DA Forms 4507-R, 4507-2-R (if used), 5645-A-R, 5645-B-R (if used), 5051-12-R (if used), and 7121-R per instructions in Chapter 9.

8-10. COMMANDER'S EVALUATION

This evaluation is conducted per TC 1-210. After the evaluation, the evaluator will debrief the examinee and complete DA Forms 4507-R, 4507-2-R (if used), 5645-A-R, 5645-B-R (if used), and 5051-12–R (if used) per instructions in Chapter 9.

CHAPTER 9

AIRCREW GRADING SYSTEM

The aircrew grading system provides the commander a complete and continuous performance record for 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. Blank copies of the forms necessary for evaluations and training flights are provided 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 (print 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. A sample of a completed DA Form 4507-R is shown in Figures 9-1 and 9-2 (pages 9-3 and 9-4). Instructions for completing the 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, APART or commander's evaluation. If training, write in the purpose of the flight; for example, refresher, mission, or continuation.

(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 (LS for left seat and RS for right seat.)

(5) **Type of aircraft, crew duty, type of training, and time flown.** Enter the type of aircraft and place an X in the appropriate blocks. (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; for example, day, night, hood, WX, simulator, NVG, or NVS.

c. **Evaluator/Instructor Recommendations.** Place an X in the appropriate blocks and circle applicable items; for example, issue orders or validate status. If the crew duty position is other than that shown, specify in the space provided. Use the comment slip on the back to explain unsatisfactory performance referencing the appropriate maneuver or procedure number from DA Form 5645-A-R, 4645-B-R, or 5051-12-R. Recommended additional training also may be listed on the back, 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/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/trainee's signature on the front of the form and beside your signature on the comment slip. (By signing the form, the examinee/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. 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 trainee or examinee is reevaluated the maneuvers or procedures graded Unsatisfactory, as 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: WILLIAMS, XAVIER	RANK: SSG	SSN: 315 09 1447	
	UNIT: C CO, 3RD CAB, APO 09222		BIRTH MONTH: SEP	
EVALUATOR/ INSTRUCTOR	NAME: NELSON, CARL	RANK: CW3	SSN: 205 12 2744	
	UNIT: C CO, 3RD, APO AE 09222			

FLIGHT TIME DATA

TOTAL HOURS (FW): TOTAL HOURS (RW): 150

PURPOSE: EVALUATION TRAINING (SPECIFY) APART

TIME TODAY: 3.0 CUMULATIVE TIME: 150 SEAT: LS

TYPE AIRCRAFT: OH-58D

		PI	PC	UT	IP	SP	IE	MP	ME	CE	AC
X	CONTACT										X
	INSTRUMENT										
X	NVG/NVS										X
	TACTICS										
	GUNNERY										
	OTHER										

DAY	NIGHT	HOOD	WX	SIMULATOR	NVG	NVS
1.0				2.0		

EVALUATOR/INSTRUCTOR RECOMMENDATIONS

		PI	PC	UT	IP	SP	IE	MP	ME	CE	AC
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: Carl Nelson

I HAVE BEEN DEBRIEFED BY THE EVALUATOR OR INSTRUCTOR AND UNDERSTAND MY CURRENT STATUS.

EXAMINEE'S OR TRAINEE'S SIGNATURE: Xavier Williams

OVERALL GRADE FOR THIS FLIGHT IS: S U NA DATE: 14 Sep 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

SSG Williams tends to become
distracted by cockpit tasks.
He needs to be more aware of
what's happing outside the aircraft.
Xaviar Williams Carl Nelson
CW3, USA
OH-58-D SP

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. The form consists of two pages and is identical for all Army aircraft or simulation devices. A sample of a completed DA Form 4507-2-R is shown in Figures 9-3 and 9-4 (pages 9-6 and 9-7). When completing this form, use the same procedure described in paragraph 9-lc. When all forms have been completed, staple them together.

9-3. DA FORM 5645-A-R (MANEUVER/PROCEDURE GRADE SLIP FOR OH-58D AVIATORS) AND DA FORM 5645-B-R (MANEUVER/PROCEDURE GRADE SLIP FOR OH-58D AEROSCOUT OBSERVERS)

These forms, which consist of two pages each, list the base and mission tasks shown in Chapter 5. Blank spaces are provided to list additional tasks designated by the commander. Samples of completed DA Forms 5645-A-R and 5645-B-R are shown in Figures 9-5 through 9-8 (pages 9-8 through 9-11). The evaluator or instructor should carry these forms during the evaluation or training flight. Instructions for completing these forms are given below.

a. Enter the examinee's/trainee's name (last name first) and the date.

b. Enter either S or U in the grade (GR) block after the examinee/trainee completes each maneuver or procedure.

c. Enter D in the grade block (GR) if the task is demonstrated only and the aviator 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 straight vertical line connecting the two diagonals. Use this method when three or more consecutive maneuvers or procedures are not graded.

NOTE: Task numbers with circles are mandatory for standardization flight evaluations. Task numbers with squares are mandatory for instrument flight evaluations. Task numbers with diamonds are mandatory for NVG standardization flight evaluations.

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.

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: HOXIE ALLEN L. Date: 15 Apr 92

This form is used to continue comments
from the back of DA form 4507-R.
Allen L. Hoxie Clint Becker
CW3, USA
OH-58D SP

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 from 4507-R.
Allen L. Hoxie Clint Becker
CW3, USA
OH-58D SP

PAGE 2, DA FORM 4507-R, MAY 87

Figure 9-4. Sample of a completed DA Form 4507-2-R (back)

MANEUVER/PROCEDURE GRADE SLIP FOR OH-58D AVIATORS

For use of this form, see TC 1-209; the proponent is TRADOC.

Examinee's Name HOXIE, ALLAN L. Date 8Oct92

Instructor or evaluator will sign in the first unused block.

NO	MANEUVER/PROCEDURE	GR	NO	MANEUVER/PROCEDURE	GR
1	CREW MISSION BRIEFING	S	24	TERRAIN FLIGHT APPROACH	S
2	VFR FLIGHT PLANNING	S	25	NVG (ANVIS) PM AND OPERATIONAL CHECKS	/
3	DD FORM 365-4	S	26	MMS OPERATIONS	S
4	DA FORM 4887-R	S	27	NAVIGATION SYSTEM	S
5	PREFLIGHT INSPECTION	S	28	COMMUNICATIONS SYSTEM	S
6	ENGINE START, RUN-UP, HOVER, AND BEFORE-TAKEOFF CHECKS	S	29	EMERGENCY AHRS APPROACH	S
7	HOVER POWER CHECK	S	30	ANALOG THROTTLE OPERATION	S
8	HOVERING FLIGHT	S	31	SIMULATED SCAS MALFUNCTION	S
9	NORMAL TAKEOFF	S	32	HOVERING AUTOROTATION	S
10	TRAFFIC PATTERN FLIGHT	/	33	SIMULATED ENGINE FAILURE AT A HOVER	S
11	FUEL MANAGEMENT PROCEDURES	S	34	SIMULATED ENGINE FAILURE AT ALTITUDE	S
12	EMERGENCY PROCEDURES FOR NVG (ANVIS) FAILURE	/	35	AERIAL OBSERVATION	S
13	PILOTAGE AND DEAD RECKONING	/	36	EMERGENCY PROCEDURES	/
14	BEFORE-LANDING CHECK	S	37	INSTRUMENT TAKEOFF	S
15	VMC APPROACH	S	38	UNUSUAL ATTITUDE RECOVERY	/
16	SHALLOW APPROACH TO A RUNNING LANDING	S	39	RADIO COMMUNICATION PROCEDURES	S
17	CONFINED AREA OPERATIONS	S	40	PROCEDURES FOR TWO-WAY RADIO FAILURE	/
18	SLOPE OPERATIONS	S	41	NONPRECISION APPROACH (GCA)	S
19	TERRAIN FLIGHT MISSION PLANNING	S	42	PRECISION APPROACH (GCA)	S
20	TERRAIN FLIGHT TAKEOFF	S	43	INADVERTENT IMC PROCEDURES/ VHIRP	/
21	TERRAIN FLIGHT	S	44	ATHS OPERATIONS	S
22	HOVER OGE CHECK	S	45	DOWNED AIRCRAFT PROCEDURES	/
23	NOE DECELERATION	S	46	MASKING AND UNMASKING	S

DA FORM 5645-A-R, NOV 92 EDITION OF MAY 87 IS OBSOLETE

Figure 9-5. Sample of a completed DA Form 5645-A-R (front)

MANEUVER/PROCEDURE GRADE SLIP FOR OH-58D AVIATORS

NO	MANEUVER/PROCEDURE	GR	NO	MANEUVER/PROCEDURE	GR
47	TACTICAL COMMUNICATION PROCEDURES AND ECCM		71	ROUTE RECONNAISSANCE	
48	TACTICAL REPORT (VOICE)		72	CALL/ADJUST FOR INDIRECT FIRE	
49	IDENTIFY US/ALLIED AND MAJOR THREAT EQUIPMENT		73	TRANSMIT INFORMATION USING VISUAL SIGNALING TECHNIQUES	
50	AIRCRAFT SURVIVABILITY EQUIPMENT		74	SELECT A COMBAT POSITION	S
51	ACTIONS ON CONTACT	S	75	REFUELING/REARMING OPERATIONS	S
52	WIRE OBSTACLES	S	76	TARGET HANDOVER TO ATTACK HELICOPTER	
53	AFTER-LANDING TASKS	S	77	RECONNOITER/RECOMMEND A HOLDING AREA	
54	MARK XII IFF SYSTEM	S	78	SECURITY MISSION	
55	2.75-INCH ROCKET SYSTEM	S	79	CALL FOR/CONTROL A TACTICAL AIR STRIKE	
56	FIRING POSITION OPERATIONS	S	80	ZONE RECONNAISSANCE	
57	DATA TRANSFER SYSTEM		81	AREA RECONNAISSANCE	
58	AIRBORNE VIDEO TAPE RECORDER	S	82	TECHNIQUES OF MOVEMENT	
59	ADSS OPERATIONAL CHECKS		83	ADJUST-FIRE MISSION USING MMS AND ATHS	
60	SELECT APPROPRIATE WEAPON SYSTEM	S	84	FIRE-FOR-EFFECT MISSION USING MMS AND ATHS	
61	HELLFIRE MISSILE SYSTEM		85	SUPPRESSION MISSION USING MMS AND ATHS	
62	WEAPONS INITIALIZATION PROCEDURES	S	86	IMMEDIATE SUPPRESSION MISSION USING MMS AND ATHS	
63	.50-CALIBER MACHINE GUN	S	87	COPPERHEAD LASER-GUIDED MUNITIONS	
64	AIR-TO-AIR STINGER SYSTEM		88	ORAL EXAMINATION	S
65	PINNACLE/RIDGELINE OPERATION		89	OPERATOR'S MANUAL EXAM	S
66	FM RADIO HOMING		90	Ronald S. Wall	
67	VAPI APPROACH		91		
68	EVASIVE MANEUVERS		92		
69	MULTIAIRCRAFT OPERATIONS		93		
70	RECONNOITER/RECOMMEND AN LZ/PZ		94		

PAGE 2, DA FORM 5645-A-R, NOV 92

Figure 9-6. Sample of a completed DA Form 5645-A-R (back)

MANEUVER/PROCEDURE GRADE SLIP FOR OH-58D AEROSCOUT OBSERVERS

For use of this form, see TC 1-209; the proponent agency is TRADOC.

Examinee's/Trainee's Name LEE, DANA C. Date 29 Aug 92

Instructor or evaluator will sign in the first unused block.

NO	MANEUVER/PROCEDURE	GR	NO	MANEUVER/PROCEDURE	GR
1	DD FORM 365-4	S	27	INADVERTENT IMC PROCEDURES/VHIRP	S
2	PREFLIGHT INSPECTION	S	28	ATHS OPERATIONS	S
3	ENGINE-START, RUN-UP, HOVER, AND BEFORE-TAKEOFF CHECKS	/	29	DOWNED AIRCRAFT PROCEDURES	/
4	STRAIGHT-AND-LEVEL FLIGHT	S	30	MASKING AND UNMASKING	/
5	TURNS, CLIMBS, AND DESCENTS	S	31	TACTICAL COMMUNICATION PROCEDURES AND ECCM	/
6	HOVERING FLIGHT	S	32	TACTICAL REPORT (VOICE)	S
7	NORMAL TAKEOFF	S	33	IDENTIFY US/ALLIED AND MAJOR THREAT EQUIPMENT	S
8	FUEL MANAGEMENT PROCEDURES	S	34	AIRCRAFT SURVIVABILITY EQUIPMENT	/
9	EMERGENCY PROCEDURES FOR NVG (ANVIS) FAILURE	/	35	ACTIONS ON CONTACT	
10	PILOTAGE AND DEAD RECKONING	/	36	WIRE OBSTACLES	/
11	BEFORE-LANDING CHECK	S	37	AFTER-LANDING TASKS	S
12	VMC APPROACH	S	38	MARK XII IFF SYSTEM	/
13	SHALLOW APPROACH TO A RUNNING LANDING	S	39	PINNACLE/RIDGELINE OPERATION	
14	TERRAIN FLIGHT MISSION PLANNING	/	40	FM RADIO HOMING	
15	TERRAIN FLIGHT	S	41	VAPI APPROACH	
16	NVG (ANVIS) PM AND OPERATIONAL CHECKS	S	42	EVASIVE MANEUVERS	
17	MMS OPERATIONS	S	43	MULTIAIRCRAFT OPERATIONS	/
18	NAVIGATION SYSTEM	S	44	RECONNOITER/RECOMMEND AN LZ/PZ	S
19	COMMUNICATIONS SYSTEM	S	45	ROUTE RECONNAISSANCE	/
20	EMERGENCY AHRS APPROACH	S	46	CALL/ADJUST FOR INDIRECT FIRE	S
21	AERIAL OBSERVATION	S	47	TRANSMIT INFORMATION USING VISUAL SIGNALING TECHNIQUES	/
22	EMERGENCY PROCEDURES	S	48	SELECT A COMBAT POSITION	
23	RADIO COMMUNICATION PROCEDURES	S	49	REFUELING/REARMING OPERATIONS	
24	PROCEDURES FOR TWO-WAY RADIO FAILURE	/	50	TARGET HANDOVER TO ATTACK HELICOPTER	/
25	NONPRECISION APPROACH (GCA)		51	RECONNOITER/RECOMMEND A HOLDING AREA	S
26	PRECISION APPROACH (GCA)	/	52	SECURITY MISSION	/

DA FORM 5645-B-R, NOV 92 EDITION OF MAY 87 IS OBSOLETE

Figure 9-7. Sample of a completed DA Form 5645-B-R (front)

MANEUVER/PROCEDURE GRADE SLIP FOR OH-58D AEROSCOUT OBSERVERS

NO	MANEUVER/PROCEDURE	GR	NO	MANEUVER/PROCEDURE	GR
53	CALL FOR/CONTROL A TACTICAL AIR STRIKE		80		
54	ZONE RECONNAISSANCE		81		
55	AREA RECONNAISSANCE		82		
56	TECHNIQUES OF MOVEMENT		83		
57	ADJUST FIRE MISSION USING MMS AND ATHS	S	84		
58	FIRE-FOR-EFFECT MISSION USING MMS AND ATHS	S	85		
59	SUPPRESSION MISSION USING MMS AND ATHS	S	86		
60	IMMEDIATE SUPPRESSION MISSION USING MMS AND ATHS	S	87		
61	COPPERHEAD LASER-GUIDED MUNITIONS	S	88		
62	ORAL EXAMINATION	S	89		
63	Lee Michaels		90		
64			91		
65			92		
66			93		
67			94		
68			95		
69			96		
70			97		
71			98		
72			99		
73			100		
74			101		
75			102		
76			103		
77			104		
78			105		
79			106		

PAGE 2, DA FORM 5645-B-R, NOV 92

Figure 9-8. Sample of a completed DA Form 5645-B-R (back)

9-4. DA FORM 5051-12-R (MAINTENANCE TEST FLIGHT MANEUVERS GRADE SLIP FOR OH-58D AVIATORS)

The maneuvers grade slip 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 5051-12-R is an important tool in attaining standardization and quality control. It should be filled out correctly and legibly. The instructor or evaluator should carry this form during the evaluation or training flight. A sample of a completed DA Form 5051-12-R is shown in Figure 9-9 (page 9-13). Instructions for completing this form are given below.

a. Enter the examinee's/trainee's name (last name first) and the date.

b. Enter either S or U in the grade (GR) block after the examinee/trainee completes each maneuver or procedure.

c. Enter D in the grade (GR) block if the task is demonstrated only and the aviator is unable to practice it for some reason.

d. Place a diagonal in all grade blocks for maneuvers or procedures not evaluated. An alternative method is to place a diagonal in the first and last unused blocks and draw a straight 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/procedure number, on the back of DA Form 4507-R and DA Form 4507-2-R, if used. 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 of each area trained or untrained.

MAINTENANCE TEST FLIGHT MANEUVERS GRADE SLIP (OH-58D)

For use of this form, see TC1-209; the proponent agency is TRADOC.

Examinee's/Trainee's Name COE, LAWRENCE E. Date 29AUG92

Instructor or evaluator will sign in the first unused block.

NO	MANEUVER / PROCEDURE	GR
1	PRIOR-TO-MAINTENANCE TEST FLIGHT CHECKS	S
2	BEFORE-STARTING ENGINE CHECKS	S
3	STARTING ENGINE CHECKS	S
4	ENGINE RUN-UP PILOT CHECKS	S
5	SYSTEM CHECKS	S
6	BEFORE-TAKEOFF CHECKS	S
7	TAKEOFF TO A HOVER	S
8	POWER ASSURANCE CHECK	S
9	HOVER POWER CHECK	S
10	HOVERING TURNS	
11	SIDEWARD FLIGHT	
12	FORWARD FLIGHT TO ETL	S
13	SCAS CHECK	S
14	HEADING HOLD CHECK	
15	POWER CYLINDER CHECK	
16	ENGINE RESPONSE CHECK	S
17	HOVER/HOVER BOB-UP CHECK	
18	TAKEOFF AND CLIMB CHECK	S
19	CONTROL RIGGING CHECK	S
20	AUTOROTATION RPM CHECK	S
21	HYDRAULICS-OFF CHECK	
22	COLLECTIVE ANTICIPATOR CHECK	S
23	FLIGHT INSTRUMENTS CHECK	
24	COMMUNICATION CHECKS	S
25	BEFORE-LANDING CHECK	S
26	AFTER-LANDING CHECK	S
27	ENGINE SHUT DOWN CHECK	S
28	SPECIAL/DETAILED PROCEDURES	
29	ORAL EVALUATION	S
30	Lawrence E. Coe Douglas J. Harris	
31		
32		
33		
34		
35		
36		
37		
38		
39		
40		

NOTE: ITEMS 30 THROUGH 40 INTENTIONALLY LEFT BLANK FOR LATER USE

DA FORM 5051-12-R, NOV 92 EDITION OF JUL 90 OBSOLETE

Figure 9-9. Sample of a completed DA Form 5051-12-R

9-5. DA FORM 7121-R (BATTLE-ROSTERED CREW EVALUATION/TRAINING GRADE SLIP)

This form is used to record information concerning battle-rostered crew evaluations and training. It consists of two pages and is identical for all Army aircraft or simulation devices. A sample of a completed Battle-Rostered Crew Evaluation/Training Grade Slip is shown in Figures 9-10 and 9-11 (pages 9-16 and 9-17). Instructions for completing the form are given below.

a. Battle-Rostered Crew Examinees/Trainees and Evaluator/ Instructor. Fill in the names and ranks of the PC, PI, and AO/AFSO in the blocks provided. Enter the duty symbols, names, and ranks of nonrated crew members in the space provided. Then enter the unit of the crew. The required entries in the evaluator/instructor blocks 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 is circled, 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, place an S or a U in the space provided and circle the appropriate mode of flight. Enter the time flown in the block below each applicable condition; for example, day, night, WX, simulator NVG, or 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 crew tasks may have been 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 memberfs signatures on the front of the form and beside your signature after the comments on the back. (By signing the form, 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, an Unsatisfactory grade (U) for an individual crew member will not result in an overall grade of unsatisfactory for the crew.

(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, as 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:	DEXTER, JAMES M.	CW2
	PI:	HOXIE, ALLEN L.	WO1
		NONRATED CREW MEMBERS	
	DUTY SYMBOL	NAME	RANK
	UNIT: C TROOP, 413 CAV FT DRUM, NY		

EVALUATOR/ INSTRUCTOR	NAME	RANK
	WALL, RONALD S.	CW4
	UNIT: C TROOP, 413 CAV FT DRUM, NY	

CREW DATA

TOTAL BATTLE-ROSTERED CREW HOURS: 30 DATE DESIGNATED A BATTLE-ROSTERED CREW: 7 OCT 92

PURPOSE: EVALUATION/TRAINING ANNUAL

TIME TODAY: 3.5 CUMULATIVE TIME:

TYPE AIRCRAFT: OH-58D

CREW TASK 1		D/N/NVD	CREW TASK 6		D/N/NVD
CREW TASK 2		D/N/NVD	CREW TASK 7	S	D/N/NVD
CREW TASK 3		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		D/N/NVD	CREW TASK 10	S	D/N/NVD

DAY	NIGHT	WX	SIMULATOR	NVG	NVS
.5				3.0	

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: Ronald S. Wall

WE HAVE BEEN DEBRIEFED BY THE EVALUATOR/INSTRUCTOR AND UNDERSTAND OUR CURRENT STATUS.

PC'S SIGNATURE: James M. Dexter

PI'S SIGNATURE: Allen L. Hoxie

NONRATED CREW MEMBERS' SIGNATURES:

OVERALL GRADE FOR THIS FLIGHT IS: | S | U | NA | DATE: 27 Dec 92

DA FORM 7121-R, MAR 92

Figure 9-10. Sample of a completed DA Form 7121-R (front)

COMMENTS

This has been a satisfactory annual
crew evaluation for CW2 Dexter and
WO1 Hoxie. Crew task #8 CW2 Dexter
hovered too high during unmasking
and left the helicopter exposed
too long.
James M. Dexter Ronald S. Wall
Allen L. Hoxie CW4 USA
OH-58D SP

Page 2, DA FORM 7121-R, MAR 92

Figure 9-11. Sample of a completed DA Form 7121-R (back)

*APPENDIX A

FADEC MANUAL THROTTLE OPERATIONS 4-STEP METHOD OF INSTRUCTION (MOI)

A-1. FADEC Manual Throttle 4-Step MOI.

This 4-Step MOI is intended as a supplement to Task 1056 in TC 1-209. All four steps are designed around the building block technique of pilot training according to The Instructor Pilots Handbook, which gives the IP a more defined process for teaching this maneuver. **IPs should not allow pilots to progress from one step to the next unless they are proficient in the step that they are being trained.** This process also gives an IP the ability to revert to an earlier training step should a pilot begin to have difficulty.

A-2. STEP 1: Basic.

Begin on level ground at engine idle. The IP or pilot will switch the FADEC to the MAN position. With the collective full down, the IP will direct the pilot to increase and decrease the throttle between idle and 100-percent NR to get the direction and "feel" of the throttle and how throttle movements effect NR. Repeat several times until the pilot demonstrates that he can easily establish and maintain NR as directed by the IP. The IP will direct the pilot to achieve/maintain 100-percent NR then increase the collective while maintaining 100-percent NR until the aircraft is light on the skids and then decrease the collective to full down while maintaining 100-percent NR. Repeat several times until the pilot demonstrates that he can easily maintain NR while correlating collective movements. Finally, the IP will direct the pilot to perform a take-off from the ground and maintain a hover where the pilot should practice left and right 360-degree turns. The IP will direct the pilot to land the aircraft and return the collective to the full down position **(care must be taken by the IP to ensure that the pilot does not "dump" the collective when contact is made with the ground which will result in an overspeed).** Repeat until the pilot can easily maintain NR within limits while taking off to a hover, landing from a hover, while making 360-degree turns at a hover and while landing from a hover.

A-3. STEP 2: FADEC fails at a hover.

a. While in the AUTO mode, the IP will direct the pilot to actually watch the throttle while he makes a throttle reduction to the appropriate position using the slippage mark for reference. Once the pilot can make a smooth, quick reduction to the correct position while looking at the throttle, the IP will direct the pilot to practice the initial reduction without looking and then glance down to “fine tune.” (This is how a pilot should react should a real failure occur.) Repeat until the reduction is smooth and controlled and can be made in approximately two seconds. (Two seconds is faster than the HMU pistons can extend at normal power settings required for flight.) The IP will place the FADEC switch from AUTO to MAN. The pilot will react by making the necessary throttle and collective inputs to gain NR control and maintain it within standards. After the pilot has established positive control of NR, hovering turns and landing from a hover may be practiced. The second variation here is to announce to the pilot that the FADEC has failed in the fixed flow mode.

b. The pilot will reduce the throttle to the appropriate position and then direct the IP to place the FADEC switch from the AUTO to the MAN position and make the necessary throttle and collective inputs to gain control of and establish the NR.

A-4. STEP 3: FADEC fails in flight.

a. Training in cruise flight is the next logical step. Begin at 80 knots, straight and level at an altitude that will allow sufficient time to recover should the need arise. (The same approximate altitude that would be used to conduct a simulated engine failure at altitude would be appropriate.) The IP will switch FADEC to the MAN position. The pilot will react accordingly by making the necessary throttle and collective inputs to gain NR control and maintain it within standards. Once the pilot has gained manual throttle control and is straight and level, the IP will direct the pilot to decelerate to 40 knots and then accelerate back to 80 knots. This requires the pilot to correlate throttle and collective movements through power changes. Initially it may take several minutes and several miles to accomplish this procedure. Repeat until the pilot can complete the entire step in approximately the time and distance equal to the standard downwind leg of a traffic pattern.

b. If a pilot is unable to perform Step 3 to standard he will NOT be able to perform a VMC approach. Do not progress to Step 4 unless the pilot is proficient in Step 3.

A-5. Step 4: Taking FADEC failure to the ground.

This step is simply the culmination of training conducted so far. Step 4 should be conducted while flying a standard rectangular traffic pattern to a large clear area. A flight strip or runway type environment is ideal if readily available. The final approach path and landing area must be familiar to the IP and clear of obstructions/obstacles before FADEC manual throttle operations are attempted. For this reason and for practice, the

IP should direct the pilot through a simulation of Step 4 while in the AUTO mode prior to conducting it in the manual mode. At approximately the mid-downwind point, at 80 knots, straight and level, the IP will place the FADEC in the manual mode. The pilot will react accordingly by making the necessary throttle and collective inputs to gain NR control and maintain NR within standards. The pilot should maneuver the aircraft so that it is on final at approximately 40-45 knots, straight and level, in trim, and at the appropriate altitude before beginning the approach. The pilot should know his 3-foot and OGE hover power required to make comparisons with torque throughout the approach to help assist in anticipating power changes. The pilot should also be aware that the VSI is a good tool to indicate impending changes in altitude and/or approach angle. Once the approach angle has been intercepted and the approach has begun, the transition through ETL is the largest single power change that the pilot will have to make prior to touchdown.

a. VMC Approach. This power change should be planned to occur at an altitude so that there is opportunity to react and recover should the pilot make inappropriate control inputs. Initially, the pilot should be directed to decelerate through ETL at approximately 250-foot AGL and, as proficiency progresses, never lower than 100-foot AGL depending upon the experience of the pilot regardless of the approach angle used. Once the pilot negotiates ETL and the corresponding power change, he need only hover down the approach path to the desired termination. The IP will terminate the approach if—

(1) The aircraft is not below ETL by the altitude directed by the IP.

(2) The pilot accelerates back above ETL.

(3) The approach progresses so that the intended landing area can no longer be safely made.

CAUTION

A common tendency is to apply aft cyclic as the throttle is being reduced. The IP/P* must be aware of this tendency and guard against it.

b. Running landing. Prior to arrival on final approach, the crew will establish operation in the FADEC Manual mode. On final approach, establish straight and level flight at 40-45 knots and determine an approach angle that allows safe obstacle clearance to arrive at the intended point of landing. Once the approach angle is intercepted, coordinate throttle and collective to maintain the approach angle and maintain operating limits. Maintain apparent ground speed and rate of closure to arrive at two feet above the intended touchdown area at approximately ETL. If all conditions are within parameters, reduce throttle to the engine idle position, (the throttle must be at the idle detent prior to touchdown or overspeed may occur) maintain heading with pedals, and apply collective to accomplish a smooth and controlled touchdown. The touchdown speed may vary from, at, above, or below ETL as dictated by the landing area conditions and controllability, but increased control inputs may be required for operations below ETL. After ground contact, ensure the aircraft remains stable as collective is lowered to reduce ground run.

NOTES:

1. Throughout FADEC training, the IP will emphasize basic flying skills by teaching the pilot to anticipate power and control requirements and, whenever possible, by separating those requirements to simplify the task being flown. Example: If the pilot needs to descend and decelerate, he should attempt to accomplish one and then the other, such as, descend and then decelerate or decelerate then descend. The pilot should be taught to anticipate power changes and demands and to adjust the throttle and NR to “lead” those changes accordingly.

2. It is imperative that the pilot understands that his initial response to the FADEC tone is to always reduce the throttle to a position that intelligently coincides with the selected power demand. The index mark on the throttle is merely a reference point that indicates approximately 75-degrees PLA and approximately 315 pounds per hour of fuel flow.

3. The second variation of inducing a FADEC failure at a hover or at altitude is for the IP to announce to the pilot that the FADEC has failed in the fixed flow mode. The pilot will reduce the throttle to the appropriate position and then direct the IP to place the FADEC in the MAN mode after which he will make the necessary throttle and collective inputs to gain control of NR. The pilot will describe to the IP the symptoms of a FADEC failure to the fixed flow mode.

4. The crew briefing conducted will include the following concept: If the IP takes the controls and announces “I have the controls” for any reason when the FADEC is in the MAN mode, the pilot will immediately prepare to press the FADEC button should the IP request that FADEC be placed back into the AUTO mode.

5. During training/evaluations, if the aviator has not demonstrated proficiency in FADEC manual operations to an IP/SP in the previous 6 months, the training/evaluation will be conducted according to this 4-step process.

GLOSSARY

ACRONYMS AND ABBREVIATIONS

ACCPTD	accepted
ACP	armament control panel
ACTVT	activate
ADJ	adjust
ADSS	ANVIS display symbology subsystem
AFSO(s)	aerial fire support observer(s)
AGL	above ground level
AHRS	attitude and heading reference system
AIM	Airman's Information Manual
ALT	altitude
AMC	air mission commander
AMMO	ammunition
ANLG	analog
ANVIS	aviator's night vision imaging system
AO(s)	aeroscout observer(s)
APART	annual proficiency and readiness test
AR	Army regulation
ARTEP	Army Training and Evaluation Program
ARTY	artillery
ASE	aircraft survivability equipment
ASR	airport surveillance radar
ATAS	air-to-air Stinger
ATC	air traffic control
ATHS	airborne target handover system
ATM	aircrew training manual
ATP	aircrew training program
ATTN	attention
AVAIL	available
AVN	aviation
AVTR	airborne video tape recorder
AVUM	aviation unit maintenance
BDA	battle damage assessment
BHOT	black hot
BIT	built-in-test
CAL	calibrate; calibration
CALC	calculation
CAS	close air support
CDS	control and display subsystem
CE	crew chief
CFT	captive flight trainer
CG	center of gravity
CL	checklist

CNTL	control
COM	communication
COMM	communications
CONT	continue; control
CONUS	continental United States
CPHD	copperhead
CPO(s)	copilot/observer(s)
CPT	cockpit procedural trainer
CRL	crew readiness level
D	day; delta; demonstrate
DA	Department of the Army
DD	Department of Defense
DIR	direct
DISENG	disengage
DOD	Department of Defense
DSN	Defense Switching Network
DTS	data transfer system
EMER	emergency
EMERG	emergency
ENG	engine
ENGA	engage
EQUIP	equipment
ESC	electronic supervisory control
ETA	estimated time of arrival
ETD	estimated time of departure
ETE	estimated time en route
ETL	effective translational lift
ETP(s)	exportable training packet(s)
EW	electronic warfare
F	Fahrenheit
FAA	Federal Aviation Administration
FAC	flight activity category
★**FADEC**	full authority digital electronic control
FAR	Federal Aviation Regulation
FARP	forward arming and refueling point
FAT	free air temperature
FDC	fire direction center
FFE	fire-for-effect
FLIP	flight information publication
FLT	flight
FM	field manual or frequency modulated
FOV	field of view
FPM	feet per minute
FW	fixed wing
FWD	forward
FXD	fixed

FZ	fuze
GCA	ground-controlled approach
GR	grade
GT	gun target
GWT	gross weight
HC	hexachloroethane (smoke)
HDG	heading
HI	high
HMS	Hellfire missile system
HQ	headquarters
HR	hour
HSD	horizontal situation display
HTR	heater
HVY	heavy
HYD	hydraulic
★**HMU**	Hydromechanical unit
I	instrument; instructor
[I]	indicates OH-58D (Kiowa Warrior)
IAF	initial approach fix
IAS	indicated airspeed
ICAO	International Civil Aviation Organization
ID	identification
★**IDM**	improved data modem
IE	instrument flight examiner
IEA	interface electronics assembly
IFF	identification, friend or foe (radar)
IFR	instrument flight rules
IGE	in ground effect
IMC	instrument meteorological conditions
INCL	included
IND	indicated
IP	instructor pilot
KIAS	knots indicated airspeed
km	kilometers
KNPT	known point
LB	pound
LOAL	lock-on after launch
LOBL	lock-on before launch
LOS	line of sight
LRF/D	laser range finder/designator
LT	light
LZ	landing zone
MAP	missed approach point

MAX	maximum
MDA	minimum descent altitude
ME	maintenance test flight evaluator
MED	medical
METL	mission essential task list
METT-T	mission, enemy, terrain, troops, and time available
MFD	multifunction display
MFK	multifunction keyboard
MIJI	meaconing, entrusion, jamming, and interference
MIN	minimum
mm	millimeter
MMS	mast-mounted sight
★**MOI**	method of instruction
MOPP	mission-oriented protective posture
MP(s)	maintenance test pilot(s)
MSGS	messages
MSL	missile
MSN	mission
MTF	maintenance test flight
MTO	message to observer
N	night
NA	not applicable
NAS	National Airspace System
NATO	North Atlantic Treaty Organization
NAV	navigation
NAVAID	navigational aid
NBC	nuclear, biological, chemical
★**NCM**	nonrated crew member
NFOV	narrow field of view
NG	engine gas generator speed
N/G	no-go
NGR	National Guard regulation
NO	number
NOE	nap-of-the-earth
NORM	normal
NOTAM(s)	notice(s) to airmen
Np	power turbine speed
Nr	rotor speed
NVD	night vision device
NVG	night vision goggles
NVS	night vision systems
OGE	out-of-ground effect
OH	observation helicopter
OPs	observation posts
OT	observer-target
ORIDE	override

P	pilot not on the controls
P*	pilot on the controls
PA	pressure altitude
PAR	precision approach radar
PAX	passengers
PC	pilot in command
PDU	pilot display unit
PI	pilot (for grade slip purposes)
PM	preventive maintenance
POI(s)	program of instruction(s)
PPC	performance planning card
PRI	primary
PROG	program
PZ	pickup zone
R	reproducible
R/C	rate of climb
★**RCM**	rated crew member
RCVD	received
REC	record
REQ	request
RET	retracted
RHE	remote Hellfire electronics
RIPL	ripple
RL	readiness level
RNG	range
RPT	report
RPM	revolutions per minute
RRU	rocket remote unit
RW	rotary wing
S	satisfactory (for grade slip purposes); standardization
SALUTE	size, activity, location, unit, time, and equipment
SAM	send a message
SCAS	stability and control augmentation system
SEL	select; selection
SH	shell
SIF	selective identification feature
SIT	situation
SOI	signal operation instructions
SOP(s)	standing operating procedure(s)
SP	standardization instructor pilot
SSN	social security number
STANAG	standardization agreement
STBY	standby
STD	standard
STR	strength
SUM	summary

SYS system

TAMMS(A) the Army maintenance management system, aviation
TAS true airspeed
TC training circular
TGT target
TIS thermal imaging sensor
TM technical manual
TOT time on target
TRADOC United States Army Training and Doctrine Command
TRK track
TVS television sensor

U unsatisfactory (for grades slip purposes)
UHF ultra high frequency
US United States (of America)
USAALS United States Army Logistics School
USAAVNC United States Army Aviation Center
USAF United States Air Force
USAR United States Army Reserve
UT unit trainer
UTM universal transverse mercator

VAPI visual approach path indicator
VFR visual flight rules
VHF very high frequency
VHIRP vertical helicopter instrument recovery procedures
★**VIXL** video image crosslink
VMC visual meteorological conditions
Vne velocity never exceed (airspeed limit)
VSD vertical situation display

WFOV wide field of view
WHOT white hot
WOG weight on gear
WPN weapon
WPT way point
WR when ready
WT weight
WX weather

XPDR transponder

Z Zulu (Greenwich mean time)

★REFERENCES

SOURCES USED

These are the sources quoted or paraphrased in this publication.

Army Regulations

AR 95-10. DOD Notice to Airmen (NOTAM) System. 1 January 1997.
AR 385-95. Army Aviation Accident Prevention. 10 December 1999.

Department of the Army Pamphlet

DA Pamphlet 351-4. U.S. Army Formal Schools Catalog. 31 October 1995.
DA Pamphlet 738-751. Functional Users Manual for the Army Maintenance Management System--Aviation (TAMMS-A). 15 March 1999.

Department of Defense Airman's Information Manual

DOD AIM 86-100. Operation and Maintenance Overview General Triservice Mode 4 Handbook. May 1987.

This publication is available from Commanding Officer, ATTN: Code 2111, Naval Electronic Systems Engineering Activity, St. Inigoes, MD 20684-0010, or WR-ALC/MMAM-AIMS, ATTN: DOD AIMSPO, Robins AFB, GA 31098-5609.

Department of Defense Flight Information Publications

Army Aviation Flight Information Bulletin

Flight Information Handbook

DOD flight information publications are available from Director, US Army Aeronautical Services Agency, ATTN: MOAS-AI, Cameron Station, Alexandria, VA 22304-5050.

Field Manuals

FM 1-120. Army Air Traffic Services Contingency and Combat Zone Operations. 22 May 1995. (Superceded FM 1-103)
FM 1-300. Flight Operations Procedures. 15 July 1998.
FM 3-100. Chemical Operations Principles and Fundamentals. 8 May 1996.
FM 17-95. Cavalry Operations. 24 December 1996.
FM 3-25.26. Map Reading and Land Navigation. 20 July 2001. (Superceded FM 21-26)
FM 25-101. Battle Focused Training. 30 September 1990.
FM 34-1. Intelligence and Electronic Warfare Operations. 27 September 1994.

International Standardization Agreement

STANAG 3114 (Edition Six)/Air Standard 60/16. Aeromedical Training of Flight Personnel. 22 October 1986.

National Guard Regulation

*NGR 95-210. Army National Guard: General Provisions and Regulations for Aviation Training. 1 July 1991.

National Guard Bureau publications are available from Chief, National Guard Bureau, ATTN: NSB-DAY, Washington, DC 20310-2500.

Technical Bulletin

TB MED 524. Occupational Environmental Health: Control of Hazards to Health From Laser Radiation. 20 June 1985.

Technical Manuals

TM 1-1500-328-23. Aeronautical Equipment Maintenance Management Policies and Procedures. 33 July 1999.
TM 1-1520-248-10. Operator's Manual for Army OH-58D Helicopter. 15 November 2001. (Superceded TM 55-1520-248-10.)
TM 1-1520-248-CL. Operator's and Crewmember's Checklist, Army OH-58D Helicopter. 15 November 2001. (Superceded TM 55-1520-248-CL.)

*This source was also used to develop this publication.

Technical Manuals (Continued)

TM 1-1520-248-MTF. Maintenance Test Flight for Army OH-58D Helicopter. 15 November 2001. (Superceded TM 55-1520-248-MTF.)
TM 1-1520-248-23-1. Aviation Unit and Intermediate Maintenance Manual for Army Model OH-58D Helicopter. 28 February 2000. (Superceded TM 55-1520-248-23-1.)
TM 1-1520-248-23-2. Aviation Unit and Intermediate Maintenance Manual for Army Model OH-58D Helicopter. 28 February 2000. (Superceded TM 55-1520-248-23-2.)
TM 1-1520-248-23-3. Aviation Unit and Intermediate Maintenance Manual for Army Model OH-58D Helicopter. 28 February 2000. (Superceded TM 55-1520-248-23-3.)
TM 750-244-1-5. Procedures for the Destruction of Aircraft and Associated Equipment to Prevent Enemy Use. 12 November 1971.

DOCUMENTS NEEDED

These documents must be available to the intended users of this publication.

Army Regulations

*AR 40-8. Temporary Flying Restrictions Due to Exogenous Factors. 17 August 1976.
*AR 95-1. Flight Regulations. 1 September 1997.
*AR 95-2. Aviation: Air Traffic Control, Airspace, Airfields, Flight Activities, and Navigational Aids. 10 August 1990.
(**Note**: *AR 95-3 was superceded by AR 95-1, 1 September 1997).
*AR 600-105. Aviation Service of Rated Army Officers. 15 December 1994.
*AR 600-106. Flying Status for Nonrated Army Aviation Personnel. 8 December 1998.

*This source was also used to develop this publication.

Department of the Army Forms

DA Form 2028. Recommended Changes to Publications and Blank Forms. 1 February 1974.
DA Form 2408-12. Army Aviator's Flight Record. January 1992.
DA Form 2408-13. Aircraft Status Information Record. October 1991.
DA Form 2696. Operational Hazard Report. December 1999.
DA Form 4507-R. Crewmember Grade Slip. August 1995.
DA Form 4507-2-R. Continuation Comment Slip. August 1994.

Department of the Army Forms (Continued)

DA Form 4887-R. RW Performance Planning Card. May 1987.
DA Form 5051-12-R. Maintenance Test Flight Maneuvers Grade Slip (OH-58D). November 1992.
DA Form 5484-R. Mission Schedule/Brief. February 1996.
DA Form 5645-A-R. Maneuver/Procedure Grade Slip for OH-58D Aviators. November 1992.
DA Form 5645-B-R. Maneuver/Procedure Grade Slip for OH-58D Aeroscout Observers. November 1992.
(**Note**: DA Form 7121-R was rescinded, March 1996.)

Department of Defense Forms

DD Form 175. Military Flight Plan. May 1986.
DD Form 365-4. Weight and Balance Form F—Transport/Tactical. August 1996.

Field Manuals

(**Note**: FM 1-101 was rescinded January 1997.)
(**Note**: FM 1-104 was rescinded January 1997.)
(**Note**: FM 1-107 was rescinded January 1997.)
*FM 1-112. Attack Helicopter Battalion. 2 April 1997.
*FM 1-114. Air Cavalry Squadron and Troop Operation. 1 February 2000.
(**Note**: FM 1-116 was rescinded January 1997.)
*FM 1-140. Helicopter Gunnery. 29 March 1996. (Supercedes TC 1-140.)
*FM 1-202. Environmental Flight. 23 February 1983.
*FM 1-203. Fundamentals of Flight. 3 October 1988.
*FM 1-230. Meteorology for Army Aviators. 30 September 1982.
*FM 1-240. Instrument Flying and Navigation for Army Aviators. 15 December 1984.
*FM 3-04.301. Aeromedical Training for Flight Personnel. 29 September 2000. (Supersedes FM 1-301)
FM 1-400. Aviator's Handbook. 31 May 1983.
(**Note**: FM 1-402 was rescinded October 1998.)
*FM 5-170. Engineer Reconnaissance. 5 May 1998. (Supersedes FM 5-36.)
FM 10-67-1. Concepts and Equipment of Petroleum Operations. 2 April 1998. (Supercedes FM 10-68.)
FM 21-60. Visual Signals. 30 September 1987.
*FM 90-4. Air Assault Operations. 16 March 1987.
FM 90-21. (JAAT) Multi-service Procedures for Joint Air Attack Team Operations. 3 June 1998).

Training Circulars

*TC 1-201. Tactical Flight Procedures. 20 January 1984.
*TC 1-204. Night Flight Techniques and Procedures. 27 December 1988.
*TC 1-210. Aircrew Training Program Commander's Guide to Individual and Crew Standardization. 3 October 1995.

Technical Manuals

*TM 9-1240-778-23. Aviation Unit and Aviation Intermediate Maintenance Manual for Mast Mounted Sight Subsystem (MMSS). 13 May 1994. (Supercedes TM 9-1240-778-20)
(**Note:** *TM 9-1240-778-30 was superceded by TM 9-1240-778-23.)
*TM 1-1427-779-23. Aviation Unit and Aviation Intermediate Maintenance Manual for Control/Display Subsystem (CDS). 6 August 1997. (Supercedes TM 1-1427-779-23 which supercedes TM 9-1427-779-20.)
*TM 9-4935-780-13-1. Operator, Aviation Unit and Aviation Intermediate Maintenance Manual for Test Support System AN/TSM-173 (TSS). 23 November 1993. (Supercedes TM 9-4935-780-13)
*TM 9-4935-780-13-2. Operator and Aviation Intermediate Maintenance Manual for Test Support System AN/TSM-173 (TSS). 23 November 1993. (Supercedes TM 9-4935-780-13)
*TM 11-1520-248-23-1. Aviation Unit and Intermediate Maintenance Manual for Army Model OH-58D Helicopter. 1 January 2000. (Supercedes TM 11-1520-248-23)
TM 11-1520-248-23-2. Aviation Unit and Intermediate Maintenance Manual for Army Model OH-58D Helicopter. 1 January 2000. (Supercedes TM 11-1520-248-23)
TM 11-5841-283-12. Aviation Unit Maintenance Manual for Radar Signal Detecting Set, AN/APR-39(V). 9 August 1983.
*TM 11-5855-263-10. Operator's Manual for Aviator's Night Vision Imaging System (ANVIS), AN/AVS-6(V)l and AN/AVS-6(V)2. 15 June 2001.
*TM 11-5895-1199-12. Operator's and Organizational Maintenance for Mark-XII IFF System. 1 July 1984.
*TM 55-1500-342-23. Army Aviation Maintenance Engineering Manual for Weight and Balance. 29 August 1986.
TM 1-2840-248-23. Aviation Unit and Intermediate Maintenance Manual for Engine, Aircraft Turboshaft, Models T700-GE-700 and T700-GE-701, T700-GE-701C. 1 June 1999. (Supercedes TM 55-2840-248-23)
*TM 55-2840-256-23. Aviation Unit and Aviation Intermediate Maintenance, Engine, Aircraft Turboshaft. 2 June 1986.

*This source was also used to develop this publication.

READING RECOMMENDED

This reading contains relevant supplemental information.

FM 6-40. Tactics, Techniques, and Procedures for Field Artillery Manual Cannon Gunnery. 23 April 1996.
FM 6-20-20. Tactics, Techniques, and Procedures for Fire Support at Battalion Task Force and Below. 27 December 1991.
FM 6-20-40. Tactics, Techniques, and Procedures for Fire Support for Brigade Operations (Heavy). 5 January 1990.
FM 7-0. Training the Force. 22 October 2002. (Supercedes FM 25-100)

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