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HEADQUARTERS
DEPARTMENT OF THE ARMY
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TC 1-212

AIRCREW TRAINING MANUAL
UTILITY HELICOPTER, UH-60/EH-60

C1, TC 1-212

Change 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 23 December 2002

AIRCREW TRAINING MANUAL
UTILITY HELICOPTER, UH-60/EH-60

1. Change TC 1-212, 8 March 1996, as follows.

Remove old pages	Insert new pages
v and vi	v and vi
6-19 through 6-26	6-19 through 6-26.18
Glossary-1 through Glossary-12	Glossary-1 through Glossary-12
Reference-1 through Reference-8	Reference-1 through Reference-8
Index-1 through Index-8	Index-1 through Index-8
DA Form 5701-R, Sep 92 UH-60/AH-64 Performance Planning Card (PPC) (Front)	DA Form 5703-R, UH-60 Performance Planning Card (Front)
DA Form 5701-R, Sep 92 UH-60/AH-64 Performance Planning Card (PPC) (Back)	DA Form 5703-R, UH-60 Performance Planning Card (Back)

2. A star △ marks new or changed material.

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

4. The effective date of Change 1 is 15 January 2003.

DISTRIBUTION RESTRICTION: Approved for public release; distribution is unlisted.

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PREFACE

The ATMs are basic documents that standardize aircrew training programs and flight evaluation procedures. This manual provides specific guidelines for executing UH-60/EH-60 aircrew training. It is based on the battle-focused training principles outlined in FM 25-101. It establishes crewmember qualification, refresher, mission, and continuation training and evaluation requirements. This manual applies to all UH-60/EH-60 crew members and their commanders and standardization officers.

Used with TC 1-210, this manual will help aviation commanders at all levels develop a comprehensive aircrew training program. By using the ATMs, commanders ensure that individual crew member and aircrew proficiency is commensurate with their units' mission. They also ensure that aircrews routinely employ standard techniques and procedures.

UH-60/EH-60 crew members will use this manual as a "how to" source for performing crew member duties. It provides performance standards and evaluation guidelines so that crewmembers know the level of performance expected and how that will be determined. Each task has a description that describes how it should be done to meet the standard.

Standardization officers, evaluators/trainers, and unit trainers will use this manual, along with TC 1-210, as a primary tool to assist the commander in implementing his aircrew training program. It provides the minimum performance standards to which they must train and evaluate crewmembers.

If differences exist between the maneuver descriptions in TM 1-1520-237-10 and this manual, this manual is the governing authority for training and flight evaluation purposes. Implementation of this manual conforms to AR 95-1 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-ATB-ATM, Fort Rucker, AL 36362-5218.

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

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

This publication has been reviewed for operations security considerations.

CHAPTER 1

INTRODUCTION

This ATM describes training requirements for UH-60/EH-60 crew members. It will be used with AR 95-1, 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

Aviators will be trained and must maintain proficiency in each of the pilot's seats they are designated to occupy. Aviators designated to fly from both pilot's seats will be evaluated in each seat during RL progression and APART evaluations. This does not mean that all tasks must be evaluated in each seat. Commanders will develop a program to meet this requirement.

1-2. SYMBOL USAGE AND WORD DISTINCTIONS

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

b. Word Distinctions.

(1) Warnings, cautions, and notes. These words emphasize important and critical instructions.

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

(b) A caution indicates an operating procedure or a practice that, 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 is used to indicate a mandatory requirement.

(b) Should is used to indicate a nonmandatory but preferred method of accomplishment.

(c) May is used to indicate an acceptable method of accomplishment.

(3) NVS, NVG, and NVD.

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

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

(c) NVD refers to NVS, NVG or NVS, and NVG.

(4) Rated crew member. RCMs are aviators. Therefore, the terms "rated crew member," "aviator," and "pilot" are used synonymously.

(5) Nonrated crew member. The NCMs who perform UH-60/EH-60 crew duties are divided into three categories: crew chief, flight medic, and voice intercept operator.

(a) Crew chief. The CE helps maintain the assigned aircraft and performs NCM duties.

(b) Flight medic. The MO is responsible for in-flight medical assistance to patients and performing other NCM duties as directed by the PC.

(c) Voice intercept operator. The voice intercept operator is responsible for operating the AN/ALQ-151(V)2 system and performing other NCM duties as directed by the PC.

(6) Noncrew member. These individuals perform duties that are directly related to the in-flight mission of the aircraft but are not essential to the operation of the aircraft. Their duties cannot be performed by assigned crew members.

CHAPTER 2

QUALIFICATION TRAINING

Rated and nonrated crew member qualification requirements are stated in AR 95-1 and TC 1-210.

2-1. INITIAL QUALIFICATION

a. *Rated Crew Member.* Initial qualification training in the UH-60 is conducted at the US Army Aviation Center, or at DA-approved training sites, according to an established program of instruction. Aircraft series qualification is conducted per AR 95-1 and this chapter.

b. *Nonrated Crew Member.* MOS qualification is conducted at DA-approved training sites. Qualification training for NCMs, FIs, and SIs is conducted at the unit per this chapter, applicable regulations, and the commander's ATP. These NCMs must complete academic and flight training and pass the required written examination within 90 consecutive days (reserve components, 1 year).

(1) *Academic training.* The NCM must receive sufficient instruction to be knowledgeable in the subjects in Figure 2-1. When possible, the academic training should be completed before the corresponding flight training. The subjects may be presented in any order. The 50-question written examination applies to the CE only. He must pass it with a grade of at least 70 percent. Commanders may develop written tests for other NCMs but the tests should be MOS-specific.

(2) *Flight training.* The NCM, to include FIs and SIs, must be trained to the standards in Chapter 6 for all tasks in Figure 5-2. Night tasks required for qualification training are identified by an X in the night column of the same figures. Figure 2-2 shows the flight tasks and hours required for qualification. The commander may reduce the total flight time shown based on a recommendation from the SP, IP, SI, or FI.

Introduction Maintenance forms and records Structure Fuel and oil systems Power plant and related systems Transmission and drive systems Hydraulic systems Rotor systems Electrical systems Aircraft environmental restrictions Emergency procedures Emergency egress procedures	Flight controls Weight and balance Avionics and mission equipment Servicing, parking, and moving procedures Crew coordination Aircrew training program and requirements Maintenance and aircraft operator's manual written examination (CE only)

Figure 2-1. Academic subjects for nonrated crew members

Flight Instruction	-
	-
Run-up tasks[1]	6.0
Before-flight tasks[1]	1.0
Base tasks[2]	-
Emergency procedures	3.0
After-landing tasks[1]	
Evaluation[3]	10.0
Total hours	
_____	

[1]These tasks are considered flight instruction, even though flight time is not logged.
[2]One hour will be at night.
[3]This evaluation is described in Chapter 8.

Figure 2-2. Flight training for nonrated crew members

2-2. NVG QUALIFICATION

NVG qualification training for all UH-60 crew members will comply with TC 1-210.

a. *Initial NVG Qualification*. Initial NVG qualification training will be conducted according to TC 1-210, Chapter 4, and this ATM. Figure 2-3 shows the flight training tasks required.

b. *UH-60 Additional Aircraft NVG Qualification*. Each crew member must complete the requirements in TC 1-210 and the tasks shown in Figure 2-3.

Task	Title
1000	Participate in a crew mission briefing
1007	Perform before-starting engine through before-leaving helicopter checks
1014	Maintain airspace surveillance
1015*	Perform ground taxi
1016*	Perform hover power check
1017*	Perform hovering flight
1018*	Perform VMC takeoff
1023	Perform fuel management procedures
1026*	Perform electronically aided navigation
1028*	Perform VMC approach
1029*	Perform a roll-on landing
1032*	Perform slope operations
1065	Perform emergency egress
1068	Perform emergency procedures
1083*	Perform inadvertent IMC procedures
1146*	Perform VMC flight maneuvers

2078*	Perform terrain flight mission planning
2079*	Perform terrain flight navigation
2081*	Perform terrain flight
2087*	Perform terrain flight deceleration
*These tasks apply to RCMs only.	

Figure 2-3. Flight tasks for initial NVG qualification

2-3. UH-60L SERIES QUALIFICATION

Initial UH-60L series qualification training may be conducted locally by an IP qualified in the UH-60L. To be qualified in the UH-60L, an aviator must complete academic training in the subjects listed in Figure 2-4. He must also undergo a 1.0 hour flight training period in the aircraft performing the tasks listed in Figure 2-5. Initial UH-60L series qualification will be documented in the Part V, Remarks section, of the crew members DA Form 759 closeout.

Performance planning

Operating limitations

Emergency procedures

T700-GE-701C engines

Improved durability gearbox

Miscellaneous aircraft improvements

_____

Information concerning above mentioned subjects is contained in TM 1-1520-237-10.

Figure 2-4. Academic subjects for UH-60L series qualification

Task	Title
1004	Prepare a performance planning card
1005	Perform preflight inspection
1007	Perform before-starting engine through before leaving helicopter checks
1053	Perform simulated engine failure at altitude
1062	Perform ECU/DEC lockout operations
1068	Perform emergency procedures

Figure 2-5. Flight tasks for UH-60L series qualification

2-4. EH-60 AIRCRAFT SYSTEM QUALIFICATION

To be qualified to operate the EH-60, an aviator must success-fully complete the system qualification course conducted at the US Army Intelligence Center and Fort Huachuca, Fort Huachuca, Arizona and be eligible for a top secret clearance per AR 611-101 and DA Pamphlet 351-4. Two EH-60 system qualified aviators are required for flights involving the use of mission equipment. Only one EH-60 system qualified aviator is required for maintenance test flights, evaluations and training of EH-60 system qualified aviators, deployment, movement, and ferrying EH-60 aircraft. These flights should not involve the use of mission equipment.

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. Rated Crew Member. The RCM completes RL 3 requirements when the criteria in TC 1-210, Chapter 2, are met.

(1) Academic training. Figure 3-1 is a guide for developing a refresher academic training program for RCMs.

(2) Flight training. Figure 3-2 is a guide for developing a refresher flight training program for RCMs. Unaided night flight task requirements are listed in Chapter 5 (Figure 5-1) and are indicated by an X in the night column. Night considerations for each task, when applicable, are in Chapter 6.

Emergency procedures
Aircraft systems, structure, and airframe
Avionics
Weight and balance
Operational limitations and performance planning charts
Flight planning, to include DOD flight information publications
Instrument procedures
Local SOPs and regulations
Airspace regulations
Ground and air safety
Crew coordination
Aircraft operator's manual written examination

Figure 3-1. Refresher academic training guide for RCM

Flight Instruction	Hours
Local area orientation	2.0
Base task training (except instrument)	6.0
Flight evaluation	2.0
Instrument training (aircraft/simulator)	8.0
Instrument evaluation	2.0
Total hours	20.0

Figure 3-2. Refresher flight training guide for RCM

b. Nonrated Crew Member. The NCM completes RL 3 requirements when the criteria in TC 1-210, Chapter 2, are met. Nonrated crew members have minimum flying-hour requirements as specified in AR 600-106.

(1) Academic training. Figure 3-3 is a guide for developing a refresher academic training program for NCMs. The commander should tailor refresher academic training to fit the specific needs of each NCM.

(2) Flight Training. Figure 3-4 (page 3-3) is a guide for developing a refresher flight training program for NCMs. Unaided night flight task requirements are listed in Chapter 5 (Figure 5-2) and are indicated by an X in the night column. Night considerations for each task, when applicable, are in Chapter 6.

MOS-related subjects Maintenance forms and records Aircraft systems, structure, and airframe Weight and balance Avionics and mission equipment Emergency procedures Crew coordination Local SOPs and regulations Ground and air safety Maintenance and aircraft operator's manual written examination

Figure 3-3. Refresher academic training guide for NCM

Flight Instruction	Hours
Local area orientation	1.0
Demonstration and practice of base tasks	2.0
Flight evaluation	1.0
Total hours	4.0

Figure 3-4. Refresher flight training guide for NCM

3-2. NVG REFRESHER TRAINING

The RCM and NCM must complete the requirements in TC 1-210, Chapter 4, and the flight tasks in Figure 2-3 of this ATM. NVG considerations for each task, when applicable, are in Chapter 6.

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 ability to perform specific mission/additional tasks selected by the commander to support the unit's METL. Mission training may be done during mission support or collective training. Besides the requirements in this chapter, voice interceptor operators and medics must refer to the appropriate appendix for additional requirements.

4-1. TRAINING REQUIREMENTS

TC 1-210 outlines mission training requirements. The crew member will receive training and evaluation in the mission and additional tasks selected for his position by the commander. During mission training, NCMs have minimum flying-hour requirements as specified in AR 600-106.

4-2. NVG MISSION TRAINING

TC 1-210 outlines night vision goggle mission training requirements. Commanders determining a requirement for using NVG in mission profiles must develop a mission training program and specify mission/additional tasks.

4-3. MAINTENANCE TEST PILOT TRAINING

Chapter 7 contains the mandatory mission tasks for RCMs designated to perform MP/ME duties. Commanders are not authorized to delete any MTF tasks. The RCMs performing as MPs should be limited to duties in one primary and one alternate/additional aircraft and classified FAC 2. The MPs should be required to complete only those additional mission tasks that the commander considers complementary to the MTF mission.

4-4. EXTENDED RANGE FUEL SYSTEM TRAINING

The minimum mission training requirements for ERFS qualification are as indicated in Figures 4-1 and 4-2. The ERFS Exportable Training Packet outlines procedures that will be used for initial ERFS qualification. Initial ERFS qualification will be documented in Part V, Remarks

section, of the crew member's DA Form 759.

ESSS/ERFS Academic Instruction	Hours
ESSS/ERFS familiarization	1.0
ESSS/ERFS preflight, system test and operation	2.0
*ERFS fault analysis	1.0
*ERFS airworthiness, limitations, handling qualities	2.0
*ERFS emergency procedures	1.0
*ERFS performance planning, and weight and balance	1.0
Total	8.0
_____	
*These apply to RCMs only.	

Figure 4-1. ERFS academic training for crew members

ESSS/ERFS Flight Instruction	
Tasks	Titles
1003*	Verify aircraft weight and balance
1004*	Prepare a performance planning card
1005	Perform preflight inspection
1007	Perform before-starting engine through before-leaving helicopter checks

1015*	Perform ground taxi
1016*	Perform hover power check
1017*	Perform hovering flight
1018*	Perform VMC takeoff
1023	Perform fuel management procedures
1028*	Perform VMC approach
1029*	Perform a roll-on landing
1032*	Perform slope operations
1053*	Perform simulated engine failure at altitude
1068*	Perform emergency procedures
1146*	Perform VMC flight maneuvers
2001*	Perform a rolling takeoff
2099*	Perform extended range fuel system operations
Total hours: 1.0 - 3.0	
_____	
*These tasks are performed by RCMs only.	

Figure 4-2. Flight tasks for initial ESSS/ERFS qualification

CHAPTER 5

CONTINUATION TRAINING

This chapter outlines continuation training requirements that RL 1 crew members must complete. The RCM aircraft and simulation device flying-hour requirements apply only to RCMs whose primary aircraft is the UH-60/EH-60. For RCMs whose additional/alternate aircraft is the UH-60/EH-60, commanders will establish continuation training requirements per TC 1-210.

5-1. TRAINING REQUIREMENTS

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

(1) Rated crew member.

(a) FAC 1--48 hours, from the pilot's or copilot's seat.

(b) FAC 2--30 hours, from the pilot's or copilot's seat.

NOTE: Evaluators/trainers and unit trainers may credit those hours they fly while performing assigned duties at any crew station, during the day and at night unaided, toward their semiannual flying-hour requirement.

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

(d) RL 1 RCMs and DACs in NVG-designated positions and NVG Pcs--9 hours of NVG flight, of which a minimum of 6 hours must be flown at night in the aircraft from the pilot's or copilot's seat. The other 3 hours may be flown in the UH-60FS.

(2) Nonrated crew member. 24 hours (12 hours USAR and ARNG) in the aircraft while performing crew duties and complying with AR 600-106 and DOD 7000.14-R. For NVG RL 1 NCMs, 5 hours at night while performing crew duties and wearing NVG.

NOTE: FIs and SIs may credit those hours they fly while performing assigned duties toward their semiannual flying-hour requirement.

b. Annual Simulation Device Flying-Hour Requirements. Annual UH-60FS requirements for FAC 1 and FAC 2 active duty RCMs who are within 25 SMs of a UH-60FS are 20 hours and 12 hours, respectively. FAC 1 and FAC 2 active duty RCMs who are not within 25 SMs

of a UH-60FS must refer to AR 95-1. The SFTS requirements for FAC 1 and FAC 2 reserve component RCMs will be per AR 95-1. RCMs may apply 12 hours of UH-60FS time toward their semiannual aircraft flying-hour requirements. All FAC 3 RCMs, despite their distance from a UH-60FS, will fly 20 hours annually in the simulator.

c. Annual Task and Iteration Requirements. The Commander's Task List in the crew member's IATF specifies the tasks and modes he must perform. As a minimum, the crew member must perform at least one iteration of each task, in each mode separately, as listed on his task list. The commander may require the crew member to perform additional iterations of specific tasks. The crew member is responsible for maintaining proficiency in each task on his task list in the modes specified.

Task	Title	S	I	N	NVG	NBC
1000	Take part in a crew mission briefing	X	X		X	
1001	Plan a VFR flight	X				
1002	Plan an IFR flight		X			
1003	Verify aircraft weight and balance	X				
1004	Prepare a performance planning card	X	X			
1005	Perform preflight inspection	X				X
1007	Perform before-starting engine through before-leaving helicopter checks	X		X	X	X
1010	Inspect/perform operational checks on ALSE	X				
1014	Maintain airspace surveillance	X		X	X	X
1015	Perform ground taxi			X		
1016	Perform hover power check	X		X	X	X
1017	Perform hovering flight	X		X	X	X
1018	Perform VMC takeoff	X		X	X	X

1023	Perform fuel management procedures	X	X	X	X	
1025	Navigate by pilotage and dead reckoning			X		
1026	Perform electronically aided navigation	X			X	
1028	Perform VMC approach	X		X	X	X
1029	Perform a roll-on landing	X		X	X	
1032	Perform slope operations	X		X	X	
1051	Perform autorotation					
1052	Perform simulated engine failure at a hover	X				
1053	Perform simulated engine failure altitude	X				
1060	Perform flight with AFCS off	X				
1062	Perform ECU/DEC lockout operations	X				
1063	Perform procedures for stabilator malfunction	X				
1065	Perform emergency egress					
1068	Perform emergency procedures	X	X	X	X	
1069	Identify or perform hand and arm signals					
1070	Obtain fuel sample					
1071	Conduct passenger briefing					
1075	Perform instrument takeoff		X			
1076	Perform radio navigation		X			
1077	Perform holding procedures		X			
1078	Perform unusual attitude recovery		X			
1079	Perform radio communications procedures		X			

1080	Perform procedures for two-way radio failure		X			
1081	Perform nonprecision approach		X			
1082	Perform precision approach		X			
1083	Perform inadvertent IMC procedures	X			X	
1084	Perform command instrument system operations	X	X			
1095	Operate aircraft survivability equipment	X				
1135	Perform instrument maneuvers		X			
1136	Perform go-around	X				
1137	Take part in a crew-level after-action review	X				
1146	Perform VMC flight maneuvers				X	
1150	Select landing zone/pickup zone					

Legend:

S--Tasks that are mandatory for standardization flight evaluation.

I--Tasks that are mandatory for instrument flight evaluation.

N--Tasks that must be performed during unaided night flight.

NVG--Tasks that are mandatory for NVG flight evaluation (for crew members who are required to fly NVG). Figure 5-3 lists additional mandatory NVG flight evaluation tasks.

NBC--Tasks that are mandatory for NBC training.

Figure 5-1. Rated crew member base task list

Task	Title	S	N	NVG	NBC	
1000	Take part in a crew mission briefing	X		X		
1005	Perform preflight inspection	X			X	
1007	Perform before-starting engine through before-leaving helicopter checks	X	X	X	X	
1010	Inspect/perform operational checks on ALSE	X				
1014	Maintain airspace surveillance	X	X	X	X	
1023	Perform fuel management procedures	X	X	X		
1042	Perform refueling operations	X	X			
1065	Perform emergency egress	X	X			
1068	Perform emergency procedures	X		X		
1069	Identify/perform hand and arm signals	X				
1070	Obtain fuel sample	X				
1071	Conduct passenger briefing					
1079	Perform radio communications procedures	X				
1095	Operate aircraft survivability equipment	X				
1137	Take part in a crew-level after-action review	X				

Figure 5-2. Nonrated crew member base task list

Task	Title
2001	Perform a rolling takeoff
2002	Perform fast rope insertion

2005	Perform FM radio homing
2008	Perform evasive maneuvers
2009	Perform multiaircraft operations
2010	Perform rappelling procedures
2011	Perform rescue-hoist operations
2013	Perform paradrop operations
2015	Perform STABO operations
2016	Perform external load operations
2017	Perform internal load operations
2022	Perform aerial radio relay
2044	Perform actions on contact
2046[1]	Prepare aircraft for mission
2072*	Perform emergency procedures for NVD failure
2078*[2]	Perform terrain flight mission planning
2079*	Perform terrain flight navigation
2081*	Perform terrain flight
2083	Negotiate wire obstacles
2086	Perform masking and unmasking
2087*	Perform terrain flight deceleration
2088	Identify major US or allied equipment and major threat equipment
2090	Perform tactical communication procedures
2091[2]	Transmit tactical reports

2094	Perform Quick Fix mission
2095	Perform flat turn or calibrated flight
2096[2]	Operate NVD with the AN/AVS-7 (ANVIS HUD) attached
2099	Perform extended range fuel system operations
2214	Perform deck landing operations
_____	
*These are mandatory NVG evaluation tasks.	
1This task applies to NCMs only.	
2 This task applies to NCMs only.	

Figure 5-3. Crew member mission task list

Task	Title
2400	Plan and prepare for a maintenance test flight
2401	Perform interior checks
2402	Perform before-starting engine checks
2420	Perform starting-engine checks
2435	Perform run-up and taxi checks
2436	Perform before-takeoff and hover checks
2451	Perform before-takeoff through climb checks
2452	Perform cruise checks
2469	Perform special/detailed procedures

Figure 5-4. Maintenance test pilot task list

5-2. NVG CURRENCY REQUIREMENTS

a. Rated Crew Member. To be considered NVG current, an RCM (from the pilot's or copilot's seat) must--

(1) Take part every 45 consecutive days in at least a 1-hour flight in the UH-60FS or at night in the aircraft while wearing NVG.

(2) Take part every 90 consecutive days in at least a 1-hour flight at night in the aircraft while wearing NVG.

b. Nonrated Crew Member. To remain NVG current, the NCM (wearing NVG) must take part every 60 consecutive days in at least a 1-hour flight in the aircraft.

c. NVG Proficiency Flight Evaluations. Those RCMs and NCMs whose currency has lapsed must complete, as a minimum, a 1-hour NVG proficiency evaluation given at night in the aircraft by an NVG IP, SP, SI, or FI. The minimum tasks to be evaluated are listed in Figures 5-1 through 5-3.

5-3. ANNUAL NBC TRAINING REQUIREMENTS

Annual NBC training is mandatory for all FAC 1 positions and those FAC 2 positions selected by the commander. NBC training is not required for FAC 3 positions.

a. Crew members will receive NBC training in the tasks listed in the NBC column in Figures 5-1 and 5-2. The commander may select other tasks based on the unit's mission. Crew members will perform at least one iteration annually while wearing MOPP Level 4 NBC gear.

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

(1) Aircrews exercise caution when performing flight duties when the wet bulb globe temperature is above 75 F.

(2) A qualified and current aviator not wearing a protective mask is at one set of the flight controls except as outlined in AR 95-1.

(3) Emergency procedures training is not conducted while wearing MOPP gear.

CHAPTER 6
CREW MEMBER TASKS

This chapter implements portions of STANAG 3114/Air Standard 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. This chapter also contains a brief description of the elements, basic qualities, and objectives found in the Aircrew Coordination Training program.

6-1. TASK CONTENTS

a. Task Number and Title. Each task is identified by a number and a title that correspond to the tasks listed in Chapter 5 (Figures 5-1 through 5-3). For ease of identification, base tasks are assigned 1000-series numbers and mission tasks are assigned 2000-series numbers.

b. Conditions. The conditions specify the situation in which the task is to be performed. They describe the important aspects of the performance environment. References to UH-60 helicopters may also apply to all H-60 series helicopters. References to the UH-60FS in the conditions do not apply to nonrated crew members. 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. Many tasks incorporate similar maneuvers and, therefore, similar standards. Listed below are the common standards for various flight maneuvers. Unless otherwise specified on the individual task, the standards below apply.

(1) Hover.

(a) Maintain heading ±10 degrees.
(b) Maintain desired altitude, ±3 feet.
(c) Do not allow drift to exceed 3 feet.
(d) Maintain ground track within 3 feet.
(e) Maintain a constant speed appropriate for conditions.
(f) Maintain a constant rate of turn not to exceed 30 degrees per second.

(2) In flight.

(a) Maintain heading ±10 degrees.
(b) Maintain altitude ±100 feet.
(c) Maintain airspeed ±10 KIAS.
(d) Maintain ground track with minimum drift.
(e) Maintain rate of climb or descent ±100 FPM.
(f) Maintain the aircraft in trim ±½ ball width.

(3) All tasks (RCM & NCM). Correctly perform crew coordination actions.

(4) All flight tasks (tasks with the APU/engines operating).

(a) Maintain airspace surveillance (Task 1014).

(b) Correctly apply appropriate environmental considerations.

(5) Other. Standards other than those listed above will be addressed in that particular task.

d. Description. The description explains how the task should be done to meet the standards. These actions apply in all modes of flight during day, night, or NVG operations. When specific crew actions are required, the task will be broken down into crew actions and procedures as follows:

(1) Crew actions. These define the portions of a task preformed by each crew member to ensure safe, efficient, and effective task execution. The indications P* and P do not imply PC duties. When required, PC responsibilities are specified.

(2) Procedures. These actions are the portions of a task that an individual accomplishes.

e. Environmental Considerations. Crew members must consider additional aspects to a task when performing it in different environmental conditions. When applicable, environmental considerations are included with each task; for example, night or NVG, snow/sand/dust, and mountain/pinnacle/ridgeline. The inclusion of environmental considerations in a task does not relieve the commander of the requirement for developing an environmental training program per TC 1-210.

f. References. The references listed for each task are sources of information about that particular task. Certain references apply to many tasks. Besides the references listed with each task, the following common references apply as indicated.

(1) All flight tasks (tasks with APU/engines operating).

(a) AR 95-1, Flight Regulations.

(b) FM 1-203, Fundamentals of Flight.

(c) FM 1-230, Meteorology for Army Aviators.

(d) TMs 1-1520-237-10/CL.

(2) All instrument tasks.

(a) AR 95-1, Flight Regulations.

(b) FM 1-240, Instrument Flying for Army Aviators.

(c) DOD FLIP.

(3) All tasks with environmental considerations.

(a) FM 1-202, Environmental Flight.

(b) TC 1-204, Night Flight Techniques and Procedures.

(4) All tasks used in a tactical situation. TC 1-201, Tactical Flight Procedures.

6-2. TASK CONSIDERATIONS

a. References to IP in the task conditions include 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. For the purpose of NVG training, NVG terrain flight is defined as flight less than 200 feet AHO in the flight path.

d. Airspeed limits for NVG flight are listed below.

(1) When operating with the wheels up to 25 feet above the highest obstacle in the flight path--40 KIAS maximum.

(2) When operating with the wheels between 25 and 80 feet AHO--70 KIAS maximum.

(3) When operating with the wheels above 80 feet AHO--whatever airspeed operational requirements dictate and aircraft limitations allow.

NOTE: The airspeeds shown above may need to be decreased if inclement weather or ambient light levels restrict visibility.

e. An infrared band-pass filter or a pink-light-modified searchlight or landing light must be operational before NVG operations are conducted.

f. Do not attempt the tasks listed below if performance planning or the hover power check indicates that hover OGE power is not available.

(1) Task 2002, Perform fast rope insertion.

(2) Task 2010, Perform rappelling procedures.

(3) Task 2011, Perform rescue-hoist operations.

(4) Task 2015, Perform STABO operations.

(5) Task 2016, Perform external load operations.

6-3. CREW COORDINATION

a. Accidents. An analysis of US Army aviation accidents revealed that a significant percentage of these accidents resulted from one or more crew coordination errors committed before or during the mission flight. Often an accident was the result of a sequence of undetected crew errors that combined to produce a catastrophic result. Additional research showed that even when accidents are avoided, these same errors can result in degraded mission performance. A systematic analysis of these error patterns identified specific areas where crew-level training could reduce the occurrence of such errors and break the error chains leading to accidents and poor mission performance.

b. Crew Coordination Elements. Broadly defined, aircrew coordination is the interaction between crew members necessary for the safe, efficient, and effective performance of tasks. The essential elements of crew coordination are described below.

(1) Communicate positively. Good cockpit teamwork requires positive communication among crew members. Communication is positive when the sender directs, announces, requests, or offers information; the receiver acknowledges the information; the sender confirms the information, based on the receiver's acknowledgement or action.

(2) Direct assistance. A crew member will direct assistance when he cannot maintain aircraft control, position, or clearance. He will also direct assistance when he cannot properly operate or troubleshoot aircraft systems without help from the other crew members.

(3) Announce actions. To ensure effective and well-coordinated actions in the aircraft, all crew members must be aware of the expected movements and unexpected individual actions. Each crew member will announce any actions that affect the actions of the other crew members.

(4) Offer assistance. A crew member will provide assistance or information that has been requested. He also will offer assistance when he sees that another crew member needs help.

(5) Acknowledge actions. Communications in the aircraft must include supportive feedback to ensure that crew members correctly understand announcements or directives.

(6) Be explicit. Crew members should use clear terms and phrases and positively acknowledge critical information. They must avoid using terms that have multiple meanings, such as "Right," "Back up," or "I have it." Crew members must also avoid using indefinite modifiers such as, "Do you see that tree?" or "You are coming in a little fast."

(7) Provide aircraft control and obstacle advisories. Although the P* is responsible for aircraft control, the other crew members may need to provide aircraft control information regarding airspeed, altitude, or obstacle avoidance.

(8) Coordinate action sequence and timing. Proper sequencing and timing ensure that the actions of one crew member mesh with the actions of the other crew members.

c. Crew Coordination Basic Qualities. The crew coordination elements are further broken down into a set of 13 basic qualities. Each basic quality is defined in terms of observable behaviors. The paragraphs below summarize these basic qualities.

(1) Flight team leadership and crew climate are established and maintained. This quality addresses the relationships among the crew and the overall climate of the flight deck. Aircrews are teams with a designated leader and clear lines of authority and responsibility. The PC sets the tone for the crew and maintains the working environment. Effective leaders use their authority but do not operate without the participation of other crew members. When crew members disagree on a course of action, they must be effective in resolving the disagreement. Specific goals include the following:

(a) The PC actively establishes an open climate where crew members freely talk and ask questions.

(b) Crew members value each other for their expertise and judgment. They do not allow differences in rank and experience to influence their willingness to speak up.

(c) Alternative viewpoints are a normal and occasional part of crew interaction. Crew members handle disagreements in a professional manner, avoiding personal attacks or defensive posturing.

(d) The PC actively monitors the attitudes of crew members and offers feedback when necessary. Each crew member displays the proper concern for balancing safety with mission accomplishment.

(2) Premission planning and rehearsal are accomplished. Premission planning includes all preparatory tasks associated with planning the mission. These tasks include planning for VFR, IFR, and terrain flight. They also include assigning crew member responsibilities and conducting all required briefings and brief-backs. Premission rehearsal involves the

crew's collectively visualizing and discussing expected and potential unexpected events for the entire mission. Through this process, all crew members think through contingencies and actions for difficult segments or unusual events associated with the mission and develop strategies to cop with contingencies. Specific goals include the following:

(a) The PC ensures that all actions, duties, and mission responsibilities are partitioned and clearly assigned to specific crew members. Each crew member actively participates in the mission planning process to ensure a common understanding of mission intent and operational sequence. The PC prioritizes planning activities so that critical items are addressed within the available planning time.

(b) The crew identifies alternate courses of action in anticipation of potential changes in METT-T and is fully prepared to implement contingency plans as necessary. Crew members mentally rehearse the entire mission by visualizing and discussing potential problems, contingencies, and responsibilities.

(c) The PC ensures that crew members take advantage of periods of low workload to rehearse upcoming flight segments. Crew members continuously review remaining flight segments to identify required adjustments. Their planning is consistently ahead of critical lead times.

(3) Appropriate decision-making techniques are applied. Decision making is the act of rendering a solution to a problem and defining a plan of action. It must involve risk assessment. The quality of decision making and problem solving throughout the planning and execution phases of the mission depends on the information available, time constraints, and level of involvement and information exchange among crew members. The crew's ability to apply appropriate decision-making techniques based on these criteria has a major impact on the choice and quality of their resultant actions. Although the entire crew should be involved in the decision-making and problem-solving process, the PC is the key decision maker. Specific goals include the following:

(a) Under high-time stress, crew members rely on a pattern-recognition decision process to produce timely responses. They minimize deliberation consistent with the available decision time. Crew members focus on the most critical factors influencing their choice of responses. They efficiently prioritize their specific information needs within the available decision time.

(b) Under moderate- to low-time stress, crew members rely on an analytical decision process to produce high-quality decisions. They encourage deliberation when time permits. To arrive at the most unbiased decision possible, crew members consider all important factors influencing their choice of action. They consistently seek all available information relative to the factors being considered.

(4) Actions are prioritized and workload is equitably distributed. This quality addresses the effectiveness of time and workload management. It assesses the extent to which the crew, as a team, avoids distractions from

essential activities, distributes and manages workload, and avoids individual task overload. Specific goals include the following:

(a) Crew members are always able to identify and prioritize competing mission tasks. They never ignore flight safety and other high-priority tasks. They appropriately delay low-priority tasks until those tasks do not compete with more critical tasks. Crew members consistently avoid nonessential distractions so that these distractions do not impact on task performance.

(b) The PC actively manages the distribution of mission tasks to prevent the overloading of any crew member, especially during critical phases of flight. Crew members watch for workload buildup on others and react quickly to adjust the distribution of task responsibilities.

(5) Unexpected events are managed effectively. This quality addresses the crew's performance under unusual circumstances that may involve high levels of stress. Both the technical and managerial aspects of coping with the situation are important. Specific goals include the following:

(a) Crew actions reflect extensive rehearsal of emergency procedures in prior training and premission planning and rehearsal. Crew members coordinate their actions and exchange information with minimal verbal direction from the PC. They respond to the unexpected event in a composed, professional manner.

(b) Each crew member appropriately or voluntarily adjusts individual workload and task priorities with minimal verbal direction from the PC. The PC ensures that each crew member is used effectively when responding to the emergency and that the workload is efficiently distributed.

(6) Statements and directives are clear, timely, relevant, complete, and verified. This quality refers to the completeness, timeliness, and quality of information transfer. It includes the crew's use of standard terminology and feedback techniques to verify information transfer. Emphasis is on the quality of instructions and statements associated with navigation, obstacle clearance, and instrument readouts. Specific goals include the following:

(a) Crew members consistently make the required callouts. Their statements and directives are always timely.

(b) Crew members use standard terminology in all communications. Their statements and directives are clear and concise.

(c) Crew members actively seek feedback when they do not receive acknowledgment from another crew member. They always acknowledge understanding of intent and request clarification when necessary.

(7) Mission situational awareness is maintained. This quality considers the extent to which crew members keep each other informed about the status of the aircraft and the mission. Information reporting helps the aircrew maintain a high level of situational awareness. The information reported includes aircraft position and orientation, equipment and personnel status, environmental and battlefield conditions, and changes to

mission objectives. Awareness of the situation by the entire crew is essential to safe flight and effective crew performance. Specific goals include the following:

(a) Crew members routinely update each other and highlight and acknowledge changes. They take personal responsibility for scanning the entire flight environment, considering their assigned workload and areas of scanning.

(b) Crew members actively discuss conditions and situations that can compromise situational awareness. These include, but are not limited to, stress, boredom, fatigue, and anger.

(8) Decisions and actions are communicated and acknowledged. This quality addresses the extent to which crew members are kept informed of decisions made and actions taken by another crew member. Crew members should respond verbally or by appropriately adjusting their behaviors, actions, or control inputs to clearly indicate that they understand when a decision has been made and what it is. Failure to do so may confuse crews and lead to uncoordinated operations. Specific goals include the following:

(a) Crew members announce decisions and actions, stating their rationale and intentions as time permits. The P verbally coordinates the transfer of or inputs to controls before action.

(b) Crew members always acknowledge announced decisions or actions and provide feedback on how these decisions or actions will affect other crew tasks. If necessary, they promptly request clarification of decisions or actions.

(9) Supporting information and actions are sought from the crew. This quality addresses the extent to which supporting information and actions are sought from the crew by another crew member, usually the PC. Crew members should feel free to raise questions during the flight regarding plans, revisions to plans, actions to be taken, and the status of key mission information. Specific goals include the following:

(a) The PC encourages crew members to raise issues or offer information about safety or the mission. Crew members anticipate impending decisions and actions and offer information as appropriate.

(b) Crew members always request assistance from others before they become overloaded with tasks or before they must divert their attention from a critical task.

(10) Crew member actions are mutually cross-monitored. This quality addresses the extent to which a crew uses cross-monitoring as a mechanism for breaking error chains that lead to accidents or degraded mission performance. Crew members must be capable of detecting each other's errors. Such redundancy is particularly important when crews are tired or overly focused on critical task elements and thus more prone to make errors. Specific goals include the following:

(a) Crew members acknowledge that crew error is a common occurrence and the active involvement of the entire crew is required to

detect and break the error chains that lead to accidents. They constantly watch for crew errors affecting flight safety or mission performance. They monitor their own performance as well as that of others. When they note an error, they quickly and professionally inform and assist the crew member committing the error.

(b) The crew thoroughly discusses the two-challenge rule before executing the mission. When required, they effectively implement the two-challenge rule with minimal compromise to flight safety.

NOTE: The two-challenge rule allows one crew member to automatically assume the duties of another crew member who fails to respond to two consecutive challenges. For example, the P* becomes fixated, confused, task overloaded, or otherwise allows the aircraft to enter an unsafe position or attitude. The P first asks the P* if he is aware of the aircraft position or attitude. If the P* does not acknowledge this challenge, the P issues a second challenge. If the P* fails to acknowledge the second challenge, the P assumes control of the aircraft.

(11) Supporting information and actions are offered by the crew. This quality addresses the extent to which crew members anticipate and offer supporting information and actions to the decision maker--usually the PC--when apparently a decision must be made or an action taken. Specific goals include the following:

(a) Crew members anticipate the need to provide information or warnings to the PC or P* during critical phases of the flight. They provide the required information and warnings in a timely manner.

(b) Crew members anticipate the need to assist the PC or P* during critical phases of flight. They provide the required assistance when needed.

(12) Advocacy and assertion are practiced. This quality concerns the extent to which crew members are proactive in advocating a course of action they consider best, even when others may disagree. Specific goals include the following:

(a) While maintaining a professional atmosphere, crew members state the rationale for their recommended plans and courses of action when time permits. They request feedback to make sure others have correctly understood their statements or rationale. Time permitting, other crew members practice good listening habits; they wait for the rationale before commenting on the recommended plans or courses of action.

(b) The PC actively promotes objectivity in the cockpit by encouraging other crew members to speak up despite their rank or experience. Junior crew members do not hesitate to speak up when they disagree with senior members; they understand that more experienced aviators can sometimes commit errors or lose situational awareness. Every member of the crew displays a sense of responsibility for adhering to flight regulations, operating procedures, and safety standards.

(13) Crew-level after-action reviews are conducted. This quality addresses the extent to which crew members review and critique their actions during or after a mission segment, during periods of low workload, or during the mission debriefing. Specific goals include the following:

(a) The crew critiques major decisions and actions. They identify options and factors that should have been discussed and outline ways to improve crew performance in future missions.

(b) The critique of crew decisions and actions is professional. "Finger pointing" is avoided; the emphasis is on education and improvement of crew performance.

d. Crew Coordination Objectives. The crew coordination elements and basic qualities are measured to determine if the objectives of the crew coordination program have been met. The objectives o f the program have been defined by five crew coordination objectives. The five objectives are as follows:

(1) Establish and maintain team relationships. Establish a positive working relationship that allows the crew to communicate openly and freely and to operate in a concerted manner.

(2) Mission planning and rehearsal. Explore, in concert, all aspects of the assigned mission and analyze each segment for potential difficulties and possible reactions in terms of the commander's intent.

(3) Establish and maintain workloads. Manage and execute the mission workload in an effective and efficient manner with the redistribution of task responsibilities as the mission situation changes.

(4) Exchange mission information. Establish intra-crew communications using effective patterns and techniques that allow for the flow of essential data between crew members.

(5) Cross-monitor performance. Cross-monitor each other's actions and decisions to reduce the likelihood of errors impacting mission performance and safety.

e. Standard Crew Terminology. To enhance communication and crew coordination, crews should use words or phrases that are understood by all participants. They must use clear, concise terms that can be easily understood and complied with in an environment full of distractions. Multiple terms with the same meaning should be avoided. DOD FLIP contains standard terminology for radio communications. Operator's manuals contain standard terminology for items of equipment. Figure 6-1 is a list of other standard words and phrases that crew members may use.

Bandit – an identified enemy aircraft.
Bogey - an unidentified aircraft assumed to be enemy.
Braking – announcement made by the RCM who intends to apply brake pressure.
Break – immediate action command to perform a maneuver to deviate from the present ground track; will be followed by "right," "left."
Call out – command by the P* for a specified procedure to be read from the checklist by another 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 a direction; for example, "right" or "slide left." Also indicates that ground personnel are clear to approach the aircraft.
Come up/down - command to change altitude up or down.
Correct - confirms a statement as being accurate or right. Do not use the word "right" to indicate correct.
Drifting - an alert of the unannounced movement of the aircraft; will be followed by direction.
Egress - immediate action command to get out of the aircraft.
Execute - initiate an action.
Expect - anticipate further instructions or guidance.
Fire light - announcement of illumination of the master fire warning light.
Firing - announcement that a specific weapon is to be fired.
Go plain/red - command to discontinue secure operations.
Go secure/green - command to activate secure operations.
Hold - command to maintain present position.
I have the controls - used as a command or announcement by the RCM assuming control of the flight controls.
Inside - primary focus of attention is inside the aircraft.
In sight - preceded by the word "traffic," "target, " "obstacle," or descriptive term. Used to confirm the traffic, target, or obstacle is positively seen or identified.
Jettison - command for emergency release of an external load or stores; when followed by "door," indicates the requirement to perform emergency door removal.
Maintain - command to conceal aircraft.
Mask - command to conceal aircraft.
Move forward/backward - command to hover the aircraft forward or backward; followed by distance. Also used to announce intended forward or backward move-ment.
Outside - the primary focus is outside the aircraft.
Put me up - command to place the P*'s radio transmit selector switch to a designated position or to place a frequency in a specific radio.
Release - command for the planned release of an external load.
Report - command to notify.
Right - used to indicate a direction only, not to be used in place of "correct."
Slide left/right - command to hover the aircraft left or right; will be followed by distance. Also used to announce intended left or right movement.
Slow down - command to decrease ground speed.
Speed up - command to increase ground speed.

Stop - command to go no further; halt present action.
Strobe - indicates that the AN/APR-39 has detected a radar threat; will be followed by a clock position.
Target - an alert that a ground target has been spotted.
Traffic - refers to any friendly aircraft that presents a collosion hazard; will be followed by a clock position, distance, and reference to altitude.
Troops on/off - command for troops to enter/exit the aircraft.
Turn - command to deviate from the current heading; will be followed by the word "right" or "left" and a specific heading or rally term.
Unmask - command to position the aircraft above terrain features.
Up on - indicates the radio selected; will be followed by the position number on the ICS panel; for example, "Up on 3."
Weapons hot/cold/off - indicates weapon switches are in the ARMED, SAFE, or OFF position.
You have the controls - used as a command or announcement by the RCM relinquishing the flight controls.

Figure 6-1. Examples of standard words and phrases

TASK 1000

Participate in a crew mission briefing.

CONDITIONS: Before flight in a UH-60 helicopter or a UH-60FS, and given a crew briefing checklist.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. PC will, without error, brief the mission to all crew members using a crew briefing checklist.

2. Crew members will verbally acknowledge a complete understanding of the mission briefing.

DESCRIPTION:

1. Crew actions.

a. The PC has overall responsibility for the crew mission briefing. He may direct other crew members to perform all or part of it.

b. Crew members will direct their attention to the crew member conducting the briefing. They will address any questions to the briefer and acknowledge that they understand the assigned actions, duties, and responsibilities.

2. Procedures.

a. Brief the mission using a crew briefing checklist. Use a checklist similar to the one shown in Figure 6-2 (page 6-15).

b. Identify mission and flight requirements that will demand effective communication and proper sequencing and timing of actions by the crew members.

NOTE: Refer to TMs 1-1520-237-10/CL and local directives for additional briefing requirements.

REFERENCES:

AR 95-1
TMs 1-1520-237-10/CL
Unit SOP

1. Mission overview.
2. Flight route.
3. Weather--Departure, en route, destination, and void time.
4. Required items, mission equipment, and personnel.
5. Analysis of the aircraft.
   a. Logbook and preflight deficiencies.
   b. Performance planning.
      (1) Comparison of computed ETF/ATF with logbook.
      (2) Recomputation of PPC, if necessary.
      (3) Go/No go data.
      (4) Single engine capability - Min/Max SE IAS.
   c. Mission deviations required based on aircraft analysis.
6. Crew actions, duties, and responsibilities.

a. Transfer of flight controls.
b. Emergency actions.
(1) Mission considerations.
(2) Inadvertent IMC.
(3) Egress procedures and rendezvous point.
(4) Actions to be performed by P*, P, and NCM.

7. General crew duties.
a. Pilot on the controls - P.
(1) Fly the aircraft - primary focus outside when VMC, inside when IMC.
(2) Avoid traffic and obstacles.
(3) Cross-check systems and instruments.
(4) Monitor/transmit on radios as directed by the PC.
b. Pilot not on the controls - P.
(1) Assist in traffic and obstacle avoidance.
(2) Tune radios and set transponder.
(3) Navigate.
(4) Copy clearances, ATIS, and other information.
(5) Cross-check systems and instruments.
(6) Monitor/transmit on radios as directed by the PC.
(7) Read and complete checklist items as required.
(8) Set/adjust switches and systems as required.
(9) Announce when focused inside for more than 2-3 seconds (VMC).
c. Crew chief, medic, and other assigned crew members.
(1) Secure passengers and cargo.
(2) Assist in traffic and obstacle clearance.
(3) Perform other duties assigned by the PC.

8. Risk assessment considerations.
9. Crew members' questions, comments, and acknowledment of mission briefing.

TASK 1001

Plan a VFR flight.

CONDITIONS: Before VFR flight in a UH-60 helicopter or UH60FS and given access to weather information; NOTAMs; flight planning aids; necessary charts, forms, and publications; and weight and balance information.

STANDARDS: Appropriate common standards plus these additions/modifications:

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

2. Determine if the flight can be performed under VFR per AR 95-1, applicable FARs/host nation regulations, and local regulations and SOPs.

3. Determine the correct departure, en route, and destination procedures.

4. Select route(s) and altitudes that avoid hazardous weather conditions, do not exceed aircraft or equipment limitations and conform to VFR cruising altitudes per DOD FLIP.

5. Compute magnetic heading(s) ±5 degrees.

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

7. Determine the fuel required per AR 95-1, ±100 pounds.

8. Complete and file the flight plan per AR 95-1 and DOD FLIP.

9. Perform mission risk assessment per unit SOP.

DESCRIPTION:

1. Crew actions.

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

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

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

2. Procedures. Using appropriate military, FAA, or host-country weather facilities, obtain information about the weather. After ensuring that the flight can be completed under VFR, check NOTAMs and other appropriate sources for any restrictions that apply to the flight. Obtain navigational 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. Determine the magnetic heading, ground speed, and ETE for each leg. Compute total distance and flight time, and calculate the required fuel. Determine if the duplicate weight and balance forms in the aircraft logbook apply to the mission per AR 95-1. Verify that the aircraft weight and CG will remain within allowable limits for the entire flight. Complete the appropriate flight plan and file it 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
DOD FLIP
FAR/host-country regulations
FM 1-230
TC 1-204
TM 1-1520-237-10

TASK 1002

Plan an IFR flight.

CONDITIONS: Before IFR flight in a UH-60 helicopter or a UH-60FS and given access to weather information; NOTAMs; flight planning aids; necessary charts, forms, and publications; and weight and balance information.

STANDARDS: Appropriate common standards plus these additions/modifications:

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

2. Determine if the flight can be performed per AR 95-1 and applicable FARs/host nation regulations.

3. Determine the proper departure, en route, and destination procedures.

4. Select route(s) and altitudes that avoid hazardous weather conditions, do not exceed aircraft or equipment limitations, and conform to IFR cruising altitudes per DOD FLIP. If off-airway, determine the course(s) ±5 degrees.

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

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

7. Determine the fuel required per AR 95-1 and FM 1-240, ±100 pounds.

8. Complete and file the flight plan per AR 95-1 and the DOD FLIP.

9. Perform mission risk assessment per unit SOP.

DESCRIPTION:

1. Crew actions.

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

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

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

2. Procedures. Using appropriate military, FAA, or host-country weather facilities, obtain information about the weather. Compare destination forecast and approach minimums, and determine if an alternate airfield is required. Ensure that the flight can be completed per AR 95-1. Check the NOTAMs and other appropriate sources for any restrictions that apply to the flight. Obtain navigation charts that cover the entire flight area, and allow for changes in routing or destination that may be required because of the weather. Select the route(s) or course(s) and altitude(s) that will best facilitate mission accomplishment. When possible, select preferred routing. Determine the magnetic heading, ground speed, and ETE for each leg, to include flight to the alternate airfield if required. Compute the total distance and flight time, and calculate the required fuel. Determine if the duplicate weight and balance forms in the aircraft logbook apply to the mission per AR 95-1. Verify that the aircraft

weight and CG will remain within allowable limits for the entire flight.
Complete the appropriate flight plan and file it with the appropriate agency.

REFERENCES: Appropriate common references plus the following:
FAR/host-country regulations
FM 1-230
TM 1-1520-237-10

TASK 1003

Verify aircraft weight and balance.

CONDITIONS: Given mission cargo and passenger data and completed DD Forms 365-4 from the aircraft log book.
STANDARDS: Appropriate common standards plus verify that CG and gross weight remain within limits for the duration of the flight per TM 1-1520-237-10.
DESCRIPTION: Using the completed DD Forms 365-4 from the aircraft logbook, verify that aircraft gross weight and CG will remain within the allowable limits for the entire flight. Note gross weight and/or loading restrictions/aircraft limitations. If there is no completed DD Form 365-4 that meets mission requirements, refer to the unit weight and balance technician or TM 55-1500-342-23.

REFERENCES:
AR 95-1
TM 1-1520-237-10
TM 55-1500-342-23

△TASK 1004
Prepare a performance planning card.

CONDITIONS: Given a blank DA Form 5703-R (UH-60 Performance Planning Card), mission conditions, UH-60 engine torque factors, and aircraft basic weight.

NOTE 1: The charts in the AMCOM approved TM 1-1520-237-10, TM 1-1520-237-CL, TM 1-1520-253-10, and TM 1-1520-253-CL or the AMCOM approved performance planning software must be used for performance planning.

NOTE 2: Tabular performance data usage and values are explained at the end of the task DESCRIPTION.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Determine performance planning data necessary to complete the mission.

2. Determine when use of DA Form 5703-R is required.

3. Compute torque values ±2 percent.

4. Compute gross weight values ±500 pounds.

5. Compute fuel flow ±100 pounds per hour.

6. Compute airspeeds ±5 KIAS.

7. Correctly determine maximum torque available, maximum allowable gross weight (OGE), and GO/NO-GO (OGE) using tabular data found in the -CL.

DESCRIPTION:

1. Crew Duties. The PC will compute or direct other rated crew members to compute the aircraft performance data required to complete the mission. He will verify the computations and ensure aircraft performance meets mission requirements, and aircraft limitations will not be exceeded.

2. Procedures.

a. Determine and have available aircraft performance data required to complete the mission. DA Form 5703-R may be used as an aid to organize performance planning data required for the mission. This form will be completed, in its entirety, for the following:

(1) RL progression training, annual ATP evaluations, and when required during other training and evaluations.

(2) When the planned or actual aircraft gross weight for departure and/or arrival is within 3,000 pounds of the maximum allowable gross weight OGE or when the planned or actual gross weight is within 3,000 pounds of the maximum allowable gross weight for cruise. To determine if the DA Form 5703-R must be completed, perform the following procedures:

Step 1: DEPARTURE - Compare the maximum allowable gross weight for departure from either the -CL tabular data or appropriate -10 HOVER chart with the planned or actual aircraft gross weight.

Step 2: CRUISE – Compare the maximum allowable gross weight for cruise from the appropriate -10 CRUISE chart with the planned or actual aircraft gross weight.

Step 3: ARRIVAL - Compare the maximum allowable gross weight for arrival from either the -CL tabular data or appropriate -10 HOVER chart with the planned or actual aircraft gross weight.

NOTE 1: If the dual-engine maximum torque available exceeds a torque limit, use the tabular data equal to the torque limit, or enter the CRUISE chart at the torque limit line.

NOTE 2: If the maximum torque available line used on a CRUISE chart is to the right of the -10, Chapter 5 maximum gross weight limitation line, use the maximum gross weight limit line.

b. When a significant change in the mission's conditions occurs, recompute all affected values. A significant change is defined as any one of the following:

(1) An increase of over 10 degrees C, 2,000 feet PA, and/or 1,000 pounds gross weight.

(2) An increase or decrease of an ETF by 0.03 or more.

NOTE: An increase or decrease of .03 ETF, normally caused by inaccurate information or a change in aircraft, can significantly enhance or degrade single engine performance under certain conditions. Therefore, when the ETF is different than the planned value, an update of all affected values is required.

c. The data presented in the performance charts in the -10 are primarily derived for either a "clean" or "high drag" aircraft. When the external equipment or configuration differs significantly from the "clean" or "high drag" configuration, a drag compensation will be made. This configuration is referred to as the "alternative or external load" configuration and the appropriate drag compensation is described.

d. The procedures for determining performance planning data are the same for the UH-60A/L, UH-60Q/HH-60L and EH-60A aircraft unless specifically noted in the appropriate items.

e. DEPARTURE. (Figures 6-5 and 6-6 show the numerical sequence of each task item for completing DA Form 5703-R (front and back).

(1) PA. Record forecast maximum pressure altitude for the mission and pressure altitude for time of departure.

(2) FAT. Record forecast maximum free air temperature for the mission and free air temperature for time of departure.

NOTE: Maximum pressure altitude and temperature will be used when computing all items in the departure section except item 13. Item 13 will be computed using forecast temperature and PA at time of departure.

(3) AIRCRAFT GWT. Record planned aircraft gross weight at takeoff. This includes the aircraft basic weight, internal load, total fuel, and when applicable, ESSS stores (exclude sling load).

(4) FUEL WEIGHT. Record total planned fuel weight (internal and/or external) at takeoff.

(5) STORES WEIGHT. Record the planned jettisonable weight of the ESSS stores.

(6) SLING WEIGHT. Record the planned weight of the sling load.

(7) ATF/ETF. Record the ATF and ETFs in the appropriate blocks.

(8) TR. Use the aircraft TORQUE FACTOR chart to compute torque ratios as described below.

Step 1: Enter the appropriate aircraft TORQUE FACTOR chart on the left at the appropriate temperature. Move right to the ATF or ETF.

Step 2: Move straight down to the bottom of the chart, note the TORQUE RATIO ~ TR. Record the **TR**.

(9) MAX TORQUE AVAILABLE. Use the appropriate MAXIMUM TORQUE AVAILABLE chart to compute engine specification torque available as described below.

NOTE 1: The maximum torque available is also referred to as INTERMEDIATE RATED POWER (IRP) – 10 OR 30 MINUTE LIMIT.

NOTE 2: Certain temperature and pressure altitude combinations will exceed -10, Chapter 5 torque limitations. This item represents actual maximum torque available values. During aircraft operations, -10, Chapter 5 torque limitations shall not be exceeded.

(a) T700-GE-700 engines.

Step 1: Enter the MAXIMUM TORQUE AVAILABLE chart at the appropriate temperature then move right to the appropriate PRESSURE ALTITUDE ~ 1000 FT.

Step 2: Move down and read the SPECIFICATION TORQUE AVAILABLE PER ENGINE ~ %.

Step 3: If the ATF or ETF is less than 1.0, multiply the specification torque by the torque ratio to obtain maximum torque available. An alternate method is to continue down to the TORQUE RATIO, item 8. Move left to read the maximum TORQUE AVAILABLE ~ % per engine. Record **MAX TORQUE AVAILABLE**.

NOTE: Adjust maximum torque available as required for planned use of engine anti-ice and/or cockpit heater according to the -10.

(b) T700-GE-701C engines.

NOTE 1: The maximum torque available – 2.5 minute limit is also referred to as SINGLE-ENGINE CONTINGENCY POWER – 2.5-MINUTE LIMIT.

Step 1: Enter the MAXIMUM TORQUE AVAILABLE – 10-MINUTE LIMIT chart for dual-engine and 2.5-MINUTE LIMIT chart for single-engine at the appropriate FREE AIR TEMPERATURE (FAT) ~ °C.

Step 2: Move right to the appropriate PRESSURE ALTITUDE ~ 1000 FT. line then move down and read the TORQUE AVAILABLE PER ENGINE ~ %.

Step 3: If the ATF or ETF is less than 1.0, multiply the SPECIFICATION TORQUE by the TORQUE RATIO to obtain maximum torque available.

Step 4: An alternate method is to enter the bottom of the TORQUE CONVERSION chart at the TORQUE AVAILABLE PER ENGINE (SPECIFICATION TORQUE) ~ %. Move up to the torque ratio, item 8, then left to read ACTUAL TORQUE AVAILABLE ~ %. Record **MAX TORQUE AVAILABLE**.

NOTE 2: Adjust the maximum torque available as required for planned use of engine anti-ice and/or cockpit heater according to the -10.

(10) MAX ALLOWABLE GWT OGE / IGE. Use the appropriate HOVER chart to compute maximum allowable gross weight for OGE/IGE as described below. Annotate the computed maximum allowable gross weight OGE/IGE or the maximum gross weight per -10, Chapter 5, whichever is less.

NOTE: If OGE capability does not exist, the MAX HOVER HEIGHT IGE, item 12, must be computed.

(a) MAX ALLOWABLE GWT OGE / …

Step 1: Enter the HOVER chart at the TORQUE PER ENGINE ~ % (OGE) at the DUAL-ENGINE MAX TORQUE AVAILABLE, item 9, then move right to the GROSS WEIGHT ~ 1000 LB chart. If the dual-engine maximum torque available exceeds transmission torque limits, use the DUAL ENGINE TRANS LIMIT line to compute the maximum allowable gross weight OGE.

Step 2: Reenter the HOVER chart at the appropriate FREE AIR TEMP ~ °C and move right to the appropriate PRESSURE ALTITUDE ~ 1000 FT, then move down to the GROSS WEIGHT ~ 1000 LB chart. Read the maximum allowable gross weight OGE at the intersection of this step and step 1 above. Record the **MAX ALLOWABLE GWT OGE / …**.

(b) MAX ALLOWABLE GWT … / IGE.

Step 1: Enter the HOVER chart at the TORQUE PER ENGINE ~ % (IGE) at the DUAL-ENGINE MAX TORQUE AVAILABLE, item 9, then move up to the desired IGE WHEEL HEIGHT ~ FT (normally the 10-ft line), then move right to the GROSS WEIGHT ~ 1000 LB chart. If the dual-engine maximum torque available exceeds transmission torque limits, use the DUAL ENGINE TRANS LIMIT line to compute the maximum allowable gross weight IGE.

Step 2: Reenter the HOVER chart at the appropriate FREE AIR TEMP. ~ °C and move right to the appropriate PRESSURE ALTITUDE ~ 1000 FT then move down to the GROSS WEIGHT ~ 1000 LB chart. Read the maximum allowable gross weight IGE at the intersection of this step and step 1 above. Record the **MAX ALLOWABLE GWT … / IGE**.

(11) GO/NO-GO TORQUE OGE / IGE. Use the appropriate HOVER chart as described below.

(a) OGE. Use maximum allowable gross weight OGE, item 10.

(b) IGE. Use maximum allowable gross weight IGE, item 10.

NOTE : GO/NO-GO is computed using the maximum forecast pressure altitude and temperature for the mission. When the actual temperature is less than maximum, the torque required to hover at a given gross weight is less. To ensure that structural limits are not exceeded, or that OGE capabilities exist at maximum forecast temperature, reduce GO/NO-GO by 1% for each 10 °C that actual temperature is less than maximum forecast temperature.

Step 1: Enter the chart at the appropriate FREE AIR TEMP ~ °C.

Step 2: Move right to the appropriate PRESSURE ALTITUDE ~ 1000 FT.

Step 3: Move down to the weight(s) computed for item 10.

Step 4: Move left to the 10-foot hover line (or WHEEL HEIGHT ~ FT that will be used to check the GO/NO-GO).

Step 5: Move down to read the GO/NO-GO torque value(s). Record the **GO/NO-GO TORQUE OGE / IGE**.

(12) MAX HOVER HEIGHT IGE. If OGE capability does not exist, use the appropriate HOVER chart to compute the MAX HOVER HEIGHT IGE, as described below.

Step 1: Enter the HOVER chart at the appropriate FREE AIR TEMP ~ °C and move right to the appropriate PRESSURE ALTITUDE ~ 1000 FT, then move down to the take-off GW ~ 1000 LB, item 3 (plus sling load weight, item 6, if applicable), then move left to the WHEEL HEIGHT ~ FT lines.

Step 2: Reenter the bottom of the HOVER chart at the TORQUE PER ENGINE ~ % (IGE) at the DUAL-ENGINE MAX TORQUE AVAILABLE, item 9, then up to the intersection from step 1 above. Interpolate hover height as required. Record the **MAX HOVER HEIGHT IGE**.

(13) PREDICTED HOVER TORQUE. Use the appropriate HOVER chart as described below for torque required to hover. Use AIRCRAFT GWT, item 3, and current PA, item 1, and FAT, item 2.

(a) Predicted hover torque (DUAL-ENGINE). Compute the torque the same as for item 11 above using the AIRCRAFT GWT, item 3, instead of the MAX ALLOWABLE GWT. Record **DUAL-ENGINE PREDICTED HOVER TORQUE**.

(b) Predicted hover torque (SINGLE-ENGINE). Double the PREDICTED HOVER TORQUE value that was computed in step (a) above. If the value exceeds the appropriate MAX TORQUE AVAILABLE, item 9, single-engine, record NA in the appropriate block(s). Record **SINGLE-ENGINE PREDICTED HOVER TORQUE**.

(14) MIN SE - IAS - W/O STORES / W/STORES. Use the appropriate CRUISE chart for the minimum single-engine airspeed with external stores and without external stores as described below.

NOTE 1: If the aircraft will be operating without external stores, record NA in the w/stores block.

NOTE 2: External stores are defined as a sling load, ESSS wing stores, or both.

Step 1: Enter the bottom of the CRUISE chart at one-half the SINGLE-ENGINE MAX TORQUE AVALABLE, item 9, for the low ETF engine, but no more than one-half of the TRANSMISSION TORQUE LIMIT.

Step 2: Move up to the first intersection of aircraft gross weight (without external stores). Read left or right for the IAS ~ KTS. Record **MIN SE – IAS – W/O STORES /….**

NOTE 3: If aircraft will be operating with external stores, proceed with steps 3 and 4 below.

Step 3: Enter the bottom of the appropriate CRUISE chart at one-half the SINGLE-ENGINE MAX TORQUE AVAILABLE, item 9, for the low ETF engine, but no more than one-half of the TRANSMISSION TORQUE LIMIT.

Step 4: Move up to the first intersection of aircraft gross weight (with external stores). Read left or right for the IAS ~ KTS. Record **MIN SE – IAS – … / W/STORES**.

(15) ZERO FUEL WEIGHT: Use the appropriate HOVER chart from the -CL to compute the adjusted ZERO FUEL WEIGHT as described below.

NOTE 1: The zero fuel weight on the DD Form 365-4 is computed using standard, average or estimated weight for personnel, equipment and fuel. Actual weights may vary greatly from those on the DD Form 365-4. It is also unrealistic to predict all possible configurations that may be encountered on every mission. As a result, it may be necessary to compute an adjusted ZERO FUEL WEIGHT. The method to determine adjusted ZERO FUEL WEIGHT or to validate the DD Form 365-4 zero fuel weight is described below.

Step 1: Note free air temperature, pressure altitude, and total indicated fuel weight.

Step 2: While at a hover, note wheel height and hover torque.

Step 3: Enter the HOVER chart at the noted FREE AIR TEMP ~ °C. Move right to the noted PRESSURE ALTITUDE ~ 1000 FT then down to the GROSS WEIGHT ~ 1000 LB chart.

Step 4: Reenter the HOVER chart at the TORQUE PER ENGINE ~ % (IGE) at the noted hover torque. Move up to the WHEEL HEIGHT ~ FT to the noted hover height then move right to the intersection of step 3 above. Note aircraft gross weight.

Step 5: Subtract the noted total indicating fuel weight from the gross weight computed in step 4 above. Record the adjusted **ZERO FUEL WEIGHT**.

NOTE 2: Although data needed to compute ZERO FUEL WEIGHT is noted at a hover, the calculation may be made on the ground or, if not practical, shortly after takeoff or level off.

(16) REMARKS: Record appropriate mission information such as drag factors, fuel requirements, and GO/NO-GO for sling loads.

NOTE: The GO/NO-GO TORQUE for sling loads is determined by using the same process as item 11 above, using the MAX ALLOWABLE GWT OGE / … and a hover height that suspends the load approximately 10 feet AGL.

f. CRUISE.

(1) PA. Record planned cruise pressure altitude.

(2) FAT. Record forecast temperature at the planned cruise pressure altitude.

(3) TR. Use the TORQUE FACTOR chart to compute torque ratios, if required. The torque ratio is computed the same as item 8, DEPARTURE data, using cruise temperature instead of departure temperature.

NOTE: The maximum torque available values found in the cruise charts of the -10 and the tabular performance data of the -CL are adjusted for torque ratio.

(4) MAX TORQUE AVAILABLE. Compute maximum torque available for dual- and single-engine the same as item 9, DEPARTURE data, using cruise temperature and pressure altitude.

NOTE 1: Adjust as required for planned use of engine anti-ice and/or cockpit heater according to the -10.

NOTE 2: Maximum torque available can be derived from the CRUISE chart by referencing the TORQUE AVAILABLE ~ 30-MINUTE ATF 1.0 and/or 0.9 line, if shown. If the ATF or ETF is between these values, interpolation is required. The maximum torque available – 30-minute limit for the T-700 engine and the 10-minute limit for the T-701C can also be derived from the tabular data in the -CL. If the ATF is between 1.0 and 0.9, interpolation is required.

(5) CT (critical torque). Record the value of one half the maximum torque available of the engine with the lowest ETF.

NOTE: CT is the dual-engine torque value, which when exceeded, may not allow the aircraft to maintain % RPM R within normal limits under single-engine operations in the same flight conditions.

WARNING: During dual-engine flight, conditions that require torque settings greater than the critical torque indicates the pilot is operating outside the aircraft low ETF single-engine capability. If operating dual-engine above the CT and an engine fails, malfunctions or must be shut down; the pilot, in these circumstances, must immediately adjust torque, airspeed and or gross weight to establish single-engine capability.

(6) MIN / MAX Vh – IAS (DUAL-ENGINE). Use the appropriate CRUISE chart to compute the minimum/maximum Vh indicated airspeeds as described below.

(a) Clean and high drag configuration.

Step 1: Enter the bottom of the CRUISE chart at the MAX TORQUE AVAILABLE, item 4, CRUISE data.

Step 2: Move up to the first intersection of AIRCRAFT GWT, item 3, DEPARTURE data. Read left or right for minimum IAS ~ KTS. Record the **DUAL-ENGINE MIN / … Vh – IAS**. If the maximum torque available line is right of the gross weight line, record 0 for the **MIN / … Vh - IAS**.

Step 3: Continue up to the second intersection of AIRCRAFT GWT, item 3, DEPARTURE data. Read left or right for maximum Vh IAS ~ KTS. Record the **DUAL-ENGINE ... / MAX Vh – IAS**.

NOTE: If the maximum torque available line is to the left of (does not intersect) the AIRCRAFT GWT, item 3, DEPARTURE data, the aircraft cannot maintain dual-engine level flight for the conditions. Item 18 must be computed and a new cruise altitude selected.

(b) Alternative or external load configuration.

NOTE 1: For alternative or external load configurations, refer to the -10, Chapter 7, Section VI, DRAG. Determine and add together the appropriate Drag Multiplying Factors.

NOTE 2: The torque change to compensate for drag (alternative or external load configuration) at minimum Vh IAS is often negligible and not computed. The dual-engine maximum Vh indicated airspeed is adjusted for alternate or external load configuration as follows:

Step 1: Enter the CRUISE chart at maximum Vh IAS ~ KTS, (a) step 3 above, then left or right to the curved dashed line then move up to read Δ TRQ ~ % FOR DRAG AREA OF 10 SQ FT of ΔF.

Step 2: Multiply the Δ TRQ times the drag multiplying factor. Subtract the result from the maximum torque available used initially in (a) step 1 above.

Step 3: Reenter the bottom of the CRUISE chart at the adjusted torque value and move up to the second intersection of AIRCRAFT GWT, item 3, DEPARTURE data. Read left or right for maximum Vh IAS. Record the adjusted **DUAL-ENGINE .../MAX Vh – IAS**.

NOTE 3: If the adjusted maximum torque available line is to the left of (does not intersect) the AIRCRAFT GWT, item 3, DEPARTURE data, the aircraft cannot maintain dual-engine level flight for the conditions. Item 18 must be computed and a new cruise altitude selected.

(7) CRUISE - IAS / TAS (DUAL-ENGINE). Record planned **CRUISE – IAS / …** (inner IAS ~ KTS scale). Enter the CRUISE chart at cruise IAS and move laterally to the outer TRUE AIRSPEED ~ KTS scale. Record **DUAL-ENGINE CRUISE - … / TAS**.

(8) CRUISE/CONTINUOUS TORQUE (DUAL-ENGINE). Use the appropriate CRUISE chart to compute the torque required for cruise and continuous torque available as described below.

NOTE: The continuous torque available is also referred to as MAXIMUM CONTINUOUS POWER (MCP).

(a) Clean and high drag configuration.

Step 1: Enter the CRUISE chart at the selected cruise IAS in item 7 above. Move left or right as appropriate to the aircraft GW ~ 1000 LB, item 3 (plus sling load weight, item 6, if applicable), DEPARTURE data.

Step 2: Move down to the TORQUE PER ENGINE ~ % line to read the CRUISE torque. Record the **DUAL-ENGINE CRUISE / … TORQUE**.

Step 3: Renter the CRUISE chart at the selected cruise IAS in item 7 above. Move left or right as appropriate to the TORQUE AVAILABLE - CONTINOUS line.

Step 4: Move straight down (do not follow the slant of the line) to the TORQUE PER ENGINE ~ % to read the CONTINUOUS torque. Record the **DUAL-ENGINE … / CONTINUOUS TORQUE**.

NOTE 1: If the selected CRUISE ~ IAS line is below the depicted TORQUE AVAILABLE – CONTINOUS line, use the torque value indicated by the lowest extreme of the TORQUE AVAILABLE ~ CONTINUOUS line.

NOTE 2: Adjust CRUISE / CONTINUOUS TORQUE for planned use of engine anti-ice and/or heater.

(b) Alternative or external load configuration.

Step 1: Enter the appropriate CRUISE chart at the IAS in item 7 above, then move left or right as appropriate to the curved dashed line. Move up to read the Δ TRQ ~ % FOR DRAG AREA OF 10 SQ FT OF ΔF.

Step 2: Multiply the Δ TRQ ~ % by the drag multiplying factor.

Step 3: Add or subtract the value in step 2 to/from the uncorrected clean or high drag cruise/continuous torque values in (a) steps 2 and 4 above (do not exceed the dual-engine transmission torque limit). Record the adjusted **CRUISE / CONTINUOUS TORQUE**.

NOTE: If the adjusted torque value exceeds the dual-engine transmission torque limit, use the dual-engine transmission torque limit and adjust cruise airspeed.

(9) CRUISE FUEL FLOW (DUAL-ENGINE).

(a) Cruise chart method. Use the appropriate CRUISE chart.

Step 1: Enter the bottom of the chart at the cruise torque value computed in item 8 above.

Step 2: Move up to TOTAL FUEL FLOW ~ 100 LB/HR and read cruise fuel flow. Record the **DUAL-ENGINE CRUISE FUEL FLOW**.

NOTE: Adjust as required for planned use of engine anti-ice and cockpit heater according to the -10.

(b) Engine fuel flow chart method. Use the SINGLE/DUAL-ENGINE FUEL FLOW chart.

Step 1: Enter the chart at the INDICATED TORQUE PER ENGINE ~ % for the cruise torque value computed in item 8 above.

Step 2: Move right to the cruise PRESSURE ALTITUDE ~ 1000 FT.

Step 3: Move up to the DUAL-ENGINE FUEL FLOW ~ LB/HR line and read cruise fuel flow. Record the DUAL ENGINE **CRUISE FUEL FLOW**.

NOTE: Adjust as required for FAT and/or planned use of engine anti-ice and cockpit heater according to the -10.

(10) MAX END - IAS / TORQUE and **MAX RANGE - IAS / TORQUE.** Use the appropriate CRUISE chart to compute maximum endurance indicated airspeed/torque and maximum range indicated airspeed/torque as described below.

(a) Clean and high drag configuration.

Step 1: Enter the bottom of the appropriate CRUISE chart at AIRCRAFT GWT, item 3, DEPARTURE data. Move up along the gross weight line to the intersection of the gross weight line and the MAX END AND R/C line. Move left or right as required to the IAS ~ KTS value then read maximum endurance indicated airspeed. Record **MAX END – IAS/….** Move down to the TORQUE PER ENGINE ~ % line, then read torque for the maximum endurance indicated airspeed. Record **MAX END - … / TORQUE**.

Step 2: Continue up along the gross weight line to the intersection of the gross weight line and the MAX RANGE line. Move left or right as required to the IAS ~ KTS value, then read maximum range indicated airspeed. Record **MAX RANGE – IAS / ….** Move down to the TORQUE PER ENGINE ~ % line, then read torque for the maximum range indicated airspeed. Record **MAX RANGE - … / TORQUE**.

(b) Alternative or external load configuration.

NOTE 1: The torque change to compensate for drag (alternative or external load configuration) at MAX END – IAS is often negligible and not computed.

NOTE 2: Maximum range airspeed is adjusted for alternative or external load configurations as follows:

Step 1: Insert the indicated change in flat plate drag ($\Delta F\ ft^2$) into the formula found in the -10, Chapter 7, Section IV, ($6\ Kts/10\ ft^2 X \Delta F\ ft^2 = N\ Kts$) to derive the change in maximum range IAS. See example in the -10, Chapter 7, Section IV.

Step 2: Subtract the IAS change in (b) step 1 above from (a) step 2 above. Record the adjusted **MAX RANGE – IAS / ….**

(11) MAX R/C - IAS / TORQUE. Use the MAX END – IAS, item 10 above, and desired torque setting as described below.

Step 1: Use the MAX TORQUE AVAILABLE DUAL-ENGINE, item 4, CRUISE data. Record this value for **MAX R/C - … / TORQUE.** Subtract the torque value found in MAX END - … / TORQUE, item 10 above from the MAX R/C - … / TORQUE to find the TORQUE INCREASE – PER ENGINE - % TRQ.

Step 2: Use the CLIMB/DESCENT charts in the -10, Chapter 7, Section VII. Enter the bottom of the CLIMB/DESCENT chart for clean or high drag, as appropriate, at the TORQUE INCREASE – PER ENGINE - % TRQ using the value from Step 1 above.

Step 3: Move up to the GROSS WEIGHT ~ 1000 LB line from item 3 DEPARTURE data, then move left to read the RATE OF CLIMB ~ FT/MIN.

Step 4: Use the AIRSPEED SYSTEM CORRECTIONS charts in the -10, Chapter 7, Section IX. Enter the appropriate AIRSPEED SYSTEM CORRECTION chart for clean or high drag at the MAX END – IAS / … from item 10 above. Move up to the appropriate segmented line for the rate of climb value derived from Step 3 above (R/C GREATER OR LESS THAN 1400 FT/MIN).

Step 5: Move left to read the CORRECTION TO ADD ~ KNOTS. Add or subtract this value to/from the MAX END – IAS / … item 10. Record the resultant **MAX R/C – IAS / ….**

(12) MAX ALLOWABLE GWT and OPTIMUM IAS AT MAX ALLOWABLE GWT (DUAL-ENGINE). Use the appropriate CRUISE chart to compute the maximum allowable gross weight and optimum indicated airspeed at maximum allowable gross weight as described below.

(a) Clean and high drag configuration.

Step 1: Enter the bottom of the CRUISE chart at the MAX TORQUE AVAILABLE, item 4, CRUISE data.

Step 2: Move up to the intersection of MAXIMUM END AND R/C line then read the indicating maximum gross weight. Record **DUAL-ENGINE MAX ALLOWABLE GWT**. Read left or right for optimum indicated airspeed (IAS ~ KTS) at maximum allowable gross weight. Record **DUAL-ENGINE OPTIMUM IAS AT MAX ALLOWABLE GWT**. If the maximum torque available line is right of the gross weight lines, enter maximum gross weight according to the -10, Chapter 5 limits then read left or right from the respective value for optimum indicated airspeed at that maximum allowable gross weight.

(b) Alternative or external load configuration.

NOTE: The dual-engine maximum allowable gross weight and optimum indicated airspeed at maximum allowable gross weight are adjusted for alternate or external load configuration as follows.

Step 1: Enter the CRUISE chart at the optimum indicated airspeed at maximum allowable gross weight, (a) step 2 above, then read left or right to the curved dashed line. Move up to read Δ TRQ ~ % FOR DRAG AREA OF 10 SQ FT of ΔF.

Step 2: Multiply the Δ TRQ times the drag multiplying factor. Subtract the result from the maximum torque available value used initially in (a) step 1 above.

Step 3: Reenter the bottom of the CRUISE chart at the adjusted torque value then move up to the intersection of MAX END AND R/C line. Read maximum gross weight and optimum IAS at maximum allowable gross weight. Record the adjusted **DUAL-ENGINE MAX ALLOWABLE GWT** and **OPTIMUM IAS AT MAX ALLOWABLE GWT**. If the adjusted torque value is right of the gross weight lines, enter maximum gross weight according to the -10, Chapter 5 limits then read left or right from the respective value for optimum indicated airspeed at that maximum allowable gross weight.

(13) MIN / MAX Vh – IAS (SINGLE-ENGINE). Use the appropriate CRUISE chart to compute the minimum/maximum Vh indicated airspeeds single-engine, as described below.

(a) Clean and high drag configuration.

Step 1: Enter the bottom of the CRUISE chart at one-half the maximum torque available for the low ETF engine, item 4 above, but no more than one-half of transmission torque limit single-engine.

Step 2: Move up to the first intersection of the AIRCRAFT GWT, item 3, DEPARTURE data then read left or right for minimum Vh IAS ~ KTS. Record the **SINGLE-ENGINE MIN / … Vh – IAS**.

Step 3: Continue up to the second intersection of the AIRCRAFT GWT, item 3, DEPARTURE data then read left or right for maximum Vh IAS. Record the **SINGLE-ENGINE … / MAX Vh – IAS**.

NOTE: If the maximum torque available line is to the left of (does not intersect) the AIRCRAFT GWT, item 3, DEPARTURE data, the aircraft cannot maintain single-engine level flight for the conditions. Item 18 must be computed. As fuel is burned, single-engine capability during the flight may be possible.

(b) Alternative or external load configuration.

NOTE 1: The torque change to compensate for drag (alternative or external load configuration) at minimum Vh IAS is often negligible and not computed.

NOTE 2: The maximum Vh indicated airspeed, single-engine, is adjusted for alternate or external load configuration as follows:

Step 1: Enter the CRUISE chart at maximum Vh IAS ~ KTS, (a) step 3, above, then move left or right to the curved dashed line. Move up to read Δ TRQ ~ % FOR DRAG AREA OF 10 SQ FT of ΔF.

Step 2: Multiply the Δ TRQ times the drag multiplying factor. Subtract the result from the maximum torque available value used initially in (a) step 1 above.

Step 3: Reenter the bottom of the CRUISE chart at one-half the adjusted torque value and move up to the second intersection of the AIRCRAFT GWT, item 3, DEPARTURE data. Read left or right for maximum Vh IAS. Record the adjusted **SINGLE-ENGINE .../MAX Vh – IAS**.

(14) CRUISE SPEED – IAS / TAS (SINGLE-ENGINE). Select an IAS that falls within the range of MIN / MAX Vh – IAS, item 13 above. Convert to TAS as described in item 7 above.

NOTE: Do not confuse single-engine cruise speed with emergency single-engine airspeed. The emergency single-engine airspeed is the speed used immediately following an emergency that requires adjustment to a single-engine airspeed. Single-engine cruise speed and associated data is used in the pre-mission planning process. In the event an engine fails, malfunctions or must be shut down, and single-engine operations are possible but landing is not practical (such as over water, jungle, densely forested areas, mountainous terrain or other impractical landing areas), the single-engine cruise speed may be used after establishing emergency single-engine speed when required to reach the intended landing area. The single-engine cruise speed may, in some instances, equal the emergency single-engine speed.

(15) CRUISE/CONTINUOUS TORQUE (SINGLE-ENGINE). Use the appropriate CRUISE chart to compute torque required for cruise and continuous torque (single-engine), as described below.

(a) Clean and High Drag configuration.

Step 1: Enter the CRUISE chart at the selected single-engine cruise IAS, item 14 above. Move left or right as appropriate to the aircraft GW ~ 1000 LB, item 3, DEPARTURE data.

Step 2: Move down to the TORQUE PER ENGINE ~ % line to read the CRUISE torque, then double the torque value. Record the **SINGLE-ENGINE CRUISE/… TORQUE**.

Step 3: Reenter the CRUISE chart at the selected CRUISE – IAS in item 14 above. Move left or right as appropriate to the TORQUE AVAILABLE - CONTINOUS line.

Step 4: Move straight down (do not follow the slant of the line) to the TORQUE PER ENGINE ~ % to read the CONTINUOUS torque. Record the **SINGLE-ENGINE …/CONTINUOUS TORQUE**. .

NOTE 1: If the selected CRUISE ~ IAS line is below the depicted TORQUE AVAILABLE – CONTINOUS line, use the torque value indicated by the lowest extreme of the TORQUE AVAILABLE ~ CONTINUOUS line.

NOTE 2: Adjust CRUISE / CONTINUOUS TORQUE for planned use of engine anti-ice and/or heater.

(b) Alternative or external load configuration.

Step 1: Enter the appropriate CRUISE chart at the selected single-engine cruise IAS in item 14 above the move left or right to the curved dashed line. Move up to read the Δ TRQ ~ % FOR DRAG AREA OF 10 SQ FT OF ΔF.

Step 2: Multiply the Δ TRQ ~ % by the drag multiplying factor.

Step 3: Add or subtract the value in step 2 to/from the uncorrected clean or high drag cruise/continuous torque values in (a) steps 2 and 4 above, then double the torque value (do not exceed the single-engine transmission torque limit). Record the adjusted **SINGLE-ENGINE CRUISE / CONTINUOUS TORQUE**.

NOTE: If the adjusted torque value exceeds the single-engine transmission torque limit, use the single-engine transmission torque limit and adjust cruise airspeed.

(16) CRUISE FUEL FLOW (SINGLE-ENGINE).

(a) Cruise chart method. Use the appropriate CRUISE chart.

Step 1: Enter the bottom of the chart at the torque value computed in item 15 above.

Step 2: Move up to TOTAL FUEL FLOW ~ 100 LB/HR and read the cruise fuel flow. Divide the cruise fuel flow value in half. Record the **SINGLE-ENGINE CRUISE FUEL FLOW**.

NOTE: Adjust as required for planned use of engine anti-ice and cockpit heater according to the -10.

(b) Engine fuel flow chart method. Use the SINGLE/DUAL-ENGINE FUEL FLOW chart.

Step 1: Enter the chart at the INDICATED TORQUE PER ENGINE ~ % for the cruise torque value computed in item 15 above.

Step 2: Move right to the cruise PRESSURE ALTITUDE ~ 1000 FT.

Step 3: Move down to the SINGLE-ENGINE FUEL FLOW ~ LB/HR line and read fuel flow value. Record the **SINGLE-ENGINE CRUISE FUEL FLOW**.

NOTE: Adjust as required for FAT and/or planned use of engine anti-ice and cockpit heater according to the -10.

(17) MAX ALLOWABLE GWT and OPTIMUM IAS AT MAX ALLOWABLE GWT (SINGLE-ENGINE). Use the appropriate CRUISE chart to compute the maximum allowable gross weight, and optimum indicated airspeed at maximum allowable gross weight, single-engine, as described below.

(a) Clean and high drag configuration.

Step 1: Enter the bottom of the CRUISE chart at one-half the SINGLE-ENGINE MAX TORQUE AVAILABLE, item 4, CRUISE data, for the low ETF engine, but no more than one-half of transmission torque limit single-engine.

Step 2: Move up to the intersection of MAX END AND R/C line then read the indicating maximum allowable gross weight. Record the **SINGLE-ENGINE MAX ALLOWABLE GWT**. Read left or right for optimum IAS ~ KTS at maximum allowable gross weight. Record the **SINGLE-ENGINE OPTIMUM IAS AT MAX ALLOWABLE GWT**.

NOTE: If the torque used does not intersect aircraft gross weight, the aircraft cannot maintain single-engine level flight for the conditions. Item 18 must be computed. As fuel is burned, single-engine capability during the flight may be possible.

(b) Alternative or external load configuration.

NOTE 1: The single-engine maximum allowable gross weight and optimum indicated airspeed at maximum allowable gross weight are adjusted for alternate or external load configuration as follows:

Step 1: Enter the CRUISE chart at the optimum indicated airspeed at maximum allowable GWT, step 2 above. Read left or right to the curved dashed line then move up to read Δ TRQ ~ % FOR DRAG AREA OF 10 SQ FT of ΔF.

Step 2: Multiply the Δ TRQ times the drag multiplying factor. Subtract the result from the maximum torque available value used initially in (a) step 1 above.

Step 3: Reenter the bottom of the CRUISE chart at one-half the adjusted torque value then move up to the intersection of MAX END AND R/C line. Read maximum allowable gross weight and optimum IAS at maximum allowable gross weight. Record the adjusted **SINGLE-ENGINE MAX ALLOWABLE GWT** and **OPTIMUM IAS AT MAX ALLOWABLE GWT**.

NOTE 2: If the adjusted torque value does not intersect the AIRCRAFT GWT, item 3, DEPARTURE data, the aircraft cannot maintain single-engine level flight for the conditions. Item 18 must be computed. As fuel is burned, single-engine capability during the flight may be possible.

(18) MAX ALTITUDE – MSL. When cruise flight, dual and/or single-engine, is not possible at the planned cruise pressure altitude, item 1, CRUISE data, use the appropriate CRUISE chart to compute the maximum altitude MSL as described below.

NOTE: Several different cruise charts may be referenced when selecting an optimum maximum cruise altitude, using a variety of temperature, altitude, aircraft gross weight and cruise IAS combinations.

(a) Dual-engine.

Step 1: Enter the appropriate cruise chart at the maximum torque available for that chart. Move up to the second intersection of the aircraft gross weight, item 3, DEPARTURE data.

Step 2: Move left or right to read the IAS ~ KTS. If the indicated IAS ~ KTS is less than the planned cruise IAS, adjust planned temperature, altitude, IAS and/or gross weight combinations to find a suitable cruise altitude. Record the **DUAL-ENGINE MAX ALTITUDE – MSL**.

(b) Single-engine.

NOTE 1: When the capability to maintain level flight after an engine failure or malfunction is not possible, continued flight may be possible by descending to a lower pressure altitude. Adjust to the appropriate maximum endurance indicated airspeed and adjust collective to the maximum torque available to attain minimum rate of descent as required.

Step 1: Enter the appropriate CRUISE chart at one half of the SINGLE-ENGINE MAX TORQUE AVAILABLE, item 4, CRUISE data, of the lowest ETF engine.

Step 2: Move up until intersecting the MAX END AND R/C line and interpolate the maximum gross weight. If the interpolated maximum gross weight is less than the aircraft gross weight, item 3, DEPARTURE data, progressively use lower altitude/temperature combination CRUISE charts until interpolated gross weight is at or greater than the aircraft gross weight. Record the **SINGLE-ENGINE MAX ALTITUDE – MSL**.

WARNING: If allowable altitude/temperature combination cruise charts do not yield a gross weight greater than/or equal to the AIRCRAFT GWT, item 3, DEPARTURE data, level flight is not possible. Record NA in item 18.

NOTE 2: Changes in maximum torque available due to changes in pressure altitude and temperature may be derived from the -CL tabular performance data.

(19) EMERGENCY SE – IAS. This value is the emergency single-engine airspeed based on the mission and briefed to the crew for the purpose of crew coordination. This airspeed is selected from the MIN / MAX Vh - IAS range computed in item 13, CRUISE data and is used immediately following an emergency that requires adjustment to a single-engine airspeed. When an aircraft does not have single-engine capability, the MAX END - IAS, item 10, or the OPTIMUM IAS AT MAX ALLOWABLE GWT, item 17, as appropriate, should be briefed as the emergency single-engine airspeed.

NOTE 1: Normally only one EMERGENCY SE – IAS is selected. However, when the MIN / MAX Vh – IAS range, item 13, is wide, the crew may select two emergency single engine airspeeds, one slow and one fast based on mission profile, modes of flight, environmental conditions or other factors.

NOTE 2: There is no power margin available when operating single-engine at the MIN / MAX Vh - IAS, item 13. These airspeeds are computed using the maximum torque available single-engine for the lowest ETF engine. It is not recommended that the aircraft be flown at airspeeds that require maximum power for continued single-engine flight.

(20) MAX ANGLE. Use the AIRSPEED FOR ONSET OF BLADE STALL chart in the -10, Chapter 5, to compute the maximum bank angle for the planned cruise IAS as described below.

Step 1: Enter the chart at the cruise PRESSURE ALTITUDE ~ 1000 FT. Move right to the cruise temperature FAT °C.

Step 2: Move down to the aircraft GROSS WEIGHT ~ 1000 LBS, item 3 (plus sling load weight, item 6, if applicable), DEPARTURE data then move left to the ANGLE OF BANK ~ DEG chart.

Step 3: Reenter the chart at the INDICATED AIRSPEED ~ KTS at the planned cruise airspeed, item 7 above, then move up to the ANGLE OF BANK ~ DEG chart. Record derived **MAX ANGLE** or 60° whichever is less.

(21) Vne - IAS. Use the appropriate AIRSPEED OPERATING LIMITATIONS chart of the -10, Chapter 5, to compute the velocity not to exceed as described below.

Step 1: Enter the chart at the cruise FREE AIR TEMPERATURE ~ °C. Move right to the cruise PRESSURE ALTITUDE ~ FT.

Step 2: Move down to the aircraft GROSS WEIGHT ~ LBS, item 3 (plus sling load weight, item 6, if applicable), DEPARTURE data. If the COMPRESSIBILITY LIMITS ~ FAT or the MACH LIMIT dashed temperature line (-10 to -50 °C) is reached prior to the aircraft GROSS WEIGHT ~ LBS, stop there.

Step 3: Move left to the MAXIMUM INDICATED AIRSPEED (VNE) ~ KNOTS line for the Vne value. Record **Vne-IAS**.

g. ARRIVAL. Complete this section if arrival conditions at destination differ significantly from departure conditions as defined in paragraph 2b above.

(1) PA. Record forecast pressure altitude for time of arrival. If unavailable, use maximum forecast pressure altitude for the mission.

(2) FAT. Record forecast temperature for time of arrival. If unavailable, use maximum forecast temperature for the mission.

(3) LANDING GWT. Record the estimated gross weight for arrival.

(4) TR. Compute the torque ratios for dual- and single-engine the same as item e(8), DEPARTURE data, using arrival temperature and pressure altitude.

(5) MAX TORQUE AVAILABLE. Compute maximum torque available for dual- and single-engine the same as item e(9), DEPARTURE data, using arrival forecast pressure altitude and temperature.

NOTE 1: Adjust as required for planned use of engine anti-ice and/or cockpit heater according to the -10.

NOTE 2: This information can also be derived from the tabular performance data in the -CL.

(6) PREDICTED HOVER TORQUE. Compute the predicted hover torque the same as item e(13), DEPARTURE data, using arrival forecast pressure altitude and temperature.

(7) MAX ALLOWABLE GWT OGE/IGE. Compute the maximum allowable gross weight the same as item e(10), DEPARTURE data, using arrival forecast pressure altitude and temperature.

(8) MAX HOVER HEIGHT IGE. If OGE capability does not exist, compute the maximum hover height IGE the same as item e(12), DEPARTURE data, using arrival forecast pressure altitude and temperature.

(9) MIN SE – IAS - W/O STORES / W/STORES. Compute the minimum single-engine airspeed with external stores and without external stores the same as item e(14), DEPARTURE data, using arrival forecast pressure altitude and temperature.

h. Updates. The PPC may be updated in flight or on the ground as the mission progresses. Updates are required when there is an intent to land and/or takeoff and when operating within 3,000 pounds of the MAX ALLOWABLE GWT (OGE), there is an increase of 500-feet pressure altitude, and/or 5 °C from the planned PPC.

(1) AIRCRAFT WEIGHT. Update the aircraft weight as described below.

(a) When internal and/or external load weights have not changed. Add the total remaining indicated fuel weight (internal/external) to the zero fuel weight computed, item 15, DEPARTURE data.

(b) When internal and/or external load weights have changed. Perform a hover check to determine a readjusted zero fuel weight as described in item e(15), DEPARTURE data.

NOTE: The tabular performance data in the back of the -CL will be used for the following computations.

(2) MAX TORQUE AVAILABLE. Use the appropriate tabular performance data MAXIMUM TORQUE AVAILABLE table as described in Figure 6-3.

Step 1: Enter the table at the appropriate HP~FT (pressure altitude) and move right to the ATF 1.0 or 0.9 value as required.

Step 2: Continue right to the appropriate FREE AIR TEMPERATURE ~ °C column. Read MAX TORQUE AVAILABLE.

NOTE 1: See tabular performance data examples in Figure 6-3.

NOTE 2: The ATFs shown on the chart are 1.0 and 0.9. If the aircraft has an ATF between these values, interpolation is required.

(3) MAX ALLOWABLE GWT OGE. Use the APPROPRIATE MAXIMUM OGE HOVER WEIGHT AND TORQUE REQUIRED table as described below.

Step 1: Enter the table at the appropriate HP ~ FT (pressure altitude) and move right to the GW ~ 100 LB line.

Step 2: Continue right to the appropriate FREE AIR TEMPERATURE ~ °C column. Multiply the indicated value by 100 to determine the MAX ALLOWABLE GWT OGE.

Step 3: Move down to Q ~ OGE ~ % line. Read torque required to hover OGE, at the MAX ALLOWABLE GWT OGE.

NOTE : See tabular performance data examples in Figure 6-4.

(4) GO/NO-GO OGE. Use the appropriate MAXIMUM OGE HOVER WEIGHT AND TORQUE REQUIRED table as described below.

Step 1: Enter the table at the appropriate HP ~ FT (pressure altitude) and move right to the Q ~ IGE ~ % line.

Step 2: Continue right to the appropriate FREE AIR TEMPERATURE ~ °C column. Read the GO/NO-GO OGE torque value. This is also the torque required to hover IGE, at the MAX ALLOWABLE GWT OGE.

NOTE: See tabular performance data examples in Figure 6-4.

i. Tabular Performance Data. The following examples are provided to explain the tabular performance data presented in the -CL.

MAXIMUM TORQUE AVAILABLE* - 30 MINUTE LIMIT
ANTI-ICE OFF T700-GE-700 ENGINE (CONTINUED)

HP ~FT	ATF	FREE AIR TEMPERATURE ~ °C						
		-15	-10	-5	0	5	10	15
8000	1.0	89	90	90	90	88	85	84
	0.9	89	88	86	85	83	81	78

Pressure Altitude (PA)

ATF – If the aircraft ATF is between 0.9 and 1.0, Interpolate the maximum torque available as described below.

Free air temperature (FAT)

EXAMPLE: UH-60A/Q
PA: +8000'
ATF: 0.96
FAT: +10°C

96 is 6/10 of the difference between ATF .90 (0.9) and 1.00 (1.0)

Maximum Torque Available

85 – 81 = 4 % TRQ
4 X 6/10 = 2.4 % TRQ
81 + 2.4 = 83.4 % maximum torque available

Figure 6-3. Maximum torque available chart.

MAXIMUM OGE HOVER WEIGHT AND TORQUE REQUIRED
ANTI-ICE OFF T700-GE-700 ENGINE (CONTINUED)

HP ~FT	ATF *	FREE AIR TEMPERATURE ~°C							
		10		15		20		25	
		1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9
8000	GW ~ 100 LB	173	166	169	162	166	157	162	152
	Q ~ OGE ~ %	85	81	84	78	82	75	79	72
	Q ~ IGE ~ %	73	69	71	67	70	64	67	62

GW ~ 100 LB (aircraft gross weight) – Multiply this value times 100.

Q ~ OGE ~ % (torque required to hover OGE at 100-feet wheel height) at maximum allowable gross weight OGE above (GW ~100 LB).

Q ~ IGE ~ % (torque required to hover IGE at 10-feet wheel height) at maximum allowable gross weight OGE above (GW ~100 LB).

EXAMPLE: UH-60A/Q

PA: +8000’
ATF: 0.96
FAT: +10°C

.96 is 6/10 of the difference between ATF .90 (0.9) and 1.00 (1.0)

GW~100 LB

Maximum allowable gross weight OGE, (0.9): 166 X 100 = 16,600, (1.0): 173 X 100 = 17,300 pounds.
17,300 – 16,600 = 700 pounds
700 X 6/10 = 420 pounds
16600 + 420 = 17,020 pounds maximum allowable gross weight OGE

Q~OGE~%

85 – 81 = 4 % TRQ
4 X 6/10 = 2.4 % TRQ
81 + 2.4 = 83.4 % TRQ required to hover 17,020 pounds OGE

Q~IGE~%

73 – 69 = 4 % TRQ
4 X 6/10 = 2.4 %, TRQ
69 + 2.4 = 71.4 % TRQ required to hover 17,020 pounds IGE

71.4% TRQ is also the GO/NO-GO OGE

Figure 6-4. Maximum OGE hover weight and torque required chart.

UH-60 PERFORMANCE PLANNING CARD					
For use of this form, see TC 1-212: The proponent agency is TRADOC.					
DEPARTURE					
AIRCRAFT GWT: **(3)** lbs		PA: **(1)** / **(1)**		FAT: **(2)** °C / **(2)** °C	
FUEL WEIGHT: **(4)** lbs		DUAL-ENGINE		SINGLE-ENGINE	
STORES WEIGHT: **(5)** lbs				#1	#2
SLING WEIGHT: **(6)** lbs		ATF: **(7)**		ETF: **(7)**	ETF: **(7)**
ZERO FUEL WEIGHT: **(15)** lbs		TR: **(8)**		TR: **(8)**	TR: **(8)**
MAX TORQUE AVAILABLE		**(9)** %		**(9)** %	**(9)** %
MAX ALLOWABLE GWT OGE / IGE		**(10)** / **(10)**			
GO/NO-GO TORQUE OGE / IGE		**(11)** % / **(11)** %			
MAX HOVER HEIGHT IGE		**(12)** ft			
PREDICTED HOVER TORQUE		**(13)** %		**(13)** %	**(13)** %
MIN SE-IAS - W/O STORES / W/STORES				**(14)** kts / **(14)** kts	
REMARKS: **(16)**					
CRUISE					
PA: **(1)** ft	FAT: **(2)** °C	MAX ANGLE: **(20)** °		Vne-IAS: **(21)** kts	
		DUAL-ENGINE		SINGLE-ENGINE	
				#1	#2
		TR: **(3)**		TR: **(3)**	TR: **(3)**
MAX TORQUE AVAILABLE	CT **(5)** %	**(4)** %		**(4)** %	**(4)** %
MIN / MAX Vh - IAS		**(6)** kts/ **(6)** kts		**(13)** kts / **(13)** kts	
CRUISE - IAS / TAS		**(7)** / **(7)**		**(14)** kts/ **(14)** kts	
CRUISE / CONTINUOUS TORQUE		**(8)** %/ **(8)** %		**(15)** %/ **(15)** %	
CRUISE FUEL FLOW		**(9)** pph		**(16)** pph	
MAX END - IAS / TORQUE		**(10)** kts/ **(10)** %			
MAX RANGE - IAS / TORQUE		**(10)** kts/ **(10)** %			
MAX R/C - IAS / TORQUE		**(11)** kts/ **(11)** %			
MAX ALLOWABLE GWT		**(12)** lbs		**(17)** lbs	
OPTIMUM IAS AT MAX ALLOWABLE GWT		**(12)** kts		**(17)** kts	
MAX ALTITUDE - MSL		**(18)** ft		**(18)** ft	
EMERGENCY SE - IAS				**(19)** kts	

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Figure 6-5. Sample UH-60 Performance Planning Card (front).

ARRIVAL				
LANDING GWT: **(3)** lbs	PA: **(1)** ft		FAT: **(2)** °C	
	DUAL-ENGINE		SINGLE-ENGINE #1	#2
	TR: **(4)**		TR: **(4)**	TR: **(4)**
MAX TORQUE AVAILABLE	**(5)** %		**(5)** %	**(5)** %
PREDICTED HOVER TORQUE	**(6)** %		**(6)** %	**(6)** %
MAX ALLOWABLE GWT OGE / IGE	**(7)** / **(7)**			
MAX HOVER HEIGHT IGE	**(8)** ft			
MIN SE-IAS - W/O STORES / W/STORES			**(9)** kts / **(9)** kts	
REMARKS:				

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Figure 6-6. Sample UH-60 Performance Planning Card (back).

TASK 1005

TASK: Perform preflight inspection.

CONDITIONS: With a UH-60 helicopter and given TMs 1-1520-23710/CL.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Rated.

a. Perform the preflight inspection per TMs 1-1520-237-10/CL.

b. Correctly enter appropriate information on DA Form 2408-12 and DA Forms 2408-13/13-1.

2. Nonrated. Complete all before-preflight and preflight duties per TMs 1-1520-237-10/CL and the unit SOP.

DESCRIPTION:

1. Crew actions.

a. The PC may direct the other crew members to complete elements of the preflight inspection as applicable.

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

2. Procedures.

a. Ensure the pr eflight inspection is conducted per TMs 1-1520-237-10/CL. Verify that all pre-flight checks have been completed and ensure that the crew members enter the appropriate information on DA Forms 2408-12 and 2408-13/13-1.

b. If circumstances permit, accomplish preflight inspection during daylight hours.

NIGHT OR NVG CONSIDERATIONS: If performing the preflight inspection during the hours of darkness, a flashlight with an unfiltered lens to supplement available lighting should be used. (Hydraulic leaks, oil leaks, and other defects are difficult to see using a flashlight with a colored lens.)

REFERENCES:

Aircraft logbook
AR 95-1
DA Pamphlet 738-751

TMs 1-1520-237-10/CL

TASK 1007

Perform before-starting engine through before-leaving helicopter checks.

CONDITIONS: In a UH-60 helicopter or a UH-60FS and given TMs 1-1520-237-10/CL.

STANDARDS: Appropriate common standards plus these additions/modifications.

a. Perform procedures and checks per TMs 1-1520-237-10/CL.

b. Correctly enter appropriate information on DA Form 2408-12 and DA Forms 2408-13/13-1.

DESCRIPTION:

1. Crew actions.

a. Each crew member will complete the required checks pertaining to his assigned crew duties per TMs 1-1520-237-10/CL.

b. The P will read the checklist and announce APU and engine starts.

c. All crew members will clear the area around the aircraft before APU start and each engine start.

d. The NCM will perform duties as directed by the PC while maintaining airspace surveillance.

2. Procedures.

Perform the before-starting engine through before leaving helicopter checks per TMs 1-1520-237-10/CL. The call and response method should be used, as appropriate. The crew member reading the checklist will read the complete checklist item. The crew member performing the check will answer with the appropriate response. For example, for the call "Anticollision/position lights - As required" the response might be "Anticollision lights, both, night; position lights, steady, bright." Responses that don't clearly communicate action or information should not be used. For example, when responding to the call, "Systems - Check" replying with "Check" doesn't clearly indicate that the systems are within the normal operating range. A response of "All in the normal operating range" communicates more accurate information.

NIGHT OR NVG CONSIDERATIONS: Before starting the engines, ensure that all internal and external lights are operational and properly set. Internal lighting levels must be high enough

to easily see the instruments and to start the engines without exceeding operating limitations.

REFERENCES: Appropriate common references plus the following:

DA Pamphlet 738-751
Engine HIT Log

TASK 1010

Inspect/perform operational checks on ALSE.

CONDITIONS: Given the appropriate ALSE for the mission.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Correctly inspect/perform operational checks on ALSE.

2. Correctly use personal and mission ALSE.

3. Assist passengers in the use of ALSE.

DESCRIPTION:

1. Crew actions. The PC will direct other crew members to ensure ALSE is onboard the aircraft before takeoff, as applicable.

2. Procedures.

Based on mission requirements, obtain the required ALSE. Inspect equipment for serviceability and perform required operational checks. Secure the required ALSE in the aircraft per FM 1-302, TMs 1-1520-237-10/CL, and the unit SOP. Brief passengers in the use the ALSE. (Task 1071 discusses the passenger briefing.)

REFERENCES:

AR 95-1
FM 1-302
TM 5-4220-202-14
TM 55-1680-317-23&P
TM 55-1680-351-10
Unit SOP

TASK 1014

Maintain airspace surveillance.

CONDITIONS: In a UH-60 helicopter or a UH-60FS.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Immediately inform other crew members of all air traffic or obstacles that pose a threat to the aircraft and of unannounced drift or altitude changes.

2. Clear the aircraft.

3. Announce when attention is focused inside the aircraft.

DESCRIPTION:

1. Crew actions. The PC will assign scan sectors to the crew members.

2. Procedures.

a. Maintain close surveillance of the surrounding airspace to keep the aircraft clear. Inform the crew immediately of air traffic or obstacles that pose a threat to the aircraft. Call out the location of traffic or obstacles by the clock, altitude, and distance method. (The 12 o'clock position is at the nose of the aircraft.) Give distance in miles or fractions of miles for air traffic and in feet for ground obstacles. When reporting air traffic, specify the type of aircraft (fixed-wing or helicopter) and, if known, the model. The altitude of the air traffic should be reported as the same as or higher or lower than the altitude at which you are flying.

b. During a hover or hovering flight, inform the P* of any unannounced drift or altitude changes. When landing, the crew will confirm the suitability of the area.

NIGHT OR NVG CONSIDERATIONS: The use of proper scanning techniques will assist in detecting traffic and obstacles, and in avoiding spatial disorientation.

REFERENCES: Appropriate common references plus the following:

TC 1-201
Unit SOP

TASK 1015

Perform ground taxi.

CONDITIONS: In a UH-60 helicopter or a UH-60FS.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Maintain a constant speed appropriate for conditions.

2. Maintain the desired ground track within 3 feet.

DESCRIPTION:

1. Crew actions.

a. The P* will ensure that the parking brake is released and the tail wheel is as required before starting the ground taxi. He will announce when the aircraft is clear, his intent to begin ground taxi operations, and the intended direction of turn before turning. He will remain focused primarily outside the aircraft.

b. The P and NCM will assist in clearing the aircraft and provide adequate warning of traffic and obstacles. They also will announce when their attention is focused inside the aircraft.

2. Procedures. Ensure the area is suitable for ground taxi operations. Initiate the taxi by centering the cyclic and raising the collective slightly to start forward movement. If required, adjust lateral cyclic and/or pedals to release the tail wheel lockpin. Avoid droop-stop contact by using proper cyclic and collective control applications. Ensure that both sets of brakes operate properly, conditions permitting. Use left or right pedal input to turn the aircraft and some lateral cyclic into turns to maintain a level fuselage attitude. To regulate the taxi speed, use a combination of collective and brakes. Be aware that soft, rough, or sloping terrain may require the use of more than normal power.

NOTE 1: During taxi with the tail wheel unlocked, fuselage roll attitude is controlled with the cyclic. The attitude indicator, as well as outside visual cues, may be used to reference fuselage roll attitude.

NOTE 2: Excessive cyclic input and insufficient collective application may result in droop-stop

pounding or main rotor contact with the mission equipment.

NOTE 3: While ground taxiing minor heading changes may be made with the tailwheel locked. However, care should be taken not to break or bend the tail wheel locking pin. Excessive pedal input with the tail wheel locked may be indicated by a slight fuselage roll in the opposite direction.

NIGHT OR NVG CONSIDERATIONS: The landing light should be used for unaided ground taxi and the searchlight when wearing NVG. The use of proper scanning techniques will assist in detecting obstacles that must be avoided.

SNOW/SAND/DUST CONSIDERATIONS: When initiating ground taxi, apply pressure and counter pressure to the pedals to ensure the wheels/skids are not frozen to the ground, if appropriate. If ground reference is lost because of blowing snow/sand/dust, lower the collective and neutralize the flight controls until visual reference is reestablished. Use caution when taxiing near other maneuvering aircraft because of limited visual references and relative motion illusion.

NOTE 1: Because of decreased visual references and relative motion illusion, limit ground speed to a safe rate.

NOTE 2: At night, use of the landing, search, or strobe lights may cause spatial disorientation in blowing snow/sand/dust.

REFERENCES: Appropriate common references.

TASK 1016

Perform hover power check.

CONDITIONS: In a UH-60 helicopter or a UH-60FS, at an appropriate hover height, and with performance planning information available.

STANDARDS: Appropriate common standards plus determine if sufficient power is available to perform the mission.

DESCRIPTION:

1. Crew actions.

a. The P* will remain focused primarily outside the aircraft during the maneuver.

b. The P and NCM will remain focused primarily outside the aircraft to assist in clearing and to provide adequate warning of obstacles. The P will announce when the aircraft is stabilized at the desired hover altitude and when the hover power check is completed.

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

2. Procedures.

a. Use the hover height computed during performance planning when performing this task unless the mission or terrain constraints dictate otherwise. If another hover height is required, use that height to compute go/no-go torque. See Task 1017, Perform Hovering Flight.

b. At desired hover height, monitor the aircraft instruments and verify the power check. Compare the actual performance data to that computed.

NOTE: If the torque required to maintain a stationary hover does not exceed the go/no-go torque OGE, any maneuver requiring OGE/ IGE power or less may be attempted. If the torque required to maintain a stationary hover exceeds the go/no-go torque OGE but does not exceed the go/no-go torque IGE, all IGE maneuvers may be attempted. If the torque required to maintain a stationary hover exceeds the go/no-go IGE, structural limits might have been exceeded, no flight maneuvers may be attempted. Recompute go/no-go and/or reduce aircraft weight.

REFERENCES: Appropriate common references.

TASK 1017

Perform hovering flight.

CONDITIONS: In a UH-60 helicopter or a UH-60FS.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Perform a smooth, controlled ascent to hover.

2. Perform a smooth, controlled descent to touchdown.

DESCRIPTION:

1. Crew actions.

a. The P* will announce his intent to perform a specific hovering flight maneuver and will remain focused primarily outside the aircraft to monitor altitude and avoid obstacles. He will announce when he terminates the maneuver.

b. The P and NCM will assist in clearing the aircraft and provide adequate warning of obstacles, unannounced drift or altitude changes. They will announce when their attention is focused inside the aircraft.

2. Procedures.

a. Takeoff to a hover. With the collective fully down, place the cyclic in a neutral position. Raise the collective with a smooth, positive pressure. Apply pedals to maintain heading, and coordinate the cyclic for a vertical ascent. As the aircraft leaves the ground, check for the proper control response and aircraft CG.

b. Hovering flight. Adjust the cyclic to maintain a stationary hover or to move in the desired direction. Control heading with the pedals, and maintain altitude with the collective. The rate of movement and altitude should be appropriate for existing conditions. To return to a stationary hover, apply cyclic in the opposite direction while maintaining altitude with the collective and heading with the pedals.

c. Hovering turns. Apply pressure to the desired pedal to begin the turn. Use pressure and counterpressure on the pedals to maintain the desired rate of turn. Coordinate cyclic control to maintain position over the pivot point while maintaining altitude with the collective. Hovering turns can be made around any vertical axis; for example, the nose, mast, tail of the aircraft, or a point in front of the aircraft. However, turns other than about the center of the aircraft will increase the turn radius proportionately.

d. Landing from a hover. Lower the collective to effect a smooth descent to touchdown. Ensure the aircraft does not move sideways or aft. Make necessary corrections with the pedals and cyclic to maintain a constant heading and position. On ground contact, ensure that the aircraft remains stable. Continue lowering the collective smoothly and steadily while continuing to check aircraft stability. When the collective is fully down, neutralize the pedals and cyclic. If sloping conditions are suspected, see Task 1032.

NIGHT OR NVG CONSIDERATIONS:

1. Movement over areas of limited contrast, such as tall grass, water, or desert, tends to cause spatial disorientation. Seek hover areas that provide adequate contrast and use proper scanning techniques. If disorientation occurs, apply sufficient power and execute a takeoff. If a takeoff is not feasible, try to maneuver the aircraft forward and down to the ground to limit the possibility of touchdown with sideward or rearward movement.

2. When performing operations during unaided night flight, ensure that the searchlight or landing light (white light) is in the desired position. Use of the white light will impair night vision several minutes. Therefore, exercise added caution if resuming flight before reaching fully dark adaptation.

SNOW/SAND/DUST CONSIDERATIONS: During ascent to a hover, if visual references do not deteriorate to an unacceptable level, continue ascent to the desired hover altitude.

1. 10-foot hover taxi. During takeoff to a hover, simultaneously accelerate the aircraft to a ground speed that keeps the snow/sand/dust cloud just aft of the main rotor mast.

NOTE 1: Maintain optimum visibility by observing references close to the aircraft. Exercise caution when operating in close proximity to other aircraft or obstacles.

NOTE 2: When visual references deteriorate making a 10-foot hover taxi unsafe, determine whether to abort the maneuver, ground taxi, air taxi, or perform a takeoff.

2. 20- to 100-foot air taxi. Use this maneuver when it is necessary to move the aircraft over terrain that is unsuitable for hover taxi. Initiate air taxi the same as a 10-foot hover, but increase altitude to not more than 100 feet and accelerate to a safe airspeed above ETL.

NOTE 1: Ensure that an area is available to safely decelerate and land the aircraft. Under certain conditions, such as adverse winds, it may be necessary to perform a traffic pattern to optimize conditions at the desired termination point.

NOTE 2: Hovering OGE reduces available ground references and may increase the possibility of spatial disorientation. Be prepared to transition to instruments and execute and instrument takeoff if ground reference is lost.

NOTE 3: At night, use of landing, search, or strobe light may cause spatial disorientation while in blowing snow/sand/dust.

CONFINED AREA CONSIDERATIONS: Select good references to avoid unanticipated drift. All crew members must be focused primarily outside for obstacle avoidance.

CAUTION

Maintain adequate main and tail rotor clearances while maneuvering in confined areas.

REFERENCES: Appropriate common references.

TASK 1018

Perform VMC takeoff.

CONDITIONS: In a UH-60 helicopter or a UH-60FS.

STANDARDS: Appropriate common standards plus maintain aircraft in trim above 50-feet AGL or as appropriate for transition to terrain flight.

DESCRIPTION:

1. Crew actions.

a. The P* will remain focused primarily outside the aircraft throughout the maneuver to provide obstacle clearance. He will announce whether the takeoff is from the ground or from a hover and his intent to abort or alter the takeoff.

b. The P and NCM will announce when ready for takeoff and will remain focused primarily outside the aircraft to assist in clearing and to provide adequate warning of obstacles. They will select reference points to assist in maintaining the takeoff flight path. The P will monitor power requirements and advise the P* if power limits are being approached. The P will announce when his attention is focused inside the aircraft.

c. The PC will determine the direction of takeoff by analyzing the tactical situation, the wind, the long axis of the takeoff area, and the lowest obstacles.

2. Procedures.

a. From the ground. Select reference points to maintain ground track. With the cyclic and pedals in the neutral position, increase power. Continue applying power until the aircraft is airborne. As the aircraft leaves the ground, apply forward cyclic as required to establish an accelerative attitude appropriate for the terrain and to avoid obstacles. Adjust the cyclic to continue the acceleration to the desired climb airspeed, and maintain the desired ground track. Make the required power adjustments to clear obstacles in the flight path, and obtain the desired rate of climb. Maintain heading with the pedals when below 50-feet AGL or until making the transition to terrain flight; then place the aircraft in trim. After obtaining the desired airspeed, adjust the cyclic as necessary to stop the acceleration and maintain desired climb airspeed. Adjust power as necessary to continue the desired rate of climb.

b. From a hover. Apply forward cyclic to accelerate the aircraft while simultaneously applying power. Perform the rest of the maneuver as for a takeoff from the ground.

NOTE 1: Avoid unnecessary nose-low accelerative attitudes; 5 degrees nose low is recommended for acceleration. However, 10 degrees nose low should not be exceeded.

NOTE 2: Performing this maneuver in certain environments may require hover OGE power. Evaluate each situation for power required versus power available.

NIGHT OR NVG CONSIDERATIONS:

1. If sufficient illumination exists to view obstacles, accomplish the takeoff in the same way as a VMC takeoff during the day. Visual obstacles, such as shadows, should be treated the

same as physical obstacles. If sufficient illumination does not exist, perform an altitude-over-airspeed takeoff by applying takeoff power first followed by a slow acceleration to ensure obstacle clearance.

2. Maintain the takeoff power setting until reaching climb airspeed. Adjust power as required to establish the desired rate of climb and cyclic to maintain the desired airspeed. Alternate attention between cross-checking instruments and assisting in obstacle avoidance. The P* and NCM should maintain orientation outside the aircraft and concentrate on obstacle avoidance. The P should make all internal checks.

3. Reduced visual references during the takeoff and throughout the ascent at night may make it difficult to maintain the desired ground track. Knowledge of the surface wind direction and velocity will assist in maintaining the desired ground track.

4. Use proper scanning techniques to avoid spatial disorientation.

5. When performing operations during unaided night flight, ensure that the searchlight or landing light (white light) is in the desired position. Use of the white light will impair night vision several minutes. Therefore, exercise added caution if resuming flight before reaching fully dark adaptation.

SNOW/SAND/DUST CONSIDERATIONS: As the aircraft leaves the surface, maintain heading with the pedals and a level attitude with the cyclic. As the aircraft clears the snow/sand/dust cloud and clears the barriers, accelerate to climb airspeed and trim the aircraft.

NOTE 1: In some cases, applying collective to blow away loose snow/sand/dust from around the aircraft is beneficial before performing this maneuver.

NOTE 2: Be prepared to transition to instruments and execute an instrument takeoff if ground reference is lost.

NOTE 3: At night, use of the landing, search, or strobe lights may cause spatial disorientation while in blowing snow/sand/dust.

CONFINED AREA CONSIDERATIONS: Before departure, confirm the takeoff plan. Perform a hover power check, if required. Reposition the aircraft, if desired, to afford a shallower departure angle and minimize power requirements. During departure, adjust the cyclic and the collective as required to establish a constant departure angle to clear obstacles.

MOUNTAIN/PINNACLE/RIDGELINE CONSIDERATIONS: Analyze winds, obstacles, and density altitude. Perform a hover power check, if required. Determine the best takeoff direction and path for conditions. After clearing any obstacles accelerate the aircraft to the desired airspeed.

NOTE: Where drop-offs are located along the takeoff path, the aircraft may be maneuvered downslope to gain airspeed.

MUD/MUSKEG/TUNDRA CONSIDERATIONS: Perform one of the following takeoff techniques:

(1) From dry muskeg/tundra areas. A vertical takeoff may be best in drier areas where the aircraft has not sunk into the muskeg/tundra or where obstacles prohibit motion. Smoothly raise the collective until the crew confirms that the wheels/skis are free. Adjust controls as necessary to perform a VMC takeoff.

(2) From wet areas. In wet areas where the aircraft is likely to have sunk or is stuck in the mud/muskeg/tundra, the following technique may be best: With the cyclic in the neutral position, smoothly raise the collective. As hover power is approached, place the cyclic slightly forward of the neutral position and slowly move the pedals back and forth. Continue raising the collective and "swim" the aircraft forward to break the suction of the wheels/skis. When free, adjust the controls as necessary to perform a VMC takeoff.

NOTE: Before performing operations in a mud/muskeg/tundra environment, it is important to understand dynamic rollover characteristics.

REFERENCES: Appropriate common references.

TASK 1023

Perform fuel management procedures.

CONDITIONS: In a UH-60 helicopter or a UH-60FS.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Rated.

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

b. Initiate an in-flight fuel consumption check within 10 minutes after leveling off or entering into the mission profile.

c. Compute the fuel consumption rate ±50 pounds per hour, 15 to 30 minutes after taking the initial readings.

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

e. Monitor the remaining fuel quantity and the continuing rate of consumption.

2. Nonrated. Compute the fuel consumption rate ±50 pounds per hour, 15 to 30 minutes

after taking the initial readings.

DESCRIPTION:

1. Crew actions.

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

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

c. The PC will confirm the results of the fuel check.

d. If applicable, the P will announce when the fuel transfer switch/fuel selector lever(s) are repositioned and when the fuel transfer/balancing operations are completed.

2. Procedures.

a. Before-takeoff fuel check. Determine the total fuel on board, and compare it with fuel required for the mission. If the fuel on board is inadequate, add sufficient fuel or abort or revise the mission.

b. Initial airborne fuel reading. Within 10 minutes after leveling off or entering into the mission profile, record the total fuel quantity and the time of reading. Record the remaining fuel and the time of reading 15 to 30 minutes after taking the initial airborne fuel reading. Compute and record the consumption rate, burnout time, and reserve entry time. Determine if the remaining fuel is sufficient to complete the flight with the required reserve. If the amount of fuel is inadequate, initiate an alternate course of action.

c. Fuel quantity and consumption. Periodically monitor the fuel quantity and consumption rate. If the fuel quantity or flow indicates a deviation from computed values, repeat the fuel consumption check to determine if the amount of fuel is adequate to complete the flight. Periodically check individual fuel tanks to determine that the system is operating properly.

NOTE: If an emergency or urgent situation requires placing an ENG FUEL SYS selector to cross-feed (for example, fuel filter bypass caution light), recalculate burnout time and reserve entry time based on the usable fuel remaining.

d. Main fuel balance operations. Set the ENG FUEL SYS selector of the engine feeding from the lowest indicating tank to XFD. After the fuel quantities equalize, return the selector to DIR.

e. Auxiliary fuel management. Follow procedures outlined in TM 1-1520-237-10 when using the external extended range fuel system. When using nonstandard auxiliary fuel systems use the appropriate manufacturer's operating manuals.

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

REFERENCES: Appropriate common references plus the manufacturer's operating manuals.

TASK 1025

Navigate by pilotage and dead reckoning.

CONDITIONS: In a UH-60 helicopter or a UH-60FS and given the appropriate maps, flight computer, and flight log.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Maintain orientation within ½ mile or 800 meters.

2. Arrive at destination at ETA ±3 minutes.

DESCRIPTION:

1. Crew actions.

a. The P* will focus primarily outside the aircraft and respond to navigation instructions or cues given by the P. The P* will acknowledge commands issued by the P for the heading, altitude, and airspeed changes necessary to navigate the desired course. The P* will announce significant surface features to assist in navigation.

b. The P will direct the P* to change aircraft heading, altitude, and airspeed as appropriate to navigate the desired course. The P will use rally terms, specific headings, relative bearings, or key terrain features to accomplish this task. He will announce all plotted wires before approaching their location. The P and NCM will monitor aircraft instruments, assist in clearing the aircraft, and provide adequate warning to avoid traffic and obstacles.

2. Procedures.

a. Both pilotage and dead reckoning will be used to maintain the position of the aircraft along the planned route. Planned headings will be adjusted as necessary to

compensate for the effects of the wind.

b. Perform a ground speed check as soon as possible by computing the actual time required to fly a known distance or obtain ground speed information from an electronic-aided navigation system. Adjust estimated times for subsequent legs of the flight route using actual ground speed. Compare planned ground speed with actual ground speed and adjust airspeed as required to arrive at each ACP/CP at its original ETA.

NIGHT OR NVG CONSIDERATIONS: More detailed flight planning is required when the flight is conducted at night. Interior cockpit lighting should be considered when selecting colors for preparing navigational aids such as maps and kneeboard notes.

REFERENCES: Appropriate common references plus FM 1-240.

TASK 1026

Perform electronically aided navigation.

CONDITIONS: In a UH-60 helicopter or a UH-60FS with an electronically aided navigational system installed and operational.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Operate the installed electronically aided navigational system per the appropriate TM.

2. Determine the position of the aircraft along the route of flight within 500 meters.

3. Use the CIS per TM 1-1520-237-10 if coupled with an electronically aided navigational system.

NOTE: Examples of electronically aided navigational systems are the doppler, GPS, IINS, LORAN, and OMEGA.

DESCRIPTION:

1. Crew actions.

a. The P* will focus primarily outside the aircraft and respond to navigation instructions or cues given by the P. The P* will acknowledge commands issued by the P for the heading, altitude, and airspeed changes necessary to navigate the desired course. The P* will announce significant terrain features to assist in navigation.

b. The P will be the primary operator of the electronic-aided navigation system. He will direct the P* to change aircraft heading, altitude, and airspeed as appropriate to

navigate the desired course. The P will use rally terms, specific headings, relative bearings, or key terrain features to accomplish this task. He will announce all plotted wires before approaching their location. The P and NCM will monitor aircraft instruments, assist in clearing the aircraft, and provide adequate warning to avoid traffic and obstacles.

2. Procedures. Perform the turn-on, test, and programming procedures per the appropriate technical manual. If the electronically aided navigational system is coupled, the selected course may be flown using the CIS. The proper updating and shutdown procedures will be performed per the appropriate TM.

REFERENCES: Appropriate common references plus the appropriate TM.

TASK 1028

Perform VMC approach.

CONDITIONS: In a UH-60 helicopter or a UH-60FS.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Select a suitable landing area.

2. Maintain a constant approach angle clear of obstacles to desired point of termination (hover) or touchdown (surface).

3. Maintain rate of closure appropriate for the conditions.

4. Maintain ground track alignment with the landing direction, as appropriate.

5. Align aircraft with landing direction below 50 feet or as appropriate for transition from terrain flight.

6. Perform a smooth and controlled termination to a hover or touchdown to the surface.

DESCRIPTION:

1. Crew actions.

a. The P* will focus primarily outside the aircraft to provide obstacle clearance throughout the maneuver. He will announce when he begins the approach and whether the approach will terminate to a hover or to the surface. The P* also will announce the intended point of landing and any deviation to the approach, if required.

b. The P and NCM will confirm the suitability of the area, assist in clearing the aircraft, and provide adequate warning of traffic and obstacles. The P will

acknowledge any deviation during the approach. The P will announce when his attention is focused inside the aircraft.

2. Procedures.

a. To a hover. Determine an approach angle that allows obstacle clearance while descending to the desired point of termination. Once the approach angle is intercepted (on base or final), adjust the collective as necessary to establish and maintain a constant angle. Maintain entry airspeed until the rate of closure appears to be increasing. Progressively decrease the rate of descent and rate of closure until an appropriate hover is established over the intended point of termination. Maintain ground track alignment with the landing direction. Maintain the aircraft in trim above 50-feet AGL and align with the landing direction below 50-feet AGL, or as appropriate for transition from terrain flight.

b. To the surface. Proceed as for an approach to a hover, except determine an approach angle that allows obstacle clearance while descending to the desired point of touchdown. (The decision to terminate to the surface with zero speed or with forward movement will depend on the aircraft's loading or environmental conditions.) Touchdown with minimum lateral movement. After surface contact, ensure that the aircraft remains stable until all movement stops. Smoothly lower the collective to fully down, and neutralize the pedals and cyclic.

NOTE 1: The P* should perform a go-around if a successful landing is doubtful or if he loses visual reference with the intended termination point. See Task 1136, Perform go-around.

NOTE 2: If wind conditions will be a factor, a wind evaluation should be performed. Techniques for evaluating wind conditions are found in FM 1-202, Environmental Flight.

NOTE 3: Steep approaches can place the aircraft in potential settling-with-power conditions.

NOTE 4: Performing this maneuver in certain environments may require hover OGE power. Evaluate each situation for power required versus power available.

NIGHT OR NVG CONSIDERATIONS:

1. 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 less than during the day to avoid abrupt attitude changes at low altitudes. After establishing the descent during unaided flights, airspeed may be reduced to approximately 50 knots until apparent ground speed and rate of closure appear to be increasing. Progressively decrease the rate of descent and forward speed until termination.

2. Surrounding terrain or vegetation may decrease contrast and cause degraded depth

perception during the approach. Before descending below obstacles, determine the need for artificial lighting.

3. Use proper scanning techniques to avoid spatial disorientation.

4. When performing operations during unaided night flight, ensure that the searchlight or landing light (white light) is in the desired position. Use of the white light will impair night vision several minutes. Therefore, exercise added caution if resuming flight before reaching fully dark adaptation.

SNOW/SAND/DUST CONSIDERATIONS:

1. Termination to a point OGE. This approach requires OGE power and may be used for most snow landings and some sand/dust landings. Make the approach to a hover OGE over the intended landing location. Slowly lower the collective and allow the aircraft to descend. The rate of descent will be determined by the rate in which the snow/sand/dust is blown from the intended landing point. Remain above the snow/sand/dust cloud until it dissipates and visual references can be seen for touch down. After ground contact, lower the collective to fully down and neutralize the flight controls.

2. Termination to the surface with forward speed. This termination may be made to an improved landing surface or suitable area with minimal ground references. Once the appropriate approach angle is intercepted, adjust the collective as necessary to establish and maintain the angle. As the apparent rate of closure appears to increase, progressively reduce the rate of descent and closure to arrive at the touchdown area slightly above effective translational lift. At this point, maintain the minimum rate of closure that ensures that the snow/sand/dust cloud remains behind the pilot's station. When the wheels or heels of the skis contact the snow/ground, lower the collective and allow the aircraft to settle. Apply slight aft cyclic at touch down to prevent burying the wheels or toes of the skis.

3. Termination to the surface with no forward speed. This termination should be made to landing areas where slopes, obstacles, or unfamiliar terrain preclude a landing with forward speed. It is not recommended when new or powder snow or fine dust is present because white/brown out conditions will occur. The termination is made directly to a reference point on the ground with no forward speed. After ground contact, lower the collective to fully down and neutralize the flight controls.

NOTE 1: When landing in deep snow, the aircraft wheels/skis may settle at different rates and the aircraft will normally terminate in a tail low attitude.

NOTE 2: During sand/dust landings, all doors and windows should be closed and vent blowers turned off.

NOTE 3: Hovering OGE reduces available ground references and may increase the possibility of spatial disorientation. Be prepared to transition to instruments and execute an instrument

takeoff if ground reference is lost.

NOTE 4: At night, use of the landing, search, or strobe light may cause spatial disorientation while in blowing snow/sand/dust.

CONFINED AREA CONSIDERATIONS: An approach to the forward one-third of the area will reduce the approach angle and minimize power requirements. During the approach, continue to determine the suitability of the area and the possible need for a go-around. If possible, make the decision to go-around before descending below the barriers or going below ETL. After touching down, check aircraft stability as the collective is lowered.

MOUNTAIN/PINNACLE/RIDGELINE CONSIDERATIONS: Select a shallow to steep approach angle, depending on the wind, density altitude, gross weight, and obstacles. During the approach, continue to determine the suitability of the intended landing point. Motion parallax may make the rate of closure difficult to determine until the aircraft is close to the landing area. Reduce airspeed to slightly above effective translational lift until the rate of closure can be determined. Before reaching the near edge of the landing area, the descent should be stopped and the rate of closure slowed. At this point, decide whether to continue the approach or make a go-around. If a go-around is required, it should be performed before decelerating below ETL. If the approach is continued, terminate in the landing area to a hover or to the surface. After touching down, check aircraft stability as the collective is lowered.

NOTE 1: To successfully operate into small areas, it may be necessary to place the nose of the aircraft over the edge of the landing area. This may cause a loss of important visual references when on final approach. All crew members must assist in providing information on aircraft position in the landing area.

NOTE 2: On approach, avoid descents greater than 700 FPM.

MUD/MUSKEG/TUNDRA CONSIDERATIONS: Select a suitable area and terminate the approach to a 10-foot hover over the intended touchdown point. Begin a vertical descent until the aircraft touches down. Check aircraft stability while lowering the collective. If the area is suitable, lower the collective fully down and neutralize the cyclic and pedals.

REFERENCES: Appropriate common references.

TASK 1029

Perform a roll-on landing.

CONDITION: In a UH-60 helicopter or a UH-60FS.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Select a suitable landing area.

2. Maintain a constant approach angle clear of obstacles to desired point of touchdown.

3. Maintain ground track alignment with the landing direction, as appropriate.

4. Perform a smooth, controlled touchdown above ETL but below 60 knots ground speed aligned with the landing direction ±5 degrees.

DESCRIPTION:

1. Crew actions.

a. The P* will focus primarily outside the aircraft to clear the aircraft throughout the approach and landing. He will announce his intent to perform a roll-on landing, the intended point of landing, and any deviation from the approach.

b. The P and NCM will confirm the suitability of the landing area and will provide adequate warning of hazards or obstacles. They will announce when their attention is focused inside the aircraft.

2. Procedures. When the desired approach angle is intercepted, lower the collective as required to establish the descent. At approximately 100 feet, or at a point from which obstacles in the flight path may be cleared, assume a decelerative attitude as necessary while maintaining the desired angle of approach. Before touchdown, align the aircraft with the landing direction. Just before tailwheel touchdown, raise the collective sufficiently to make a smooth touchdown above ETL but below 60 knots ground speed. After tailwheel contact, use collective to smoothly lower the main landing gear to the surface. If desired, use aerodynamic braking while lowering the main landing gear to assist in stopping the rollout. Do not use aerodynamic braking after the main landing gear is on the ground. After the main landing gear is on the surface, neutralize the cyclic, lower the collective, and apply the brakes as necessary. To avoid droop-stop pounding, center the cyclic before fully lowering the collective.

CAUTION

With deceleration beyond 25 degrees, the possibility of ground contact with the stabilator's trailing edge exists.

NOTE 1: When performing a roll-on landing because of a single-engine failure, the aircraft should not be decelerated below minimum single-engine IAS until obstacles in the flight path have been cleared.

NOTE 2: During training, a commonly used technique to reduce wear on the wheel brakes is stop the aircraft by returning to a hover. Care must be taken that this does not develop a negative habit pattern.

NIGHT OR NVG CONSIDERATIONS: Altitude, apparent ground speed, and rate of closure are difficult to estimate at night.

ROUGH/UNPREPARED SURFACE CONSIDERATIONS: Closely monitor touchdown speed when landing to a rough or unprepared surface. Consistent with the situation and aircraft capabilities, a more pronounced deceleration before touchdown coupled with stronger aerodynamic braking after touchdown may be appropriate. Note that the wheel brakes may be less effective. If the surface is soft, exercise care when lowering the collective until the aircraft comes to a complete stop.

REFERENCES: Appropriate common references.

TASK 1032

Perform slope operations.

CONDITIONS: In a UH-60 helicopter or a UH-60FS.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Select a suitable landing area.

2. From memory, know the slope landing limitations per TM 1-1520-237-10.

3. Set the parking brakes before landing.

4. Perform a smooth and controlled descent and touchdown.

5. Perform a smooth and controlled ascent from the surface.

DESCRIPTION:

1. Crew actions.

a. The P* will announce his intent to perform a slope operation and establish the helicopter over the slope. He will ensure the brakes are set. He will announce his intended landing area and any deviation from the intended maneuver.

b. The P and NCM will provide adequate warning of obstacles, unannounced drift, or altitude changes. The P will assist in setting the parking brakes and verify when they are set. He will note the aircraft attitude on the VSI, and notify the P* prior to exceeding aircraft slope limitations. The P and NCM will confirm the suitability of the intended landing area and announce when their attention is focused inside the aircraft.

2. Procedures.

a. Select a suitable area for slope operations. If possible, orient the aircraft into the wind. Set the parking brakes.

b. Announce the initiation of the slope landing. Smoothly lower the collective until the tail or main landing gear contacts the ground. Adjust the cyclic to maintain the aircraft in a level attitude while maintaining heading with the pedals. Continue lowering the collective and simultaneously apply cyclic into the slope to maintain the position of the upslope wheel until the landing gear is firmly on the ground. Coordinate the collective and cyclic to control the rate of attitude change to lower the downslope gear to the slope. With the downslope gear on the ground, simultaneously lower the collective fully down and neutralize the cyclic. If cyclic or aircraft slope limits are reached before the aircraft is firmly on the ground, return the aircraft to a hover. Select a new area where the slope is less steep and attempt another slope landing.

c. Before takeoff, announce initiation of an ascent. Smoothly raise the collective and apply the cyclic into the slope to maintain the position of the upslope wheel. Continue to raise the collective to raise the downslope wheel(s), maintain heading with the pedals, and simultaneously adjust the cyclic to attain a hover attitude.

NOTE 1: Before performing slope operations, it is important to understand dynamic rollover characteristics.

NOTE 2: When the tail wheel is locked and on the ground, overcontrolling the pedals may result in roll oscillations caused by the tail rotor torque effect.

NIGHT OR NVG CONSIDERATIONS:

1. When conducting slope operations, select reference points to determine slope angles. (References probably will be limited and difficult to ascertain.) If, at any time, successful completion of the landing is doubtful, abort the maneuver.

2. When performing operations during unaided night flight, ensure that the searchlight or landing light (white light) is in the desired position. Use of the white light will impair night vision several minutes. Therefore, exercise added caution if resuming flight before reaching fully dark adaptation.

REFERENCES: Appropriate common references.

TASK 1042

Perform refueling operations.

CONDITIONS: With a UH-60 helicopter.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Ensure that safety procedures are complied with per FM 10-68 and TM 1-1520-237-10.

2. Ensure that all doors, windows, and vents are closed on the refueling side (for hot refueling operations).

3. Ensure that the aircraft is refueled per FM 10-68, TM 1-1520-237-10, and the unit SOP.

4. Enter the appropriate information on DA Form 2408-13.

DESCRIPTION:

1. Cold refueling.

a. Guide the refueling vehicle to the aircraft. Ensure that the driver parks the vehicle the proper distance from the aircraft per FM 10-68. Verify that all personnel not involved with the refueling operation are a safe distance away.

b. Properly ground and refuel the aircraft per FM 10-68, TM 1-1520-237-10, and the unit SOP. Ensure that the tanks are filled to the required level. When the refueling is completed, ensure that all caps are secured and remove the ground connection if the aircraft will not remain parked.

2. Hot refueling.

a. Assist the P* in positioning the aircraft. Ensure that the proper separation is maintained between the fuel source, the aircraft, and the refueling equipment. Maintain communication with the P*. Before refueling the aircraft, the PC will verify that personnel not involved with the refueling operation are a safe distance away.

b. Properly ground and refuel the aircraft per FM 10-68, TM 1-1520-237-10, and the unit SOP; and assist with the refueling operation. Ensure that the tanks are filled to the required level. When the refueling is completed, ensure that all caps are secured and remove the ground connection.

c. Inform the PC when the refueling is completed. Assist passengers in boarding the aircraft and in securing their seat belts. Assist the P* and P in clearing the aircraft during the departure from the refueling area. Make the appropriate entries on DA Form 2408-12.

NIGHT OR NVG CONSIDERATIONS: Supplement aircraft lighting at the refueling station by using an explosion-proof flashlight with an unfiltered lens to check for leaks and fuel venting.

REFERENCES: Appropriate common references plus the following:

DA Pamphlet 738-751

FM 1-104
FM 10-68
FM 21-60
TMs 1-1520-237-10/CL
Unit and local SOP

TASK 1051

Perform autorotation.

CONDITIONS: In a UH-60 helicopter with an IP or in a UH-60FS.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Establish autorotational airspeed ±10 KIAS.

2. Ensure that the airspeed at 200 feet AGL is not less than 80 KIAS and the % RPM R is within limits.

3. Perform a deceleration and termination per TM 1-1520-237-10.

DESCRIPTION:

1. Crew actions.

a. The P* will remain focused primarily outside the aircraft throughout the maneuver and announce when he begins the maneuver. The P* will also announce the intended point of termination.

b. The P will monitor % RPM R, Ng, aircraft trim, and airspeed and provide adequate warning for corrective action if limits may be exceeded.

c. The P and NCM will confirm the suitability of the landing area, assist in clearing the aircraft, and provide adequate warning of obstacles.

2. Procedures.

a. SFTS training or in an actual emergency. Upon recognizing the need for an autorotation, perform the procedure as described in TM 1-1520-237-10, Chapter 9 (Dual-engine Failure - General). Initiate a turn as required.

NOTE: Before passing through 200-feet AGL, ensure that the airspeed is not less than 80 KIAS.

b. In the aircraft (training). The IP will announce "Simulated forced landing, autorotation." Enter and maintain an autorotative descent as described in a above. The IP will announce "Power recovery" in time to allow the descent to be completely

arrested before reaching 200-feet AGL. Upon receiving the command "Power recovery," apply sufficient collective to completely arrest the descent before reaching 200-feet AGL. Start a climb, as required.

NOTE 1: During application of the collective for power recovery, be aware of the tendency for rapid rotor decay in the UH-60A.

NOTE 2: To prevent negative habit transfer, the IP should take the controls to complete the power recovery.

NOTE 3: The preferred method of training this task is in the UH-60FS, if available.

NIGHT OR NVG CONSIDERATIONS: If conducted in the aircraft, training this maneuver is prohibited at night or when the crew members are wearing NVG.

REFERENCES: Appropriate common references.

TASK 1052

Perform simulated engine failure at a hover.

CONDITIONS: In a UH-60 helicopter with an IP or in a UH-60FS and given a simulated engine failure.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Correctly identify the malfunction, determine the appropriate emergency procedure, and perform or describe all immediate action procedures in TMs 1-1520-237-10/CL.

2. Perform a smooth, controlled descent and touchdown with minimal lateral drift and no rearward drift.

DESCRIPTION:

1. Crew actions.

a. The P* will remain focused primarily outside the aircraft throughout the maneuver to provide obstacle clearance.

b. The P will assist in clearing the aircraft. He will monitor the cockpit instrument indications to warn the P* of any impending low % RPM R conditions. Time permitting, the P will verify the procedures with TMs 1-1520-237-10/CL.

c. The P/NCM will continually monitor the condition of the aircraft. He will clear the aircraft and perform any other crew tasks as directed.

2. Procedures.

a. Upon detecting engine failure, immediately determine if the aircraft is continuing to hover or is settling to the surface. Maintain heading with the pedals and correct any lateral or rearward drift with the cyclic.

b. If the aircraft is settling to the surface, apply collective as required to cushion the aircraft. If the aircraft is moving forward, adjust the cyclic to attain a landing attitude while avoiding an excessive tail-low condition. On a smooth or prepared surface, make surface contact with some forward speed. If over a rough area, touch down as close to zero ground speed as possible. When the helicopter is resting firmly on the ground, smoothly lower the collective fully down while neutralizing the pedals and cyclic. Apply brakes as necessary.

c. If the aircraft continues to hover, and the area is suitable, land the aircraft. On a smooth or prepared surface, a landing with some forward speed may be desirable. If the area is unsuitable, move to a suitable area and land the aircraft.

NOTE: During training in the aircraft, the IP will monitor the systems and take appropriate corrective actions to prevent exceeding any limitations.

NIGHT OR NVG CONSIDERATIONS: Use proper scanning techniques to avoid spatial disorientation.

REFERENCES: Appropriate common references.

TASK 1053

Perform simulated engine failure at altitude.

CONDITIONS: In a UH-60 helicopter with an IP or in a UH-60FS and given a simulated engine failure.

STANDARDS: Appropriate common standards plus correctly identify the malfunction, determine the appropriate emergency procedure, and perform or describe all immediate action procedures in TMs 1-1520-237-10/CL.

DESCRIPTION:

1. Crew actions.

a. The P* or P will announce to the other crew members when he detects an engine failure.

b. The P* will perform or direct the P to perform the underlined steps in TMs 1-1520-

237-10/CL and initiate the appropriate type of landing. During VMC, the P* will focus primarily outside the aircraft to maintain aircraft control and to provide adequate clearance from traffic or obstacles. During IMC, the P* will remain focused inside the aircraft on the flight instruments to maintain aircraft control.

c. The P will perform as directed or briefed. He will monitor cockpit instruments to warn the P* of an impending low % RPM R conditions. If time permits, he will verify all emergency checks with TMs 1-1520-237-10/CL. He will request appropriate emergency assistance as described in the FIH.

d. The P/NCM will continually monitor the condition of the aircraft. He will clear the aircraft and perform any other crew tasks as directed.

2. Procedures. Upon detecting and verifying engine failure, immediately evaluate and determine if continued flight is possible. Adjust collective as required to maintain % RPM R within limits. If required, adjust airspeed to a point within the minimum to maximum single engine airspeed range, as determined by performance planning. Perform immediate action steps outlined in TMs 1-1520-237-10/CL and advise other crew members of intentions. Complete a landing as appropriate.

NIGHT OR NVG CONSIDERATIONS: Take special precautions to identify the correct engine power control lever.

REFERENCES: Appropriate common references.

TASK 1060

Perform flight with AFCS off.

CONDITIONS: In a UH-60 helicopter with an IP or in a UH60FS and with any or all AFCS components deactivated.

NOTE: For evaluations, the following systems will be deactivated: SAS 1, SAS 2, FPS, and boost.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Correctly identify the malfunction, determine the appropriate emergency procedure, and perform or describe all immediate action procedures in TMs 1-1520-237-10/CL.

2. Perform a VMC approach.

3. When a hover is required, maintain altitude ±5 feet and maintain heading ±20 degrees.

DESCRIPTION:

1. Crew actions.

a. The P* or P will announce to the other crew members when he detects an AFCS emergency situation.

b. The P* will perform or direct the P to perform the underlined steps in TMs 1-1520-237-10/CL and will initiate the appropriate type of landing for the emergency. During VMC, the P* will focus primarily outside the aircraft to maintain aircraft control and to provide adequate clearance from traffic or obstacles. During IMC, the P* will remain focused inside the aircraft on the flight instruments to maintain aircraft control. He will announce when he begins the approach and whether the approach will terminate to a hover or to the surface. The P* will also announce the intended point of landing and any deviation to the approach, if required, to include go-around.

c. The P will perform as directed or briefed. If time permits, he will verify all emergency checks with TMs 1-1520-237-10/CL. He will request appropriate emergency assistance as described in the FIH.

d. The P/NCM will confirm the suitability of the landing area, assist in clearing the aircraft, and provide adequate warning of traffic and obstacles. If go-around is necessary, the P and NCM will focus primarily outside the aircraft for obstacle avoidance. The P will acknowledge any deviation during the approach.

2. Procedures. Analyze the situation and take the appropriate corrective action. Maintain aircraft control and complete a VMC approach. A slightly slower rate of closure may assist in maintaining aircraft control. Terminate the approach to the ground or to a hover, as appropriate. When terminating at a hover, select a suitable area, then land the aircraft. During training, perform taxi, hover, takeoff, cruise flight, turns, and landings as directed.

NIGHT OR NVG CONSIDERATIONS: To aid in preventing spatial disorientation, do not make large or abrupt attitude changes.

REFERENCES: Appropriate common references.

TASK 1062

Perform ECU/DEC lockout operations.

CONDITIONS: In a UH-60 helicopter with an IP or in a UH-60FS and given an emergency condition that requires operation in ECU/DEC lockout.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Correctly identify the malfunction, determine the appropriate emergency procedure, and perform or describe all immediate action procedures in TMs 1-1520-237-10/CL.

2. Place the malfunctioning engine in LOCKOUT, and maintain torque 10 percent, ±10 percent, below the other engine.

3. Maintain TGT within limits.

4. Maintain % RPM R within limits.

DESCRIPTION:

1. Crew actions.

a. The P* or P will announce to the other crew members when he detects an emergency situation requiring ECU/DEC lockout.

b. During VMC, the P* will focus primarily outside the aircraft to maintain aircraft control and to provide adequate clearance from traffic or obstacles. During IMC, the P* will remain focused inside the aircraft on the flight instruments to maintain aircraft control.

c. The P should focus primarily inside the aircraft and perform the procedures described below. Time permitting, he will verify the procedures with TMs 1-1520-237-10/CL. He will request appropriate emergency assistance as described in the FIH.

d. The NCM will continually monitor the aircraft condition. He will clear the aircraft and perform other duties as directed.

2. Procedures.

a. Acknowledge a malfunction requiring ECU/DEC lockout and announce execution of appropriate emergency procedures. Verify and pull the selected engine power control lever down and momentarily forward to the LOCKOUT position. Immediately retard the engine power control lever to some intermediate position between IDLE and FLY to manually control the engine. Set torque on the malfunctioning engine to 10 percent below the other engine. Maintain TGT and % RPM R within limits.

b. To reset the ECU/DEC, retard the selected engine power control lever to the IDLE position. Cautiously advance the engine power control lever to the FLY position while monitoring Np, Ng, TGT, and torque to ensure that the ECU/DEC has properly reset.

NIGHT OR NVG CONSIDERATIONS:

1. Take special precautions to identify the correct engine power control lever.

2. For training at night or under NVG, this task will be performed on the ground only.

REFERENCES: Appropriate common references.

TASK 1063

Perform procedures for stabilator malfunction.

CONDITIONS: In a UH-60 helicopter with an IP or in a UH-60FS and given a stabilator malfunction.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Correctly identify the malfunction, determine the appropriate emergency procedure, and perform or describe all immediate action procedures in TMs 1-1520-237-10/CL.

2. Do not exceed placard limits when stabilator is not in the Auto Mode.

DESCRIPTION:

1. Crew actions.

a. The P* or P will announce to the other crew members when he detects a stabilator malfunction.

b. The P* will perform or direct the P to perform the underlined steps in TMs 1-1520-237-10/CL and will initiate a landing as required. During VMC, the P* will focus primarily outside the aircraft to maintain aircraft control and to provide adequate clearance from traffic or obstacles. During IMC, the P* will remain focused inside the aircraft on the flight instruments to maintain aircraft control.

c. The P will perform as directed or briefed. If time permits, he will verify all emergency checks with TMs 1-1520-237-10/CL. He will request appropriate emergency assistance as described in the FIH.

d. The P and NCM will clear the aircraft and perform other crew duties as directed.

2. Procedures. Announce and perform the emergency procedure per TMs 1-1520-237-10/CL.

REFERENCES: Appropriate common references.

TASK 1065

Perform emergency egress.

CONDITIONS: In a UH-60 helicopter or orally.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Perform or describe the use of emergency exits on the aircraft per TM 1-1520-237-10.

2. Perform or describe the emergency evacuation of a pilot from his seat.

3. Perform or describe the emergency engine shutdown of the aircraft per TM 1-1520-237-10.

DESCRIPTION:

1. Crew actions.

a. The PC will direct an emergency evacuation. He will determine if the evacuation will be accomplished before the rotor blades have stopped. (If the PC is incapacitated, the next ranking RCM/NCM will perform this function.)

b. The P* and P will evacuate their respective positions and assist with passenger evacuation.

c. The NCM will direct passenger evacuation.

d. All crew members will assist with the evacuation of incapacitated crew members and passengers.

2. Procedures.

a. If an emergency evacuation occurs, use the cargo/cockpit doors. If they are jammed, use the emergency release. If the emergency release does not work, break out the plexiglass windows with the crash axe, boot, or other suitable object. Once out, guide yourself and passengers to clear the aircraft in a safe direction and meet at the assembly point. Account for all personnel.

WARNING

Beware of rotor blades if an evacuation is performed before the rotor blades have stopped.

b. Perform the emergency evacuation of a pilot from his seat per TM 1-1520-237-10. The instructions may also be found on the back of the seat.

c. Perform emergency engine shutdown procedures per TM 1-1520-237-10.

REFERENCES: Appropriate common references plus the following:

TMs 1-1520-237-10/CL
Unit SOP

TASK 1068

Perform emergency procedures.

CONDITIONS: In a UH-60 helicopter with an IP, IE, SI, or FI; in a UH-60FS; or orally and given a specific emergency condition or the cockpit indications of a specific malfunction.

STANDARDS: Appropriate common standards plus the following additions/modifications:

1. Rated.

a. Correctly determine the malfunction.

b. Perform or describe appropriate emergency procedures per TMs 1-1520-237-10/CL.

2. Nonrated. Prepare the aircraft and passengers for an emergency landing.

DESCRIPTION:

1. Crew actions.

a. The P*, P, or NCM will announce to the other crew members when he detects an emergency situation.

b. The P* will perform or direct the P to perform the underlined steps in TMs 1-1520-237-10/CL and will initiate the appropriate type of landing for the emergency. During VMC, the P* will focus primarily outside the aircraft to maintain aircraft control and to provide adequate clearance from traffic or obstacles. During IMC, the P* will remain focused inside the aircraft on the flight instruments to maintain aircraft control.

c. The P will perform as directed or briefed. If time permits, he will verify all

emergency checks with TMs 1-1520-237-10/CL. He will request appropriate emergency assistance as described in the FIH.

d. The NCM will prepare the passengers for an emergency landing. During the descent he will assist in clearing the aircraft. After landing, the NCM will assist in evacuating the passengers to the designated assembly area. If normal exits cannot be used, he will use the nearest emergency exit to expedite the evacuation. He will keep communications to a minimum to allow the P* or P to attempt communications outside the aircraft. After accounting for all crew members and passengers, the NCM will assist the other crew members in any follow-on action (fire fighting, first aid, emergency signaling, or survival equipment).

2. Procedures. Analyze the information given (for example, aircraft response, caution/advisory lights, and CDU/PDU indications). Determine the malfunction and select the appropriate emergency procedure. Perform the emergency procedure per TMs 1-1520-237-10/CL.

NIGHT OR NVG CONSIDERATIONS: Take special precautions to identify the correct switches/levers when performing emergency procedures at night or while wearing NVGs.

REFERENCES: Appropriate common references plus TMs 1-1520-237-10/CL.

TASK 1069

Identify or perform hand and arm signals.

CONDITIONS: Given a list of hand and arm signals from FM 21-60 to identify or perform.

STANDARDS: Appropriate common standards plus identify or perform the hand and arm signals per FM 21-60.

DESCRIPTION: Identify or perform the hand and arm signals required to move an aircraft from one point to another. (The list should include, as a minimum, the signals required for moving an aircraft left, right, forward, or rearward and those for takeoff, land, sling load hooked, and release sling load.)

REFERENCES: Appropriate common references plus FM 21-60 and Unit SOP.

TASK 1070

Obtain fuel sample.

CONDITIONS: With a UH-60 helicopter and given a fuel sample bottle and fuel-sampling hand

pump.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Correctly obtain fuel sample.

2. Determine if fuel is contaminated.

3. Correctly dispose of the fuel sample.

DESCRIPTION: Obtain a fuel sample before or during the pre-flight inspection of the aircraft and when directed by the PC. Take the sample from both fuel cells and, if installed, the range extension tanks. Insert the tubing attached to the fuel- sampling hand pump into the guide in the fuel cell. (This guide directs the tubing to the bottom of the fuel cell. The hand pump draws the fuel from the bottom of the fuel cell, and the fuel is directed into the bottle. Any water contaminants and foreign material in the fuel will settle to the bottom of the fuel sample bottle.) If necessary, obtain additional fuel samples to remove the materials from the fuel cell. After taking the necessary fuel samples, stow the hand pump and tubing and dispose of the fuel sample per the unit SOP.

NIGHT OR NVG CONSIDERATIONS: When supplemental lighting is needed, an unfiltered explosion-proof flashlight will be used.

REFERENCES: Appropriate common references plus the following:

FM 10-68
TMs 1-1520-237-10/CL
Unit SOP

TASK 1071

Conduct passenger briefing.

CONDITIONS: Given TMs 1-1520-237-10/CL, the unit SOP, if applicable, and information about the mission.

STANDARDS: Appropriate common standards plus, without omissions, conduct the briefing per TMs 1-1520-237-10/CL and unit SOP.

DESCRIPTION: Conduct applicable portions of the passenger briefing per TMs 1-1520-237-10/CL and the unit SOP. Ensure that the passengers understand each element of the briefing.

REFERENCES: Appropriate common references plus the following:

FM 1-302

TMs 1-1520-237-10/CL
Unit SOP

TASK 1075

Perform instrument takeoff.

CONDITIONS: In a UH-60 helicopter or a UH-60FS in IMC or with reference to instruments only.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Set attitude indicator.

2. Maintain required power +5%, -0% torque.

3. Maintain accelerative climb attitude ±2 until climb airspeed is attained.

4. Maintain the aircraft in trim after ETL.

DESCRIPTION:

1. Crew actions.

a. The P* will focus primarily outside the aircraft during the VMC portion of the maneuver. He will announce when he initiates the maneuver and his intent to abort or alter the takeoff. Before the aircraft enters simulated or actual IMC, he will make the transition to the flight instruments.

b. The P will announce when ready for takeoff and will focus primarily outside the aircraft to assist in clearing during the VMC portion of the maneuver and to provide adequate warning of obstacles. He will announce when his attention is focused inside the aircraft. As the aircraft enters actual IMC, the P will monitor the flight instruments to assist in establishing coordinated flight within aircraft operating limits.

c. The NCM will maintain airspace surveillance during the VMC portion of the maneuver. During simulated IMC, the P and NCM will focus primarily outside the aircraft to provide adequate warning of traffic or obstacles. They will announce when their attention is focused inside the aircraft.

2. Procedures. On the runway or takeoff pad, align the aircraft with the desired takeoff heading. Set the attitude indicator for takeoff (wings on the horizon). Initiate the takeoff by raising the collective smoothly and steadily until takeoff power is reached. (Set power as required to accelerate to the desired climb airspeed and maintain the desired climb rate.) Adjust the pitch attitude 3 to 5 degrees below the horizon to establish the initial

accelerative climb attitude. Visually maintain runway clearance and alignment on takeoff and transition to the flight instruments before entering IMC. Maintain the heading/course required by the departure procedure or ATC instructions. When the desired climb airspeed is reached, adjust cyclic to maintain airspeed and adjust collective to maintain the desired climb rate.

REFERENCES: Appropriate common references.

TASK 1076

Perform radio navigation.

CONDITIONS: In a UH-60 helicopter or a UH-60FS in VMC, IMC, or with reference to instruments only and given appropriate navigational publications.

NOTE: For instrument training/evaluations, conditions will be IMC or with reference to instruments only.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. T une and identify appropriate NAVAIDs.

2. Determine aircraft position.

3. Intercept and maintain the desired course per FM 1-240 and FAR Part 91.

4. Identify station passage.

DESCRIPTION:

1. Crew actions.

a. The P* will remain focused inside the aircraft. He will announce any deviation not directed by ATC or the P and will acknowledge all directives given by ATC or the P.

b. The P will select and announce radio frequencies. He also will monitor radios and ATC information not monitored by the P*.

c. During VMC or simulated IMC, the P and NCM will focus primarily outside the aircraft to provide adequate warning of traffic or obstacles. They will announce when their attention is focused inside the aircraft.

2. Procedures.

a. Before flight when the use of the ADF is expected, ensure that the ADF will receive on the desired band and the Number 2 needle points in the direction of the

selected station.

b. Before flight when the use of the VOR/ILS receiver is expected, ensure that the VOR is operational and the VSI and HSI are providing the proper indications per TM 1-1520-237-10.

c. Before using a selected VOR for navigation, tune and identify the VOR. After identifying the desired station and the position of the aircraft in relation to the desired course, turn to an appropriate intercept heading. Maintain the intercept heading until approaching an on-course indication. Depending on the rate of closure, start a turn to intercept the desired course.

d. Maintain heading to track the desired course. If the navigational instruments show an off-course condition, turn as necessary toward the course to re-intercept. If navigational instruments do not indicate movement toward the course within a reasonable time, increase the intercept angle. When re-intercepting the course, turn toward the course and apply the appropriate drift correction (normally one-half of the intercept angle). Continue to bracket the course by decreasing corrections until obtaining a heading that will maintain the aircraft on course. Determine arrival at radio intersections per procedures in FM 1-240. Identify station passage by observing the first complete reversal of the indicator needle and/or the TO-FROM indicator on the HSI.

REFERENCES: Appropriate common references.

TASK 1077

Perform holding procedures.

CONDITIONS: In a UH-60 helicopter or a UH-60FS in IMC or with reference to instruments only and given holding instructions and appropriate DOD FLIP.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Tune and identify the appropriate NAVAIDs.

2. Correctly enter the holding pattern.

3. Time and track holding pattern legs.

DESCRIPTION:

1. Crew actions.

a. Before arrival at the holding fix, the PC will analyze the holding instructions and

determine the holding pattern and proper entry procedures. He will brief the other crew members on the proposed entry, outbound heading, and inbound course. (The PC may delegate this task to another RCM.)

b. The P will select radio frequencies and monitor radios. He will announce ATC information not monitored by the P*. He also will compute outbound times and headings to adjust for winds and direct the P* to adjust the pattern as necessary.

c. The P* will fly headings and altitudes and will adjust inbound and outbound times as directed by ATC or the P. He will announce any deviation as well as ATC information not monitored by the P.

d. During simulated IMC, the P and NCM will focus primarily outside the aircraft to provide adequate warning of traffic or obstacles. They will announce when their attention is focused inside the aircraft.

2. Procedures. Upon arrival at the holding fix, turn (if required) to the predetermined outbound heading and check the inbound course. Maintain the outbound heading per the DOD FLIP or as directed by ATC. After the appropriate time outbound, turn to the inbound heading and apply normal tracking procedures to maintain the inbound course. Note the time required to fly the inbound leg.

REFERENCES: Appropriate common references.

TASK 1078

Perform unusual attitude recovery.

CONDITIONS: In a UH-60 helicopter with an IP or an IE and with reference to instruments only, or in a UH-60FS in IMC.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Correctly analyze aircraft attitude.

2. Without delay, use correct recovery procedures.

3. Recover without exceeding aircraft operating limitations and with a minimum loss of altitude.

DESCRIPTION:

1. Crew actions.

a. The P* will remain focused inside the aircraft during this maneuver. The P will assist in monitoring the aircraft instruments.

b. The RCM not performing the maneuver will place the aircraft in an unusual attitude recovery and transfer aircraft controls. He will provide adequate warning for corrective action if aircraft operating limitations may be exceeded. He will announce any input to or when assuming aircraft controls.

c. The P* will acknowledge the unusual attitude recovery and transfer of aircraft controls.

d. During VMC, the P and NCM will focus primarily outside the aircraft to provide adequate warning of traffic or obstacles. They will announce when their attention is focused inside the aircraft.

2. Procedures. To recover from an unusual attitude, correct the pitch and bank attitude, adjust power, and trim the aircraft as required to return to level flight. All components are changed simultaneously with little lead of one over the other. The displacement of controls used in recoveries may be greater than those for normal flight. Care must be taken in making adjustments as straight-and-level flight is approached. The instruments must be observed closely to avoid overcontrolling.

REFERENCES: Appropriate common references.

TASK 1079

Perform radio communication procedures.

CONDITIONS: In a UH-60 helicopter or a UH-60FS.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Rated.

a. Adjust avionics to the proper frequencies.

b. Establish radio contact with the desired facility.

c. When communicating with ATC facilities, use correct radio communication procedures and phraseology per the DOD FLIP.

2. Rated and Nonrated.

a. Correctly use the intercommunication system to communicate with the crew.

b. Correctly use the appropriate radio to communicate with the desired facility (as required for NCM).

DESCRIPTION:

1. Crew actions.

a. The PC will determine radio frequencies per mission requirements during the crew briefing and will indicate whether the P* or P will establish and maintain primary communications.

b. The P* will announce information not monitored by the P.

c. The P will adjust avionics to required frequencies. He will copy pertinent information and announce information not monitored by the P*.

d. During normal operations, the NCM will monitor external communications so as not to interrupt when external communications are being transmitted or received. (Monitoring external communications may not be desirable during operations requiring extensive internal communication; for example, external loads, hoist, and rappelling.)

e. Certain operations may require that the NCM transmit on an aircraft radio; for example, MEDEVAC. He will coordinate with the PC before using aircraft radios.

2. Procedures. Adjust avionics to the required frequencies. Continuously monitor the avionics as directed by the PC. When required, establish communications with the desired facility. Monitor the frequency before transmitting. Transmit the desired/required information. Use the correct radio call sign when acknowledging each communication. When advised to change frequencies, acknowledge instructions. Select the new frequency as soon as possible unless instructed to do so at a specific time, fix, or altitude. Use radio communication procedures and phraseology as appropriate for the area of operations. Use standard terms and phraseology for all intercommunications.

REFERENCES: Appropriate common references plus the following:

DOD FLIP
Unit SOP

TASK 1080

Perform procedures for two-way radio failure.

CONDITIONS: In a UH-60 helicopter, a UH-60FS, or orally.

STANDARDS: Appropriate common standards plus implement correct procedures for two-way radio failure.

DESCRIPTION:

1. Crew actions.

a. The PC will direct the efforts to identify and correct the avionic malfunctions.

b. The P* will focus outside the aircraft or inside the cockpit on the instruments, as appropriate, but should not participate in troubleshooting the malfunction.

c. The P will remain focused primarily inside the aircraft.

2. Procedures.

a. Announce two-way radio failure and attempt to identify the malfunction and announce the results.

b. If two-way radio failure is confirmed, comply with procedure outlined in the Flight Information Handbook.

REFERENCES: Appropriate common references plus the DOD FLIP.

TASK 1081

Perform nonprecision approach.

CONDITIONS: In a UH-60 helicopter or UH-60FS in IMC or with reference to instruments only, given approach information and appropriate DOD FLIP.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Perform the approach per AR 95-1, FM 1-240, and the DOD FLIP.

2. Intercept and maintain NDB courses per FM 1-240 and within 5 of course centerline.

3. Intercept and maintain VOR courses per FM 1-240 and within 5 of course centerline (one dot on the HSI/VSI).

4. Intercept and maintain LOC courses per FM 1-240 and within 2.5 of course centerline (two dots on the HSI/VSI).

5. During ASR approaches, make immediate heading and altitude changes issued by ATC and maintain heading ±5 degrees.

6. Comply with descent minimums prescribed for the approach.

7. Perform the correct missed approach procedure per DOD FLIP or ATC instruction upon reaching the MAP if landing cannot be accomplished per AR 95-1.

DESCRIPTION:

1. Crew actions.

a. The PC will review the approach with the other crew members before initiating the procedure. He will confirm with the crew the specific approach to be flown, that the correct navaid/communication frequencies are set, and the HSI and CIS are properly set, as required. The PC may assign other crew members to perform these duties.

b. The P* will focus primarily inside the aircraft on the instruments and perform the approach. He will follow the heading/course, altitude, and missed approach directives issued by the P. He will announce any deviation not directed by ATC or the P and will acknowledge all navigation directives given by the P.

c. The P will call out the approach procedure to the P* and will advise the P* of any unannounced deviations. He will monitor outside for visual contact with the landing environment. If he makes visual contact suitable to complete the landing per AR 95-1, he will announce such and may, if directed by the PC, take the controls and complete the landing. If visual contact is not made by the missed approach point, he will announce such and call out the missed approach procedures.

d. During VMC, the P and NCM will focus primarily outside the aircraft to provide adequate warning of traffic or obstacles. They will announce when their attention is focused inside the aircraft.

2. Procedures. Perform the desired approach procedures per AR 95-1, DOD FLIP, FM 1-240, and TM 1-1520-237-10.

REFERENCES: Appropriate common references.

TASK 1082

Perform precision approach.

CONDITIONS: In a UH-60 helicopter or a UH-60FS in IMC or with reference to instruments only, given approach information and appropriate DOD FLIP.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Perform the approach per AR 95-1, FM 1-240, and the DOD FLIP.

2. For an ILS approach, intercept and maintain the LOC and glide slope per FM 1-240. Maintain the LOC course within 2.5 of course centerline (two dots on the HSI/VSI)and the glide slope within 0.5 of glide slope center (two dots on the VSI).

3. For a PAR approach, make immediate heading and altitude changes issued by ATC and maintain headings ±5 degrees; for final approach, maintain glide slope as directed by ATC.

4. Comply with the DH prescribed for the approach.

5. Perform the correct missed approach procedure per DOD FLIP or ATC instruction upon reaching the DH if landing cannot be accomplished per AR 95-1.

DESCRIPTION:

1. Crew actions.

a. The PC will review the approach with the other crew members before initiating the procedure. He will confirm with the crew the specific approach to be flown, that the correct navaid/communication frequencies are set, and the HSI and CIS are properly set, as required. The PC may assign other crew members to perform these duties.

b. The P* will focus primarily inside the aircraft on the instruments and perform the approach. He will follow the heading/course, altitude, and missed approach directives issued by the P. He will announce any deviation not directed by ATC or the P and will acknowledge all navigation directives given by the P.

c. The P will call out the approach procedure to the P* and will advise the P* of any unannounced deviations. He will monitor outside for visual contact with the landing environment. If he makes visual contact suitable to complete the landing per AR 95-1 he will announce such and may, if directed by the PC, take the controls and complete the landing. If visual contact is not made by the Decision Height, he will announce such and call out the missed approach procedures.

d. During VMC, the P and NCM will focus primarily outside the aircraft to provide adequate warning of traffic or obstacles. They will announce when their attention is focused inside the aircraft.

2. Procedures. Perform the desired approach procedures per AR 95-1, DOD FLIP, FM 1-240, and TM 1-1520-237-10.

REFERENCES: Appropriate common references.

TASK 1083

Perform inadvertent IMC procedures.

CONDITIONS: In a UH-60 helicopter with reference to instruments only or in a UH-60FS in IMC.

STANDARDS: Appropriate common standards plus these additions/modifications:

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

2. Initiate a climb immediately.

3. Comply with local SOP.

DESCRIPTION:

1. Crew actions.

a. The P*/P will announce inadvertent IMC.

b. The P* will announce when he initiates inadvertent IMC procedures.

c. The P will monitor the cockpit instruments to assist in establishing coordinated flight within aircraft operating limits. He also will make the appropriate radio calls.

d. The NCM will focus primarily outside the aircraft to provide adequate warning for avoiding terrain or obstacles. The P and NCM will perform any other crew tasks as directed by the PC.

2. Procedures. If inadvertent IMC are encountered--

a. Level the wings on the attitude indicator.

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

c. Adjust the torque to climb power.

d. Adjust the airspeed to climb airspeed.

e. Complete the inadvertent IMC recovery per local regulations and policies.

NIGHT OR NVG CONSIDERATIONS: When using NVG, it may be possible to see through a thin obscuration, such as fog and drizzle, with little or no degradation. The NVG may be removed or flipped up once stable flight is established.

NOTE: If IMC are entered with the pink light or landing light on, spatial disorientation may occur.

REFERENCES: Appropriate common references plus unit and local SOP.

TASK 1084

Perform command instrument system operations.

CONDITIONS: In a UH-60 helicopter or a UH-60FS.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Configure the CIS to obtain the desired navigational data and commands.

2. Follow the cyclic roll, cyclic pitch, and collective position commands, as appropriate.

DESCRIPTION: Configure the CIS MODE SEL panel and, if required, the HSI/VSI MODE SEL panel, as required per TM 1-1520-237-10.

REFERENCE: Appropriate common references.

TASK 1095

Operate aircraft survivability equipment.

CONDITIONS: In a UH-60 helicopter or UH-60FS equipped with ASE or orally.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Rated.

a. Describe the purpose of each installed item of ASE.

b. Perform/describe preflight inspection, turn-on, test, operation, and shut down of installed ASE.

c. Correctly employ/describe use of installed ASE.

2. Nonrated. Correctly prepare equipment for operation.

DESCRIPTION:

1. Perform or describe preflight inspection, turn-on, test, operation, and shutdown of installed ASE equipment. Evaluate and interpret the ASE visual and aural indications.

2. Properly execute mission employment doctrine and determine partial failure alternatives.

REFERENCES: Appropriate common references plus the following:

ASET Programs
FM 1-101

TASK 1135

Perform instrument maneuvers.

CONDITIONS: In a UH-60 helicopter or a UH-60FS in IMC or with reference to instruments only.

STANDARDS: Appropriate common standards plus correctly maneuver the aircraft to establish and maintain the desired altitude and course or heading, as appropriate.

DESCRIPTION:

1. Crew actions.

a. The P* will remain focused primarily on aircraft instruments. He will announce heading and altitude changes.

b. During simulated IMC, the P and NCM will assist in clearing the aircraft and provide adequate warning of traffic and obstacles. The P will confirm heading and altitude changes.

2. Procedures. Adjust cyclic as required to maintain the desired airspeed and heading. Adjust collective as required to maintain the desired climb/descent rate or altitude and maintain aircraft in trim with the pedals. Perform instrument procedures per AR 95-1, FM 1-240, and DOD FLIP.

REFERENCES: Appropriate common references.

TASK 1136

Perform go-around.

CONDITIONS: In a UH-60 helicopter or a UH-60FS.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Determine when a go-around is required.

2. Immediately apply climb power (not to exceed aircraft limits).

3. Accelerate to climb airspeed ±10 knots.

4. Maintain aircraft in trim.

5. Maintain appropriate ground track.

DESCRIPTION:

1. Crew actions.

a. The P* will announce his intent to perform a go-around and will remain primarily focused outside to avoid obstacles.

b. The P and NCM will assist in clearing the aircraft and provide adequate warning of obstacles. The P will also monitor systems instruments to ensure aircraft limits are not exceeded.

2. Procedures. When it becomes doubtful that a safe landing can be accomplished, announce "Go around." Immediately increase power and simultaneously adjust pitch attitude to stop the descent and start a climb to clear any obstacles. Maintain aircraft in trim and accelerate to the appropriate climb speed for conditions. Maintain the appropriate ground track.

NOTE: The decision to go-around may be made at any time, but should be determined before descending below the barriers or decelerating below ETL.

NIGHT OR NVG CONSIDERATIONS: A go-around should be initiated if visual contact with the landing area is lost.

SNOW/SAND/DUST CONSIDERATIONS: If, during the approach, visual reference with the landing area or obstacles is lost, initiate a go-around immediately. Be prepared to transition to instruments and perform an instrument takeoff. Once VMC is regained, continue with the go-around.

MOUNTAINOUS AREA CONSIDERATIONS: If, at any time during an approach, insufficient power is available or turbulent conditions or wind shift create an unsafe condition, perform a go-round immediately. Perform one of the following:

1. Where escape routes exist, turn the aircraft away from the terrain, apply forward cyclic, and lower the collective, if possible. Accelerate the aircraft to an appropriate airspeed for conditions and complete the go-around.

2. Where escape routes do not exist, adjust aircraft for maximum rate of climb to ensure obstacle clearance. Upon clearing obstacles, accelerate aircraft to an appropriate airspeed for conditions and complete the go-around.

REFERENCES: Appropriate common references.

TASK 1137

Participate in a crew-level after-action review.

CONDITIONS: After flight in a UH-60 helicopter or a UH60FS and given a crew-level after-action review checklist.

STANDARDS: Appropriate common standards plus brief items detailed in a crew-level after-action review checklist.

DESCRIPTION:

1. Crew actions.

a. The PC/AMC will conduct a crew-level after-action review. He will use a checklist similar to the one shown in Figure 6-9. The PC/AMC will actively seek input from all crew members. He will ensure that the results of the review are passed to operations and flight standards.

b. All crew members will actively participate in the review. The intent is to constructively review the mission and apply lessons learned into subsequent missions.

2. Procedures. Using an after-action review checklist, participate in a crew-level after-action review of the mission. The review should be an open and frank discussion of all aspects of the mission. It should include all factors of the mission and incorporate all crew members. The results of the review should be passed to operations and flight standards.

REFERENCES: Appropriate common references plus AR 95-1.

CREW-LEVEL AFTER-ACTION REVIEW CHECKLIST

1. Restate mission objectives with METT-T considerations.

2. Conduct review for each mission segment:

a. Restate planned actions/interactions for the segment.

b. What actually happened?

(1) Each crew member states in own words.

(2) Discuss impacts of crew coordination requirements, aircraft/equipment operation, tactics, commander's intent, etc.

c. What was right or wrong about what happened?

(1) Each crew member states in own words.

(2) Explore causative factors for both favorable and unfavorable events.

(3) Discuss crew coordination strengths and weakness in dealing with each event.

d. What must be done differently the next time?

(1) Each crew member states in own words.

(2) Identify improvements required in the areas of team relationships, mission planning, workload distribution and prioritization, information exchange, and cross-monitoring of performance.

e. What are the lessons learned?

(1) Each crew member states in own words.

(2) Are changes necessary to:

(a) Crew coordination techniques?

(b) Flying techniques?

(c) SOP?

(d) Doctrine, ATM, TMs?

3. Effect of segment actions and interactions on the overall mission.

a. Each crew member states in own words.

b. Lessons learned.

(1) Individual level.

(2) Crew level.

(3) Unit level.

4. Advise unit operations of significant lessons learned.

Figure 6-9. Suggested format for a crew-level after-action review checklist

TASK 1146

Perform VMC flight maneuvers.

CONDITIONS: In a UH-60 helicopter or a UH-60FS.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Correctly maneuver the aircraft to establish and maintain the desired altitude and course, ground track, or heading, as appropriate.

2. Correctly enter, operate in, and depart a traffic pattern.

DESCRIPTION:

1. Crew actions.

a. The P* will remain focused primarily outside the aircraft. He will announce and clear each turn, climb, and descent.

b. The P and NCM will assist in clearing the aircraft and will provide adequate warning of traffic and obstacles. They will announce when their attention is focused inside the aircraft.

2. Procedures. Adjust cyclic as required to maintain the desired airspeed and heading. Adjust collective as required to maintain the desired climb/descent rate or altitude and maintain aircraft in trim with the pedals. Perform traffic pattern operations per ATC directives, local SOP, and FM 1-203.

NIGHT OR NVG CONSIDERATIONS:

1. The P* will focus primarily outside the aircraft and should concentrate on obstacle avoidance and aircraft control. The P will make all internal cockpit checks.

2. For NVG training in the traffic pattern, the recommended maximum airspeed is 90 KIAS and the recommended maximum bank angle is 30 .

REFERENCES: Appropriate common references plus the following:

DOD FLIP
Unit and local SOP

TASK 1150

Select landing zone/pickup zone

CONDITIONS: In a UH-60 helicopter, a UH-60FS or orally.

STANDARDS: Appropriate common standards plus determine the suitability of the area for the required operations.

DESCRIPTION:

1. Crew actions.

a. The P* will remain focused primarily outside the aircraft throughout the maneuver for aircraft control and obstacle avoidance. He will announce his intent to deviate from the maneuver.

b. The P and NCM will assist in clearing the aircraft, and will provide adequate warning of obstacles. They will acknowledge the P*'s intent to deviate from the maneuver.

2. Procedures.

Determine the suitability by evaluating size, long axis, barriers, surface conditions, tactical situation, and effects of the wind. Select a flight path, altitude, and airspeed that affords the best observation of the landing area, as required. Determine an approach and departure path and desired touchdown point.

NOTE 1: If wind conditions will be a factor, a wind evaluation should be performed. Techniques for evaluating wind conditions are found in FM 1-202.

NOTE 2: Depending on the mission, an in-flight suitability check may not be feasible. Suitability may be determined by a map reconnaissance. Make a final determination of suitability upon arrival to the LZ/PZ.

WARNING

Not all hazards will be depicted on a map. When using a map reconnaissance to determine suitability, the added risk of unknown hazards must be addressed during the mission risk assessment process.

NIGHT OR NVG CONSIDERATIONS:

1. Unimproved and unlit areas are more difficult to evaluate at night because of low contrast. Knowledge of the various methods for determining the height of obstacles is critical to successfully completing this task. Visual obstacles should be treated the same as physical obstacles.

2. When performing operations during unaided night flight, ensure that the searchlight or landing light (white light) is in the desired position. Use of the white light will impair night vision several minutes. Therefore, exercise added caution if resuming flight before reaching fully dark adaptation.

CONFINED AREA CONSIDERATIONS: Determine a suitable axis and path for a go-around. For multi-aircraft operations, determine the number of aircraft that the area can safely accommodate.

SNOW/SAND/DUST CONSIDERATIONS: Evaluate surface conditions for the likelihood of encountering a whiteout/brownout. Determine a suitable axis and path for a go-around.

MOUNTAIN/PINNACLE/RIDGELINE CONSIDERATIONS: When practical, position the aircraft on the windward side of the area. Evaluate suitability paying particular attention to density altitude and winds. Determine a suitable axis and escape route for a go-around.

REFERENCES: Appropriate common references.

TASK 2001

Perform a rolling takeoff.

CONDITIONS: In a UH-60 helicopter or a UH-60FS with a suitable takeoff area.

STANDARDS: Appropriate common standards plus the following additions/modifications:

1. Before liftoff.

a. Establish and maintain power, as necessary.

b. Maintain alignment with takeoff direction ±5 degrees.

c. Accelerate to desired liftoff speed not to exceed 60 knots ground speed.

2. After liftoff.

a. Adjust power, as required, not to exceed aircraft limits.

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

c. Maintain maximum rate of climb airspeed ±5 KIAS.

d. Maintain aircraft in trim immediately after liftoff.

DESCRIPTION:

1. Crew actions.

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

b. The P and NCM will announce when ready for takeoff and will remain focused primarily outside the aircraft to assist in clearing and to provide adequate warning of obstacles. The P will announce when his attention is focused inside the cockpit. He will monitor power requirements, ground speed, and advise the P* when power limits are being approached.

2. Procedures.

a. A rolling takeoff is used when hover power for takeoff is marginal or insufficient and a takeoff must be made. The concept is to use rotor system power to accelerate the aircraft to a more efficient speed while not having to produce lift sufficient for flight.

WARNING

Depending on aircraft weight, speed, and size of the takeoff area, if the takeoff is aborted, it may be impossible to stop the aircraft before reaching any barriers. Also, situations requiring this maneuver will usually result in very marginal single-engine characteristics. This increased risk factor will be addressed during the mission risk assessment process.

b. Verify that the takeoff surface is suitable for the maneuver, and select ground reference points. Neutralize the cyclic, and raise the collective to establish the aircraft light on the wheels. Use the pedals to maintain heading. Coordinate forward cyclic, and raise the collective as necessary to accelerate the aircraft. Maintain heading with pedals and accelerate to maximum rate-of-climb IAS, not to exceed 60 knots ground speed. Lower the collective if necessary to maintain the main landing gear in contact with the takeoff surface until liftoff speed is attained. Note that the aircraft nose will drop as a result of tailwheel lift off as forward speed increases. Upon reaching liftoff speed, adjust power to maximum and cyclic as necessary to allow the aircraft to become airborne. After liftoff, trim the aircraft as soon as possible. Establish and maintain maximum rate of climb airspeed until the aircraft is clear of obstacles.

NOTE 1: For training, to simulate situations requiring a rolling takeoff, use 10-percent-below-hover torque as maximum torque available.

NOTE 2: Pilot technique, winds, and type of runway surface will affect the distance needed to perform this maneuver.

NIGHT OR NVG CONSIDERATIONS:

1. If sufficient illumination or NVD resolution exists to view obstacles, accomplish the takeoff in the same way as a rolling takeoff during the day. Visual obstacles such as shadows should be treated as physical obstacles. If sufficient illumination or NVD resolution does not exist, a rolling takeoff should not be performed.

2. Reduced visual references during the takeoff and throughout the ascent at night may make it difficult to maintain the desired ground track. Knowledge of the surface wind direction and velocity will assist in establishing the crab angle required to maintain the desired ground track.

REFERENCES: Appropriate common references.

TASK 2002

Perform fast rope insertion.

CONDITIONS: In a UH-60 helicopter properly configured.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Rated.

a. Conduct a thorough crew and passenger briefing.

b. Maintain entry altitude as directed ±10 feet.

c. Maintain entry airspeed of 80 KIAS ±5 KIAS.

d. Maintain track aligned with landing direction.

e. Perform a smooth, controlled termination to a hover over the insertion point.

f. Maintain appropriate hover height ±5 feet.

2. Nonrated. Ensure that the aircraft is configured for fast rope operations per TC 21-24.

DESCRIPTION:

1. Crew actions.

a. The PC will conduct a crew and passenger briefing and ensure personnel are familiar with normal and emergency procedures. He will ensure the aircraft is properly rigged.

b. The P* will remain focused primarily outside the aircraft throughout the maneuver and will announce when he begins the maneuver. The P* will also announce the intended point of insertion.

c. The P and NCM will assist in clearing the aircraft, and will provide adequate warning of obstacles. They will also assist the P* in maintaining a stable hover. The NCM will inspect the rigging to ensure that the aircraft is properly configured for fast rope operations.

2. Procedures.

a. Arrive over the insertion point at a predetermined hover height (not to exceed rope length). Remain over the area at a stabilized hover until all ropers and ropes are clear.

b. After ropers are clear, crew members will pull the ropes back inside the aircraft or release them by pulling the locking device and detaching the rope. Keep the aircraft stationary until the "ropes clear" signal is given.

NOTE 1: Tasks 1017, Perform hovering flight, and 2087, Perform terrain flight deceleration, contain procedures that may be used in performing this task.

NOTE 2: A high hover, especially if a 90-foot rope is used, may cause the loss of all normal visual hover cues.

WARNING

Ensure that crew members in the cabin area are wearing a safety harness secured to a tiedown ring anytime the cabin doors are open. Also ensure that all ropers are on the ground before any ropes are released.

CAUTION

Hover OGE power is required for this task.

REFERENCES: Appropriate common references plus the following:

TC 21-24
Unit SOP

TASK 2005

Perform FM radio homing.

CONDITIONS: In a UH-60 helicopter or a UH-60FS.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Tune the homing station.

2. Use the correct homing procedures.

3. Identify station passage.

DESCRIPTION:

1. Crew actions.

a. The P* will remain focused primarily inside the aircraft.

b. The P and NCM will remain focused primarily outside the aircraft and clear the aircraft. They will provide adequate warning of traffic or obstacles. They will announce when their attention is focused inside the aircraft.

2. Procedures.

a. Establish radio contact with the homing station and specify definite transmission and pause periods. Set the VSI/HSI and CIS mode selector panels and FM radio per TM 1-1520-237-10.

b. While the station is transmitting turn to a heading that will center the course deviation pointer. After the pointer is centered, solve ambiguity by turning either left or right and observing that the pointer drifts in the opposite direction. While homing to the station, change heading slightly (10 to 15 degrees) during the transmissions and observe that the pointer continues to deflect in the opposite direction. If the pointer shows a turn in the same direction, it indicates that the aircraft has passed the station. Station passage is also indicated on the CIS MODE SEL panel by the HDG switch light going on and the NAV switch light going out. Continue the turn and attempt to identify the station visually or to verify position.

REFERENCES: Appropriate common references.

TASK 2008

Perform evasive maneuvers.

CONDITIONS: In a UH-60 helicopter, UH-60FS, or orally.

STANDARDS: Appropriate common standards plus use the correct evasive maneuver consistent with the type of hostile fire encountered.

DESCRIPTION:

1. Crew actions.

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

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

c. The P and NCM will remain focused primarily outside the aircraft and announce adequate warning to avoid obstacles detected during the evasive maneuver. They also will announce when their attention is focused inside the aircraft.

2. Procedures.

a. The specific maneuver required 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 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 suppressive fire.

(2) Large caliber, antiaircraft fire (radar-controlled). Execute an immediate 90-degree turn, deploy chaff, and mask the helicopter. After turning, do not maintain a straight line of flight or the same altitude for more than 10 seconds before initiating a second 90-degree turn. To reduce the danger, descend immediately to NOE altitude.

NOTE: Dispensing chaff while maneuvering may cause tracking radars to break lock.

(3) Fighters. Upon sighting a fighter, try to mask the helicopter. If the fighter is alone and executes a dive, turn the helicopter toward the attacker and descend. This maneuver will cause the fighter pilot to increase his attack angle. Depending on the fighter's dive angle, it may be advantageous to turn sharply and maneuver away once the attacker is committed. The fighter pilot will then have to break off his attack to recover from the maneuver. Once he

breaks off his attack, maneuver the helicopter to take advantage of terrain, vegetation, and shadow for concealment.

(4) Heat-seeking missiles. Try to keep helicopter heat sources away from the threat. If a missile is sighted, turn the tail of the helicopter away from the missile and mask the helicopter. As appropriate, employ the aircraft survivability equipment to counter heat-seeking devices while maneuvering to avoid the threat.

(5) Antitank-guided missiles. Some missiles fly relatively 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 flight path or altitude to evade it.

(6) Artillery. Depart the impact area, and determine NBC requirements.

(7) Radar-guided missiles. Maneuver the helicopter to break the line of sight to the radar source while simultaneously activating chaff if available.

b. If hit by hostile fire, rapidly assess the situation and determine an appropriate course of action. The first step is to assess aircraft controllability. Then check all instruments and warning and caution lights. If a malfunction is indicated, initiate the appropriate emergency procedure. If continued flight is possible, take evasive action. Make a radio call to report your situation, location, and action. Also request assistance if desired. Continue to be alert for unusual control responses, noises, and vibrations. Monitor all instruments for an indication of a malfunction. Fly the aircraft to the nearest secure location and land. After landing, inspect the aircraft to determine the extent of damage and whether flight can be continued.

NOTE 1: Proper employment of terrain flight techniques will reduce exposure to enemy threat weapon systems.

NOTE 2: Hover OGE power may be required for this task.

REFERENCES: Appropriate common references plus the following:

ASET Programs
FM 1-101
FM 1-107
Unit SOP

TASK 2009

Perform multiaircraft operations.

CONDITIONS: In a UH-60 helicopter or a UH-60FS with the mission briefing completed.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Rated.

a. Correctly maneuver into the flight formation.

b. Correctly change position in the flight formation when required.

c. Maintain proper horizontal and vertical separation for the type of formation flight being conducted.

d. Correctly perform techniques of movement, if required.

2. Nonrated. Correctly assume a position in the helicopter to observe other aircraft in the formation.

DESCRIPTION:

1. Crew actions.

a. The P* will focus primarily outside the aircraft for clearing and keeping track of other aircraft. He will announce any maneuver or movement before execution and inform the P and NCM if visual contact is lost with other aircraft.

b. The P and NCM will provide adequate warning of traffic or obstacles detected in the flight path and identified on the map. They will inform the P* if visual contact is lost with other aircraft, if an enemy is sighted, and when their attention is focused inside the aircraft. They will position themselves in the aircraft to observe other aircraft in the formation and assist in maintaining aircraft separation and obstacle clearance.

2. Procedures.

a. Perform formation flight per AR 95-1, FM 1-107, TC 1-201, TC 1-204, TC 1-210, FM 90-4, and the unit SOP.

b. If the tactical situation requires, perform techniques of movement per TC 1-201.

NIGHT OR NVG CONSIDERATIONS: Closure rates are more difficult to determine. Keep changes in the formation to a minimum. All crew members must avoid fixation by using proper scanning techniques.

a. Night. During unaided night flight, the crew should use formation and position lights to aid in maintaining the aircraft's position in the formation.

b. NVG. When conducting NVG formation flight, the crew should use the IR formation lights (if installed) to maintain the aircraft's position in the formation. Additional crew member requirements are in TC 1-210, Chapter 4.

REFERENCES: Appropriate common references plus the following:

FM 90-4
Unit SOP

TASK 2010

Perform rappelling procedures.

CONDITIONS: In a UH-60 helicopter properly configured.

STANDARDS: Appropriate common standards plus these additions/modification:

1. Rated.

a. Conduct a thorough crew and passenger briefing.

b. Maintain appropriate hover altitude ±10 feet.

c. Do not allow drift to exceed 5 feet from the intended hover point.

d. Maintain ropes in continuous contact with the ground.

2. Nonrated. Ensure that the aircraft is configured for rappelling operations per TC 21-24.

DESCRIPTION:

1. Crew actions.

a. The PC will conduct a crew and passenger briefing and ensure personnel are familiar with normal and emergency procedures. He will ensure the aircraft is properly rigged.

b. The P* will remain focused primarily outside the aircraft throughout the maneuver. He will announce the intended point of insertion.

c. The P and NCM will assist in clearing the aircraft and will provide adequate warning of obstacles. They will also assist the P* in maintaining a stable hover by providing the P* with information regarding the lateral and fore-and-aft drift of the aircraft.

d. The P will monitor cockpit indications.

e. The NCM will ensure that the aircraft is configured properly per TC 21-24. He will also ensure that all rappelling ropes are dropped or retrieved and secured in the aircraft before takeoff.

2. Procedures. Make the approach into the wind if possible and plan to terminate the approach at an altitude that will clear the highest obstacle. Select an appropriate reference point to maintain heading and position over the ground. Ensure the aircraft is at an altitude that allows approximately 20 feet of the rappelling ropes to be on the ground. During the rappelling operation, use the collective to maintain altitude and be prepared to

correct for CG changes as the rappellers depart the aircraft.

WARNING

Ensure the rappel master and crew chief are wearing a safety harness secured to a tiedown ring anytime the cabin doors are open. Also ensure that all rappellers are on the ground before any rappel ropes are released.

CAUTION

Hover OGE power is required for this task.

NIGHT OR NVG CONSIDERATIONS: Proper scanning techniques are necessary to avoid spatial disorientation.

REFERENCES: Appropriate common references plus the following:

Unit SOP
TC 21-24

TASK 2011

Perform rescue-hoist operations.

CONDITIONS: In a UH-60 helicopter equipped with a rescue-hoist system.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Rated.

a. Perform a preflight inspection of the rescue hoist per TMs 1-1520-237-10/CL.

b. Perform rescue-hoist procedures per TMs 1-1520-23710/CL, FM 8-10-6, TC 1-201, and the unit SOP.

c. Maintain appropriate hover altitude ±10 feet.

d. Do not allow drift to exceed 5 feet.

2. Nonrated.

a. Perform a preflight inspection of the rescue hoist per TMs 1-1520-237-10/CL.

b. Correctly operate the rescue-hoist pendant.

DESCRIPTION:

1. Crew actions.

a. The PC will conduct a thorough crew briefing and ensure all members of the crew are familiar with emergency procedures and rescue-hoist operations.

b. The P* will remain focused primarily outside the aircraft throughout the maneuver. He will monitor altitude and avoid obstacles.

c. The P and NCM will assist in clearing the aircraft and will provide adequate warning of obstacles.

d. The P will clear the aircraft and, if necessary, be able to operate the control panel for the rescue hoist.

e. The NCM conduct the hoist operation per TC 1-201, TMs 1-1520-237-10/CL, and the unit SOP.

2. Procedures. Perform hoist operations per FM 8-10-6, TC 1-201, TMs 1-1520-237-10/CL, and the unit SOP.

WARNING

Ensure that crew members in the cabin area are wearing a safety harness secured to a tiedown ring anytime the cabin doors are open. The crew member riding the hoist will be secured either to the aircraft or to the jungle penetrator.

CAUTION

Hover OGE power is required for this task.

NIGHT OR NVG CONSIDERATIONS: Use proper scanning techniques to ensure obstacle avoidance maintain aircraft control.

REFERENCES: Appropriate common references plus the following:

FM 8-10-6
Unit SOP

TASK 2013

Perform paradrop operations.

CONDITIONS: In a UH-60 helicopter with a jumpmaster or orally.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Rated. Maintain appropriate ground track over the drop zone.

2. Nonrated. Ensure that the aircraft is prepared for paradrop operations per TM 1-1520-237-10, FM 31-19, FM 57-230, and the unit SOP.

DESCRIPTION:

1. Crew actions.

a. The PC will conduct a crew and jumpmaster briefing and ensure personnel are

familiar with normal and emergency procedures. He will ensure the aircraft is rigged properly, if required.

b. The P* will remain focused primarily outside the aircraft throughout the maneuver.

c. The P and NCM will assist in clearing the aircraft and will provide adequate warning of obstacles.

d. The P will ensure that the jumpmaster or crew chief retrieves the static lines as soon as the last parachutist has cleared the aircraft.

e. The NCM will ensure that the aircraft is properly prepared for paradrop operations. He or the jumpmaster will acknowledge all communications from the P* and P. The NCM will inform the P* or P when all parachutists have exited the aircraft.

2. Procedures. Maintain altitude, airspeed, and ground track as determined during premission planning and jumpmaster's instructions. Perform in-flight procedures per FM 31-19, FM 57-220, and FM 57-230.

WARNING

Ensure that any personnel in the cabin area not wearing a parachute are wearing a safety harness secured to a tie- down ring or are seated in a seat with seat belt on.

NOTE: Many parachutists are equipped with automatic parachute openers. Certain models must be disarmed if the parachutist remains with the aircraft during a descent. If the mission is aborted, ensure that these openers are disarmed before the aircraft begins the descent.

CAUTION

Ensure that static lines remain secured to the anchor point until they are recovered or the aircraft has landed. If recovery of static lines is impossible, execute a roll-on landing to avoid entangling deployment bags in the rotor system.

NOTE: Initial evaluation of this task must be performed in the helicopter.

REFERENCES: Appropriate common references plus the following:

FAR, Part 105
FM 31-19
FM 57-220
FM 57-230
Unit SOP

TASK 2015

Perform STABO operations.

CONDITIONS: In a UH-60 helicopter with STABO equipment installed.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Rated. During hover, maintain hover altitude ±10 feet and do not allow drift to exceed 5 feet.

2. Nonrated. Ensure that the aircraft is prepared for STABO operations per TC 21-24 and the unit SOP.

DESCRIPTION:

1. Crew actions.

a. The PC will conduct a crew and passenger briefing and ensure personnel are familiar with normal and emergency procedures. He will ensure the aircraft is properly rigged.

b. The P* will remain focused primarily outside the aircraft throughout the maneuver. He will monitor altitude and avoid obstacles.

c. The P and NCM will assist in clearing the aircraft and will provide adequate warning of obstacles. They will assist the P* during the pickup phase of the operation. They will advise the P* when the slack is out of the ropes and when the STABO members are off the ground and above the highest obstacle. During forward flight, the NCM must constantly monitor the STABO members and keep the P* informed of their stability.

2. Procedures.

a. Ascend at a rate that will ensure the safety of the STABO members. To avoid "jerking" the STABO members off the ground, the slack in the ropes must be removed cautiously. Do not start forward flight until all obstacles are cleared.

b. While in flight it may be necessary to reduce airspeed if they start a spin or the cone angle exceeds 30 .

c. Descend at a rate that will ensure the safety of the STABO members. Ensure that STABO members are lowered gently to the surface. Maintain a stable hover until STABO members clear the ropes.

WARNING

Ensure that the STABO system operator and crew chief wear a safety harness secured to a tiedown ring anytime cabin doors are opened.

CAUTION

Ensure that STABO lines remain secured to the anchor cable until the aircraft has landed. If recovery of STABO lines is impossible, execute a roll-on landing to avoid entanglement in the rotor system.

CAUTION

Hover OGE power is required for this task.

NIGHT OR NVG CONSIDERATIONS:

1. For unaided night flight, the landing light and searchlight should be operational. If an NVG filter is installed, it should be removed.

2. When NVG are used, hovering with minimum drift is difficult and requires proper scanning techniques and crew member coordination. If possible, an area with adequate

ground contrast and reference points should be used.

REFERENCE: Appropriate common references plus the following:

TC 21-24
Unit SOP

TASK 2016

Perform external load operations.

CONDITIONS: In a UH-60 helicopter with an operational cargo hook or in a UH-60FS.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Rated.

a. Before hookup. Verify that the aircraft will remain within gross weight and CG limitations.

b. Hookup and hover.

(1) Ensure that the aircraft remains clear of the load and any obstacles.

(2) Perform a vertical ascent with the load to a load height of 10 feet ±5 feet.

(3) Determine power sufficient to continue the maneuver.

c. Takeoff. Maintain aircraft in trim (above 100-feet AGL).

d. Approach and load release.

(1) Maintain a constant approach angle to ensure the load safely clears obstacles and terminate over the intended point of landing.

(2) Perform a vertical descent with the load to the desired touchdown point ±5 feet.

2. Nonrated. Clear the aircraft and sling load during the operation.

DESCRIPTION:

1. Crew actions.

a. The PC will conduct a thorough mission briefing and ensure all personnel are familiar with normal and emergency procedures.

b. The P* will remain primarily focused primarily outside the aircraft throughout the maneuver. He will monitor altitude and avoid obstacles.

c. The P will monitor the cockpit instruments and assist the P* in clearing the aircraft. He will set cargo hook switches, as required, and should make all radio calls. When directed by the P*, the P will "arm" the cargo hook and release the load.

d. The P and NCM will assist in clearing the aircraft and will provide adequate warning of obstacles.

e. The NCM will remain primarily focused on the load. He will guide the P* during the load pickup, advise of the load condition in flight, and direct the P* when setting down the load.

2. Procedures.

a. Hookup and hover. Set cargo hook control switches per TM 1-1520-237-10. Follow hand signals from the signalman and commands from the NCM to hover over the load. Remain vertically clear of and centered over the load. When the load is hooked up, remove slack from the sling and ascend vertically to a load height of 10 feet. Ensure aircraft limitations are not exceeded.

b. Takeoff. Establish a constant angle of climb that will permit safe obstacle clearance. When above 100 feet AGL or when clear of obstacles, adjust attitude and power as required to establish the desired rate of climb and airspeed. Smoothly adjust flight controls to prevent load oscillation. After passing above 300-feet AGL, place the cargo release switch in the SAFE position.

NOTE: Ensure that the cargo switch is in the ARM position when operating at altitudes below 300-feet AHO.

c. En route. Maintain the desired altitude, flight path, and airspeed. Make smooth control applications to prevent load oscillation. If a lateral load oscillation occurs, reduce airspeed. If a fore-and-aft oscillation occurs, begin a shallow bank while reducing airspeed.

d. Approach and load release. Establish and maintain and approach angle that will keep the load clear of obstacles to the desired point of termination. Establish a rate of closure appropriate for the conditions and the load. When passing below 300 feet AGL, place the cargo release switch in the ARM position. Terminate the approach at a stationary hover with the load 10 feet above the intended release point. (A go-around should be made before descending below obstacles or decelerating below ETL.) Confirm with the NCM that the release point is clear. Descend vertically until the load rests completely on the ground. Continue descent to obtain slack in the sling,

and then hover laterally to ensure the clevis is clear of the load before releasing the load. Confirm that the load is released before moving away from the release point.

NOTE 1: Avoid flight over populated areas.

NOTE 2: Before the mission, the PC will ensure that all crew members are familiar with the hand and arm signals shown in TC 1-201 and with forced landing procedures. In case of a forced landing, the aviator will land the aircraft to the left of the load. The hookup man will move to the right of the aircraft and lie facedown on the ground. The signalman will remain in place and lie facedown on the ground.

NOTE 3: If the crew member pendant is used, the crew member must be unit trained.

WARNING

When performing this task with cabin doors open, ensure that any personnel in the cabin area are wearing a safety harness secured to a tiedown ring or are seated in a seat with seat belt on.

CAUTION

Hover OGE power is required for this task.

NIGHT OR NVG CONSIDERATIONS:

1. For unaided night flight, the landing light and searchlight should be operational. If an NVG filter is installed, it should be removed.

2. When NVG are used, hovering with minimum drift is difficult and requires proper scanning techniques and crew member coordination. If possible, an area with adequate ground contrast and reference points should be used.

3. Visual obstacles should be treated the same as physical obstacles.

4. The rate of descent and rate of closure should be slightly slower to avoid abrupt attitude changes at low altitudes.

REFERENCES: Appropriate common references plus the following:

FM 21-60
FM 55-450-3
FM 55-450-4
Unit SOP

TASK 2017

Perform internal load operations.

CONDITIONS: In a UH-60 helicopter loaded with passengers/cargo, or orally.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Rated.

a. Perform or ensure that a thorough passenger briefing is conducted, if applicable.

b. Verify that the aircraft will remain within gross weight and CG limitations.

c. Ensure that the passengers and cargo are properly restrained.

d. Ensure that floor-loading limits are not exceeded.

2. Nonrated.

a. Perform a thorough passenger briefing, if applicable.

b. Load the aircraft per the load plan, if applicable.

c. Correctly secure passengers and the load.

DESCRIPTION:

1. Crew actions.

a. The PC will formulate a load plan, ensure that a DD Form 365-4 is completed, if required, and ensure that the aircraft will be within gross weight and CG limits. He will ensure that the crew properly load the cargo, proper tiedown procedures are used, and any passengers receive a briefing.

b. The NCM will ensure passengers are seated and are wearing seat belts before takeoff. He will monitor passengers and cargo during the flight for security.

c. The P* will perform a hover power check before takeoff and ensure that the maximum allowable gross weight of the aircraft is not exceeded.

2. Procedures.

a. Load cargo per the cargo plan or DD Form 365-4, as appropriate. Correctly secure and restrain all cargo. For additional information, see Task 1003, Prepare DD Form 365-4.

b. Brief passengers for the flight and seat them according to the load plan or DD Form 365-4, as appropriate. For additional information, see Task 1071, Conduct passenger briefing.

NOTE 1: If the aircraft is not shut down for loading, a passenger briefing may be impractical. Passengers may be prebriefed or passenger briefing cards may be used per local directives or the unit SOP.

NOTE 2: Hazardous cargo will be handled, loaded, and transported per AR 95-27.

REFERENCES: Appropriate common references plus the following:

AR 95-27
FM 55-450-2
Unit SOP

TASK 2022

Perform aerial radio relay.

CONDITIONS: In a UH-60 helicopter equipped with the appropriate communications equipment.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Identify and tune the appropriate frequency.

2. Correctly establish contact with the message sender.

3. Correctly authenticate, if required.

4. Correctly establish contact with the message receiver.

5. Configure the aircraft radios for radio relay.

DESCRIPTION:

1. Crew actions.

a. The P* will focus primarily outside for obstacle avoidance.

b. The P will remain focused inside as required to perform this task.

2. Procedures. Follow the radio operation procedures outlined in TM 1-1520-237-10 and tune in the assigned frequencies. For additional information, see Task 2090, Perform tactical communications.

REFERENCES: Appropriate common references plus the following:

FM 24-35
SOI

TASK 2044

Perform actions on contact.

CONDITIONS: In a UH-60 helicopter or a UH-60FS.

STANDARDS: Appropriate common standards plus use the correct actions on contact consistent with the tactical situation.

1. If appropriate, immediately deploy to a covered and concealed position using suppressive fires.

2. Continue observation as appropriate to the mission.

3. Report the situation.

4. Choose a course of action.

DESCRIPTION:

1. Crew actions.

a. All crew members will immediately report any visual contact with the enemy.

b. The P* will remain primarily focused outside for traffic and obstacle avoidance.

c. The P and NCM will assist in traffic and obstacle avoidance.

2. Procedures. Fly the helicopter to a concealed area, using evasive maneuvers as required. Choose a course of action that supports the mission and the intent of the unit commander's directives. For additional information, see Task 2091, Transmit tactical report, and Task 2008, Perform evasive maneuvers.

REFERENCES: Appropriate common references plus the Unit SOP.

TASK 2046

Prepare aircraft for mission.

CONDITIONS: In a UH-60 helicopter and given a warning order or a mission briefing and available mission equipment.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Correctly install, secure, inspect, and inventory all mission equipment.

2. Correctly prepare the aircraft for the assigned mission.

DESCRIPTION: After receiving a mission briefing, determine the mission equipment that is required. Ensure that it is installed, secured, inventoried, and operational before flight. Check the equipment that requires aircraft power for operation per procedures in TMs 1-1520-237-10/CL or appropriate mission equipment operator's manuals.

REFERENCES: Appropriate common references plus the following:

TM 1-1520-237-10/CL
Unit SOP

TASK 2072

Perform emergency procedures for NVD failure.

CONDITIONS: In a UH-60 helicopter, a UH-60FS, or orally.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Identify or describe the indications of impending NVD failure.

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

DESCRIPTION:

1. Crew actions.

a. The P* must consider aircraft control and proximity to obstacles. If in a terrain flight mode he should start a climb and transfer the flight controls.

b. The P must be ready to assume aircraft control if the P* announces goggle failure.

c. All crew members must be prepared to assume the scan sector assigned to the crew member whose goggles have failed.

d. The PC will determine how a crew member's goggle failure affects the mission and any required deviations.

2. Procedures. Impending NVD failure may be indicated by flickering or dimming of the view image or by illuminating the low-battery indicator on the visor mount. If the NVD fails, perform the following procedure:

a. Immediately announce "goggle failure" and crew position.

b. Attempt to restore NVD power by selecting the alternate battery.

c. Advise the crew of restored vision or of continued failure.

d. If NVDs are not restored, revise or abort the mission.

NOTE: NVD tube failure is infrequent and usually preceded by ample warning such as intermittent operation. At low altitudes, the P* should consider turning on the landing light.

REFERENCES: Appropriate common references plus TM 11-5855-263-10.

TASK 2078

Perform terrain flight mission planning.

CONDITIONS: Before flight in a UH-60 helicopter or UH-60FS and given a mission briefing, navigational maps, a navigational computer, and other materials as required.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Correctly analyze the mission.

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

3. Select the appropriate terrain flight modes.

4. Select appropriate primary and alternate routes.

5. Determine the distance ±1 kilometer, groundspeed ±5 knots and ETE ±1 minute for each leg of the flight.

6. Determine the fuel required per AR 95-1 ±100 pounds.

7. Obtain and evaluate the weather briefing.

8. Perform mission risk assessment per unit SOP.

9. Conduct a thorough crew mission briefing.

DESCRIPTION:

1. Crew actions.

a. The PC/AMC will delegate mission tasks to crew members and have the overall responsibility for mission planning. He will analyze the mission in terms of METT-T.

b. The P and NCM will perform the planning tasks directed by the PC/AMC. They will report the results of their planning to the PC/AMC.

2. Procedures. Analyze the mission using the factors of METT-T. Conduct a map or an aerial photo reconnaissance. Obtain a thorough weather briefing that covers the entire mission. Determine primary and alternate routes, terrain flight modes, and movement techniques. Determine time, distance, and fuel requirements. Annotate the map or overlay with sufficient information to complete the mission. Consider such items as hazards, checkpoints, observation posts, and friendly and enemy positions.

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

REFERENCES: Appropriate common references plus the following:

FM 1-202
Unit SOP

TASK 2079

Perform terrain flight navigation.

CONDITIONS: In a UH-60 helicopter or a UH-60FS and given a mission briefing and required maps and materials.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. During NOE flight (surface to 25 feet AHO) know the en route location within 200 meters (with NVG, within 500 meters).

2. During contour flight (25 to 80 feet AHO) or low-level flight (80 to 200 AHO) know the en route location within 500 meters (with NVG, within 1,000 meters).

3. Locate each objective within 100 meters.

4. Arrive at each objective at the planned time ±2 minutes (if an objective arrival time was given in the mission briefing).

DESCRIPTION:

1. Crew actions.

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

b. The P will furnish the P* with the information required to remain on course. He will announce all plotted wires before approaching their location. The P will use rally terms and terrain features to convey instructions to the P*. Examples of these terms are "Turn left to your 10 o'clock," "Stop turn," and "Turn down the valley to the left." If using the HSI during low-level flight, the P may include headings. The P should use electronically aided navigation to help arrive at a specific checkpoint or turning point.

c. The P*, P and NCM should use standardized terms to prevent misinterpretation of information and unnecessary cockpit conversation. The crew must look far enough ahead of the aircraft at all times to assist in avoiding traffic and obstacles.

2. Procedures.

a. During NOE and contour flight, identify prominent terrain features that are located some distance ahead of the aircraft and which lie along or near the course. Using these terrain features to key on, the P* maneuvers the aircraft to take advantage of the terrain and vegetation for concealment. If this navigational technique does not apply, identify the desired route by designating a series of successive checkpoints. To remain continuously oriented, compare actual terrain features with those on the map.

An effective technique is to combine the use of terrain features and rally terms when giving directions. This will allow the P* to focus his attention outside the aircraft.

b. For low-level navigation, the time and distance can be computed effectively. This means that the P* can fly specific headings and airspeeds.

NOTE 1: Each of the methods for stating heading information is appropriate under specific conditions. When a number of terrain features are visible and prominent enough for the P* to recognize them, the most appropriate method is navigation instruction toward the terrain feature in view. When forward visibility is restricted and frequent changes are necessary, controlled turning instructions are more appropriate. Clock headings are recommended when associated with a terrain feature and with controlled turning instructions.

NOTE 2: For additional information, see Task 1025, Navigate by pilotage and dead reckoning, Task 1026, Perform electronically aided navigation, and Task 1076, Perform radio navigation.

NIGHT OR NVG CONSIDERATIONS:

1. Conducting the flight in reduced visibility or at night (aided or unaided) requires more detailed and extensive flight planning and map preparation. TC 1-204 contains details on night navigation. NVG navigation with standard maps can be difficult because of map colors and symbology.

2. Use proper scanning techniques to ensure obstacle avoidance.

REFERENCES: Appropriate common references plus FM 21-26.

TASK 2081

Perform terrain flight.

CONDITIONS: In a UH-60 helicopter or a UH-60FS.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Maintain altitude appropriate for the selected mode of flight.

2. Maintain airspeed appropriate for the selected mode of flight, terrain, weather, and visibility.

DESCRIPTION:

1. Crew actions.

a. The P* will focus primarily outside the aircraft and acknowledge all navigational and obstacle clearance instructions given by the P. He will announce the intended direction of flight or any deviation from instructions given by the P. During terrain flight, the P* is primarily concerned with threat and obstacle avoidance.

b. The P and NCM will assist in clearing the aircraft and provide adequate warning of obstacles, unusual attitudes, or altitude changes. The P will announce when his attention is focused inside the aircraft.

c. During contour flight, the P will advise the P* whenever an unannounced descent is detected. If the descent continues without acknowledgement or corrective action, the P will again advise the P* and be prepared to make a collective control input. The P will raise the collective when it becomes apparent that the aircraft will descend below 25-feet AHO.

d. During NOE flight, the P will advise the P* whenever an unannounced descent is detected. He will immediately raise the collective when it becomes apparent that the P* is not taking corrective action and that the aircraft will descend below 10- feet AHO.

2. Procedures. Terrain flight involves flight close to the earth's surface. The modes of terrain flight are NOE, contour, and low-level. Crew members will seldom perform pure NOE or contour flight. Instead, they will alternate techniques while maneuvering over the desired route.

a. NOE flight. Perform NOE flight at varying airspeeds and altitudes as close to the earth's surface as vegetation, obstacles, and ambient light will permit.

b. Contour flight. Perform contour flight by varying altitude and while maintaining a relatively constant airspeed, depending on the vegetation, obstacles, and ambient light. Generally follow the contours of the earth.

c. Low-level flight. Perform low-level flight at a constant airspeed and altitude. To prevent or reduce the chance of detection by enemy forces, fly at the minimum safe altitude that will allow a constant altitude.

NOTE 1: Hover OGE power may be required for this task.

NOTE 2: Terrain flight is considered sustained flight below 200 feet AGL (except during takeoff and landing).

NIGHT OR NVG CONSIDERATIONS:

1. Wires are difficult to detect with the NVG.

2. Use proper scanning techniques to ensure obstacle avoidance.

3. During NVG terrain flight, observe the NVG speed and altitude restrictions in paragraph 6-2d.

OVERWATER CONSIDERATIONS:

Overwater flight, at any altitude, is characterized by a lack of visual cues and therefore, has the potential of causing visual illusions. Be alert to any unannounced changes in the flight profile and be prepared to take immediate corrective actions. The radar altimeter low bug should be set to assist in altitude control. Hazards to terrain flight such as harbor lights, buoys, wires, and birds must also be considered during overwater flight. These considerations may also apply to flight over desert or broad expanses of snow, especially under low ambient lighting.

REFERENCES: Appropriate common references.

TASK 2083

Negotiate wire obstacles.

CONDITIONS: In a UH-60 helicopter, a UH-60FS, or orally.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Locate and accurately estimate the height of wires.

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

3. Safely negotiate the wire obstacle, minimizing the time unmasked.

DESCRIPTION:

1. Crew actions.

a. The P* will remain focused primarily outside the aircraft.

b. The P and NCM will announce adequate warning to avoid hazards, wires, and poles or supporting structures. They also will announce when the aircraft is clear and when their attention is focused inside the aircraft.

2. Procedures.

a. Announce when wires are seen. Confirm the location of wire obstacles with other crew members.

b. Discuss the characteristics of 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.

c. Announce the method of negotiating the wires and when the maneuver is initiated. Before crossing the wires, identify the highest wire. Cross near a pole to aid in visual perception and minimize the time that the aircraft is unmasked. When underflying wires, maintain a minimum clearance of hover height plus 30 feet and ground speed no greater than that of a brisk walk. Ensure lateral clearance from guy wires and poles.

NOTE: The crew must maintain proper scanning techniques to ensure obstacle avoidance and aircraft clearance.

NIGHT OR NVG CONSIDERATIONS: Wires are difficult to detect with NVG. This task should not be performed while using NVG, unless the location has been checked during daylight conditions and all hazards have been identified.

REFERENCES: Appropriate common references plus the unit SOP.

TASK 2086

Perform masking and unmasking.

CONDITIONS: In a UH-60 helicopter or a UH-60FS.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Rated.

a. Mask the aircraft from enemy visual and electronic detection.

b. Ensure that aircraft exposure time does not exceed 10 seconds during the unmasking.

c. Scan assigned sector.

d. Maintain a sufficient distance behind obstacles to allow for safe maneuvering.

e. Move to a new location before subsequent unmasking.

2. Nonrated. Scan assigned sector.

DESCRIPTION:

1. Crew actions.

a. The PC will assign scanning sectors to all crew members to maximize the area scanned during the time unmasked.

b. The P* will focus primarily outside the aircraft to clear the aircraft throughout the maneuver. He will announce the type of masking and unmasking before executing the maneuver.

c. The P and NCM will focus primarily outside the aircraft. If appropriate, they will perform a thorough map reconnaissance to identify natural and man-made features before the unmasking. They will warn the P* of obstacles and unusual or unanticipated drift and altitude changes. The P will announce when his attention is focused inside the aircraft.

d. The crew must clear directly below the aircraft if descending vertically or the flight path if moving laterally.

2. Procedures. Unmasking is a maneuver used when it becomes necessary to come above the mask to observe points of interest. Before unmasking, a thorough map reconnaissance should be completed so that all eyes can be focused outside during the unmasking. The three general types of unmasking are as follows:

a. Unmasking in flight. This type is used when the aircraft has forward speed and can best be described as a quick "pop up and peek" at the desired point or area of observation. It is usually used while flying behind a ridgeline or other linear barrier.

b. Unmasking at a hover (vertically). Announce intent to unmask. The crew will acknowledge that they are prepared to execute the maneuver. Ensure that sufficient power is available to unmask. Raise the collective to obtain sufficient altitude to see over the mask without exceeding aircraft limitations. 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, unmask at a safe distance from the mask to allow a rapid descent to a masked condition if the aircraft is detected or fired upon. Be aware of a common tendency to move forward or rearward while vertically unmasking and remasking. Keep aircraft exposure time to a minimum.

c. Unmasking at a hover (laterally). Sometimes, the aircraft may be unmasked by moving laterally from the mask. Announce intent to hover the aircraft sideward to provide the smallest silhouette possible to enemy observation or fire. The crew will acknowledge that they are prepared to execute the maneuver. Keep aircraft exposure time to a minimum.

NOTE: Hover OGE power may be required for this task.

NIGHT OR NVG CONSIDERATIONS: When hovering above 25 feet, the P* may have difficulty in maintaining altitude and position. Proper scanning techniques must be used. The P* may become spatially disoriented when alternating his viewing perspective between high and low references.

REFERENCES: Appropriate common references plus FM 1-400.

TASK 2087

Perform terrain flight deceleration.

CONDITIONS: In a UH-60 helicopter or a UH-60FS.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Maintain heading alignment with the selected flight path.

2. Maintain the tail clear of all obstacles.

3. Decelerate to the desired airspeed or to a full stop.

DESCRIPTION:

1. Crew actions.

a. The P* will focus primarily outside the aircraft to clear the aircraft throughout the maneuver.

b. The P and NCM will focus primarily outside the aircraft and will advise the P* of obstacles.

2. Procedures: Coordinate application of cyclic and collective to establish a decelerative attitude that keeps the tail clear of all obstacles. Consider variations in the terrain and obstacles when determining tail clearance. Apply aft cyclic as required to slow to the desired airspeed or to a full stop while adjusting the collective to maintain the altitude of the tail. Maintain heading and make all control movements smoothly. If the aircraft attitude is changed excessively or abruptly, it may be difficult to return the aircraft to a level attitude and overcontrolling may result.

NOTE: Hover OGE power may be required for this task.

NIGHT OR NVG CONSIDERATIONS: The P* must avoid abrupt changes in aircraft attitude because the NVG will limit his field of view. He should maintain proper scanning techniques to ensure obstacle avoidance and tail rotor clearance.

REFERENCES: Appropriate common references.

TASK 2088

Identify major US or allied equipment and major threat equipment.

CONDITIONS: Given a photo of or actual US, allied, and threat equipment expected to be in the area of operations.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Correctly identify selected major US or allied equipment expected to be in the area of operations.

2. Correctly identify selected major threat equipment expected to be in the area of operations.

DESCRIPTION:

1. While looking at the actual equipment or when shown pictures or mock-ups of the equipment, correctly identify major US or allied equipment expected to be in the area of operations.

2. While looking at the actual equipment or when shown pictures or mock-ups of the equipment, correctly identify major threat equipment expected to be in the area of operations.

3. When in the aircraft, identify and announce the type and direction of equipment detected. The other crew members will confirm the type and direction of the equipment.

REFERENCES: Appropriate common references plus FM 1-402 and FM 44-30.

TASK 2090

Perform tactical communication procedures.

CONDITIONS: In a UH-60 helicopter or a UH-60FS and given SOI.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Correctly operate aircraft avionics.

2. Maintain radio discipline.

3. Correctly operate voice security equipment.

4. Correctly use the SOI.

5. Correctly recognize and respond to enemy electronic countermeasures.

6. Correctly operate Mark XII IFF system.

DESCRIPTION:

1. Crew actions.

a. The PC will assign radio frequencies per mission requirements during the crew briefing. He will indicate whether the P* or P will establish and maintain primary communications.

b. The P* will announce mission information not monitored by the P and any deviation from directives.

c. The P will manage and announce radio frequencies and copy and decode pertinent information. He will announce information not monitored by the P*.

2. Procedures. Electronic communications should not be used in a tactical environment except when absolutely necessary. (Avionics that are not needed should be turned off.) If electronic communication is required, the best method is to operate in the secure voice mode. To eliminate confusion and reduce transmission time, the crew must use approved communication words, phrases, and codes. Plan what to say before keying the transmitter. Transmit information clearly, concisely, and slowly enough to be understood by the receiving station. Ideally, keep transmissions under 10 seconds. Do not identify a unit or an individual by name during nonsecure radio transmissions. Follow procedures listed below.

a. Authentication. 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. Keep accurate and detailed records of any MIJI incidents. Report an incident as soon as possible when a secure communications capability exists. (See Task 2091 for information on transmitting a tactical report.)

c. Visual methods. Use other visual communication methods such as flags, lights, panels, pyrotechnics, hand and arm signals, and aircraft maneuvers.

d. Mark XII IFF. Turn on, test, and operate the IFF per TM 1-1520-237-10. Operate the IFF per the tactical situation. During shutdown, hold or zeroize the code, as

required.

REFERENCES: Appropriate common references plus the following:

DOD AIM 86-100
FM 1-103
FM 24-35
TM 11-5810-262-10
TM 11-5895-1199-12
Unit SOP

TASK 2091

Transmit tactical reports.

CONDITIONS: In a UH-60 helicopter, a UH60FS, or orally and given sufficient information to compile a tactical report.

STANDARDS: Appropriate common standards plus transmit the appropriate report using the current SOI.

DESCRIPTION:

1. Crew actions.

a. The P* and NCM will focus primarily outside the aircraft to clear the aircraft and provide adequate warning of traffic or obstacles. The P* will announce any maneuver or movement before execution.

b. The P will assemble and transmit the report. He will use the correct format as specified in the SOI and transmit the report to the appropriate agency.

2. Procedures. To save time, minimize confusion, and ensure completeness, report information in an established format. Assemble the report in the correct format and transmit it to the appropriate agency. Standard formats may be found in the SOI or other sources.

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

REFERENCES: Appropriate common references plus the following:

FM 34-1
Unit SOP

TASK 2094

Perform Quick Fix mission.

CONDITIONS: In an EH-60 helicopter in VMC or IMC.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Correctly perform the Quick Fix mission.

2. Correctly perform the mission profiles.

3. Obtain usable data that will satisfy the mission requirement.

DESCRIPTION:

1. Crew actions.

a. The P* flies the mission profiles at the appropriate airspeeds, altitudes, and times.

b. The P monitors the ASE and responds appropriately in all mission profiles.

2. Procedures. Plan the flight to and from the mission area. Consider the flight planning factors in Tasks 1001 through 1004. Determine weather conditions en route and in the operational area, and evaluate their effects on the mission. Know and understand factors adversely affecting the mission or requiring the mission to be aborted. Know the mission equipment configuration and operational uses. Conduct a mission debriefing after the mission has been completed.

NOTE: This task does not fully describe the Quick Fix mission because of classification. Refer to appropriate classified and unclassified Army manuals and unit SOPs.

REFERENCES: Appropriate common references plus the following:

FM 34-10-7
Unit SOP

TASK 2095

Perform flat turn or calibrated flight.

CONDITIONS: In an EH-60 helicopter in VMC.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Recognize the mission event requiring a flat turn.

2. Complete a flat turn without banking the aircraft.

3. Do not exceed aircraft or system limitations.

DESCRIPTION: Recognize the mission event requiring a flat turn. Recognize possible aircraft structural deficiencies that may arise when the P* executes numerous flat turns. Apply the required pressures to turn the aircraft in the desired direction while keeping the aircraft level. Terminate the turn on the desired heading as dictated by mission requirements.

NOTE: This task does not fully describe the Quick Fix mission because of classification. Refer to appropriate classified and unclassified Army manuals and unit SOPs.

REFERENCES: Appropriate common references plus the following:

FM 34-10-7
Unit SOP

TASK 2096

Operate NVD with the AN/AVS-7 (ANVIS HUD) attached.

CONDITIONS: In a UH-60 helicopter or a UH-60FS, at night and given a mission to be performed using AN/AVS-6 together with the AN/AVS-7.

STANDARDS: Appropriate common standards plus describe and demonstrate correct terminology and usage of the AN/AVS-7 while it is attached to the AN/AVS-6.

DESCRIPTION: Perform operational procedures for the AN/AVS-7. These include assembly and preparation for use, operating procedures, and equipment shutdown.

REFERENCES:

TMs 1-1520-237-10/CL
TM 11-5855-300-10

TASK 2099

Perform extended range fuel system operations.

CONDITIONS: In a UH-60 helicopter or a UH-60FS with an ERFS consisting of two 230-gallon fuel tanks or four 230-gallon fuel tanks.

STANDARDS: Appropriate common standards plus these additions/modifications:

DESCRIPTION: Monitor the main fuel quantity indicators and the auxiliary fuel management panel to ensure that the system is operating normally. Operate the fuel management system panel in the AUTO or MANUAL mode, as required.

REFERENCES: Appropriate common references.

TASK 2214

Perform deck landing operations.

CONDITIONS: In a UH-60 helicopter or a UH-60FS.

STANDARDS: Appropriate common standards plus these additions/modifications:

1. Comply with arrival and departure and LSE/controller instructions.

2. Set parking brakes before landing.

3. Ensure a green deck before landing.

4. Perform a VMC approach.

5. Perform a VMC takeoff.

DESCRIPTION:

1. Crew actions.

a. The P* will focus primarily outside the aircraft to provide obstacle clearance throughout the maneuver. He will announce when he begins the approach and whether the approach will terminate to a hover or to the surface. The P* also will announce the intended point of landing and any deviation to the approach, to include go-around. He will announce his intentions to takeoff.

b. The P will call out "crossing the wake" and will complete the before-landing check. He will ensure that the parking brakes are set and the tailwheel is locked.

c. The P and NCM will assist in clearing the aircraft and will provide adequate warning of obstacles, unannounced drift, and changes in altitude. They will announce when their attention is focused inside and will acknowledge all P* directions. They will assist the P* in ensuring that the main wheels are within the landing deck circle

before touchdown.

2. Procedures.

NOTE: The deck landing area may have a perimeter safety net, perimeter markings, and red lights outlining the landing area. Two white lineup lines form an "X" through the landing area. These lines contain white lights which are only visible when the aircraft is properly aligned on the approach path. Around the center of the "X" is a white circle with a centered amber light. The landing gear will normally be in the forward portion of this circle but landing will be as directed by the LSE/controller. Most ships have flood lights to illuminate the landing area for unaided operations but the lights can be turned down or off for NVG operations.

a. Before approach. When cleared to land, adjust airspeed as necessary, descend to 200 feet AGL, and enter the landing pattern. (The LSE will expect the pilot in the seat nearest the bow of the ship upon landing to be at the flight controls for the first landing.) Make a standard rate turn or less in the appropriate direction and cross-perpendicular to the ship's wake, then begin the turn to final. When the ship is underway, it will be necessary to make lateral corrections to maintain alignment with the landing deck lineup lines. An alternate technique is to lead the ship by initiating the approach to a point forward of the flight deck.

b. During the approach. Cross the deck edge no faster than a brisk walk at an altitude of 5 to 10 feet above the landing surface. (Higher altitudes make it difficult to maintain good visual references.) Keep the LSE in sight. Stop all aircraft movement over the center of the deck and ensure the wheels are within the landing circle.

NOTE: The LSE will assist during the last part of the approach with hand and arm signals.

(1) Hovering. Maintain a hover until the LSE gives the signal to set the aircraft down. Follow the LSE's signal to move left, right, aft, or forward. Control drift using the ship's superstructure and the horizon, if visible, for attitude reference while hovering.

NOTE: The P will verbally relay the signalman's signals if the P* loses visual contact with the LSE.

(2) Landing. In rough seas, attempt to land when the ship is at the apex of a pitch up. Watch the LSE and listen to guidance from the ship's tower. Lower the collective and perform a controlled touchdown with the main wheels inside the landing deck circle. When the landing gear is on the deck, smoothly lower the collective to fully down. Maintain the cyclic centered and ignore aircraft motion. Wait until the wheels are chocked and chained before exiting the aircraft.

WARNING

Do not move the cyclic with the pitch and roll of the ship. Do not allow the rotor to dip down to a low position as it could be fatal to deck crews and those exiting the aircraft.

5. Takeoff. The P will show his hands during the day or will flash a light at night to indicate to the LSE which aviator is at the controls. When cleared for takeoff, increase power and smoothly ascend to a hover height of 10 feet, keeping the LSE in sight. Slide left or right as directed to clear any obstructions and depart the ship at a 45-degree angle from the bow. The ship can be used for an attitude reference during acceleration. During conditions of reduced visibility, it may be necessary to transition to instruments for most of the takeoff.

NOTE: Hover OGE power may be required for this task.

NIGHT OR NVG CONSIDERATIONS: At night and during periods of reduced visibility, fly instruments or cross-check the flight instruments while in the holding pattern. The P will advise when he has the lineup line in sight. The P* will transition outside and make flight control adjustments as necessary to line up on final and to remain aligned with the lineup line. The P will continue to assist by monitoring the flight instruments, calling out airspeed and altitude as necessary.

OVERWATER CONSIDERATIONS: Overwater flight, at any altitude, is characterized by a lack of visual cues and, therefore, has the potential of causing visual illusions. Be alert to any unannounced changes in the flight profile and be prepared to take immediate corrective actions. The radar altimeter low bug should be set to assist in altitude control. Hazards to terrain flight such as harbor lights, buoys, wires, and birds must also be considered during overwater flight.

REFERENCES: Appropriate common references plus the following:

Army/Air Force Deck Landing Operations MOU
Joint Pub 3-04.1, Joint Tactics, Techniques, and Procedures for Shipboard Helicopter Operations
Shipboard Aviation Facilities Resume
Unit SOP

CHAPTER 7

MAINTENANCE TEST PILOT TASKS

This chapter describes those maneuvers and procedures that are essential for maintaining maintenance test pilot skills. If discrepancies are found between this chapter and TM 1-1520-237-MTF, the TM takes precedence.

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. References to UH-60 helicopters may also apply to all H-60 series helicopters. All conditions must be met before the task iterations can be credited. References to MP include ME.

c. Standards. The standards describe the minimum degree of proficiency or standard of performance to which the task must be accomplished. The common standards in 6-1c. apply to these tasks. In addition, the following common standards apply to all MP tasks:

(1) Perform procedures and checks in sequence per TM 1-1520-237-MTF, as required.

(2) Correctly determine malfunctions or discrepancies and apply appropriate troubleshooting procedures and corrective actions.

(3) Correctly enter appropriate information on DA Form 2408-12, DA Form 2408-13, and DA Form 2408-13-1.

d. Description. The description explains how the task should be done to meet the standards. When specific crew actions are required, the task will be broken down into crew actions and procedures as follows.

(1) Crew actions. These define the portions of a task to be preformed by each crew member to ensure safe, efficient, and effective task execution. The indications P* and P do not imply PC or MP duties. When required, PC or MP responsibilities are specified.

(2) Procedures. These actions are the portions of a task that the MP must accomplish.

e. Evaluation Considerations.

(1) Many of the tasks incorporate more than one check from TM 1-1520-237-MTF.

This section defines the checks in each task that, as a minimum, must be evaluated on an evaluation flight. The evaluator may select additional checks for evaluation.

(2) If one or more checks are performed unsatisfactorily, the task will be graded unsatisfactory. However, when the task is reevaluated, only those checks must be evalua- ted.

f. References. The references listed for each task are sources of information about that particular task. Besides the common references in 6-1f, the following common references apply to all MP tasks:

(1) Aircraft logbook.

(2) DA Pam 738-751.

(3) TM 1-1520-237-10.

(4) TM 1-1520-237-23 series.

(5) TM 1-1520-237-MTF.

(6) TM 1-1520-237-T-1.

TASK 2400

Plan and prepare for maintenance test flight checks.

CONDITIONS: In a UH-60 helicopter with an MP.

STANDARDS: Appropriate common standards plus the following additions/modifications:

1. Correctly determine the checks required for the test flight.

2. Perform preflight inspection (Task 1005).

3. Perform a thorough crew briefing (Task 1000).

4. Perform before MTF checks per TM 1-1520-237-MTF.

DESCRIPTION:

1. Crew actions.

a. The MP will determine the checks required for the MTF. He will direct other crew members to complete planning and preflight elements as appropriate. The MP will conduct a crew briefing (Task 1000, Participate in a crew mission briefing). He will brief all crew members on the checks being performed and their duties during each check.

b. The other crew members will perform tasks as directed by the MP.

2. Procedures.

a. Check the aircraft logbook and determine the checks required for the MTF. Ensure that the maintenance on the aircraft has been properly performed and documented. Obtain any required special tools or equipment. Calculate required performance planning data. Perform flight planning per Task 1001, Plan a VFR flight, as appropriate.

b. Preflight the aircraft per Task 1005, Perform preflight inspection. Pay parti-cular attention to the areas that have been repaired. Check that any special equipment is properly installed.

c. Perform before MTF checks per TM 1-1520-237-MTF.

EVALUATION CONSIDERATIONS: All components of this task must be evaluated on an evaluation flight.

REFERENCES: Appropriate common references plus TM 1-1520-237-CL.

TASK 2401

Perform interior checks.

CONDITIONS: In a UH-60 helicopter or a UH-60FS, with an MP.

STANDARDS: Appropriate common standards.

DESCRIPTION:

1. Crew actions.

a. The MP will perform the required checks. He will direct assistance from other crew members, as required.

b. The other crew members will assist the MP as directed.

2. Procedures. The type of test flight to be performed (for example, general or limited) will determine the detailed checks required. At a minimum, perform all checks required for flight per TMs 1-1520-237-10/CL or TM 1-1520-237-MTF.

EVALUATION CONSIDERATIONS: All components of this task must be evaluated on an evaluation flight.

REFERENCES: Appropriate common references.

TASK 2402

Perform before-starting engine checks.

CONDITIONS: In a UH-60 helicopter or a UH-60FS, with an MP.

STANDARDS: Appropriate common standards.

DESCRIPTION:

1. Crew actions.

a. The MP will perform the required checks. He will determine when he will perform P* or P duties. The MP will announce when starting each check and when it is completed.

b. The P* will remain focused primarily outside the aircraft throughout the maneuver to provide traffic and obstacle avoidance.

c. The P and NCM will assist with traffic and obstacle avoidance. They will announce when their attention is focused inside the aircraft.

2. Procedures. Perform checks per TM 1-1520-237-MTF.

EVALUATION CONSIDERATIONS: The following checks will be evaluated on an evaluation flight:

1. Flight control hydraulics checks.

2. AFCS checks.

3. Stabilator checks.

REFERENCES: Appropriate common references.

TASK 2420

Perform starting engine checks.

CONDITIONS: In a UH-60 helicopter or a UH-60FS, with an MP.

STANDARDS: Appropriate common standards.

DESCRIPTION:

1. Crew actions.

a. The MP will perform the required checks. He will determine when he will perform P* or P duties. The MP will announce when starting each check and when it is completed.

b. The P* will remain focused primarily outside the aircraft throughout the maneuver to provide traffic and obstacle avoidance.

c. The P and NCM will assist with traffic and obstacle avoidance and clear the aircraft before engine start. They will announce when their attention is focused inside the aircraft.

2. Procedures. Perform checks per TM 1-1520-237-MTF.

EVALUATION CONSIDERATIONS: The following checks will be evaluated on an evaluation flight:

1. Engine start checks (Steps 11 through 21 of starting engines check).

2. Hydraulic leak checks.

REFERENCES: Appropriate common references.

TASK 2435

Perform run-up and taxi checks.

CONDITIONS: In a UH-60 helicopter or a UH-60FS, with an MP.

STANDARDS: Appropriate common standards.

DESCRIPTION:

1. Crew actions.

a. The MP will perform the required checks. He will determine when he will perform P* or P duties. The MP will announce when starting each check and when it is completed.

b. The P* will remain focused primarily outside the aircraft throughout the maneuver to provide traffic and obstacle avoidance.

c. The P and NCM will assist with traffic and obstacle avoidance. They will announce when their attention is focused inside the aircraft.

2. Procedures. Perform checks per TM 1-1520-237-MTF.

EVALUATION CONSIDERATIONS: The following checks will be evaluated on evaluation flights:

1. Engine overspeed check (one engine only).

2. ECU/DECU lockout/Np overspeed check (one engine only).

3. Acceleration/deceleration check (one engine only).

4. Electrical system checks.

5. Engine health indicator test/anti-ice check.

6. HIT baseline procedures, engine performance data checks.

REFERENCES: Appropriate common references.

TASK 2436

Perform before-takeoff and hover checks.

CONDITIONS: In a UH-60 helicopter or a UH-60FS, with an MP.

STANDARDS: Appropriate common standards.

DESCRIPTION:

1. Crew actions.

a. The MP will perform the required checks. He will determine when he will perform P* or P duties.

b. The P* will remain focused primarily outside the aircraft throughout the maneuver to provide traffic and obstacle avoidance.

c. The P and NCM will assist with traffic and obstacle avoidance. They will announce when their attention is focused inside the aircraft.

2. Procedures.

a. Perform checks per TM 1-1520-237-MTF.

b. SAS, FPS, and tail rotor checks. Perform P* duties during these checks. Direct the P to callout the checklist items and manipulate cockpit switches as you direct. Before the tail rotor check, ensure the P understands the commands to be used and his duties in the event of a loss of tail rotor controllability.

c. Generator underfrequency protection disable/low rotor RPM check. Perform P duties during these checks. Ensure the P* understands hover parameters, low rotor warning signal, control response, emergencies, and recovery procedures.

EVALUATION CONSIDERATIONS: The following checks will be evaluated on an evaluation flight:

1. Hover controllability check.

2. SAS check (one SAS only).

3. FPS check.

4. Tail rotor servo check.

5. Generator underfrequency protection disable/low rotor RPM check.

6. Compass/turn rate/vertical gyro check.

REFERENCES: Appropriate common references.

TASK 2451

Perform before-takeoff through climb checks.

CONDITIONS: In a UH-60 helicopter or a UH-60FS, with an MP.

STANDARDS: Appropriate common standards.

DESCRIPTION:

1. Crew actions.

a. The MP will perform the required checks. He will determine when he will perform P* or P duties. The MP will announce when starting each check, and when it is completed.

b. The P* will remain focused primarily outside the aircraft throughout the maneuver to provide traffic and obstacle avoidance.

c. The P and NCM will assist with traffic and obstacle avoidance. They will announce when their attention is focused inside the aircraft.

2. Procedures. Perform checks per TM 1-1520-237-MTF. Either aviator may perform P* duties during these checks at the discretion of the MP.

EVALUATION CONSIDERATIONS: All components of this task must be evaluated on an evaluation flight.

REFERENCES: Appropriate common references.

TASK 2452

Perform cruise checks.

CONDITIONS: In a UH-60 helicopter or a UH-60FS, with an MP.

STANDARDS: Appropriate common standards.

DESCRIPTION:

1. Crew actions.

a. The MP will perform the required checks. He will determine when he will perform P* or P duties. The MP will announce when starting each check and when it is completed.

b. The P* will remain focused primarily outside the aircraft throughout the maneuver to provide traffic and obstacle avoidance.

c. The P and NCM will assist with traffic and obstacle avoidance. They will announce when their attention is focused inside the aircraft.

2. Procedures.

a. Perform checks per TM 1-1520-237-MTF.

b. Autorotation RPM check. Perform P duties and manipulate the power control levers during this check. Direct the P* to smoothly lower the collective to initiate the descent. Monitor the collective to ensure the P* does not attempt to prematurely initiate the power recovery. Initiate the power recovery before reaching 500-feet AGL.

c. In-flight controllability check. To eliminate inputs from the pitch rate gyros and lateral accelerometers, maintain pitch attitude, airspeed, and aircraft trim. You may allow the FPS to maintain trim. However if FPS will not maintain trim, maintain it manually.

d. Maximum power check. Perform P duties for this check. Ensure the P* understands the altitude and airspeed to be maintained, and emergencies.

e. Vh check. Perform P duties for this check. Ensure the P* understands the altitude to be maintained, torque, TGT limiting, and emergencies.

NOTE 1: The autorotation RPM check and the maximum power check may be evaluated orally if weather conditions are unsuitable, the UH-60FS is not available, and the evaluation cannot be postponed.

NOTE 2: For all cruise checks, have a forced landing area in range in the event of an engine failure.

EVALUATION CONSIDERATIONS: The following checks will be evaluated on an evaluation flight:

1. Autorotation RPM check.

2. In-flight controllability check.

3. Maximum power check (one engine only).

4. Stabilator checks at 120 KIAS.

5. FPS/SAS checks during flight.

6. Beep trim check.

7. Attitude/airspeed check.

8. Vh check.

REFERENCES: Appropriate common references.

TASK 2469

Perform special/detailed procedures.

CONDITIONS: In a UH-60 helicopter or UH-60FS, with an MP.

STANDARDS: Appropriate common standards.

DESCRIPTION:

1. Crew actions.

a. The MP will perform the required checks. He will determine when he will perform P* or P duties. The MP will announce when starting each check and when it is completed.

b. The P* will remain focused primarily outside the aircraft throughout the maneuver to provide traffic and obstacle avoidance.

c. The P and NCM will assist with traffic and obstacle avoidance. They will announce when their attention is focused inside the aircraft.

2. Procedures. Perform the appropriate special/detailed procedures per Section IV of TM 1-1520-237-MTF.

EVALUATION CONSIDERATIONS: For evaluation flights, the ME will select at least two special/detailed procedures to be evaluated.

REFERENCES: Appropriate common references.

TASK 2470

Perform before landing through engine shutdown checks.

CONDITIONS: In a UH-60 helicopter, with an MP.

STANDARDS: Appropriate common standards.

DESCRIPTION:

1. Crew actions.

a. The MP will perform the required checks. He will determine when he will perform P* or P duties. The MP will announce when starting each check and when it is completed.

b. The P* will remain focused primarily outside the aircraft throughout the maneuver to provide traffic and obstacle avoidance.

c. The P and NCM will assist with traffic and obstacle avoidance. They will announce when their attention is focused inside the aircraft.

2. Procedures. Perform checks per TM 1-1520-237-MTF. Ensure the aircraft logbook and test flight check sheet are correctly filled out.

EVALUATION CONSIDERATIONS: For evaluation flights, the ME will evaluate the MP on the post flight inspection and correctness of all entries in the aircraft logbook and test flight check sheet.

REFERENCES: Appropriate common references.

CHAPTER 8

EVALUATION

This chapter describes evaluation principles and grading considerations. It also contains guidelines for conducting the hands-on performance test. Flight evaluation is a primary means of assessing flight standardization and crew member proficiency. Evaluations will be conducted per AR 95-1, TC 1-210, and this manual.

8-1. EVALUATION PRINCIPLES

a. The value of any evaluation depends on adherence to fundamental evaluation principles. These 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 to provide constructive comments. These evaluators are the SPs, IPs, IEs, MEs, FIs, and SIs who assist the commander in administering the ATP.

(2) The method used to conduct the evaluation must be based on uniform and 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.

(4) Cooperation by all participants is necessary to guarantee the 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 and incorrectly and how improvements can be made.

b. The evaluation will determine the examinee's ability to perform essential hands-on tasks to prescribed standards. Flight evaluations will also determine the examinees ability to exercise crew coordination in completing these tasks.

c. The guidelines for evaluating crew coordination are not based on objective criteria; for example, distances or degrees. Rather, they are based on a subjective analysis of how effectively a crew performs together to accomplish a series of tasks. The evaluator must determine how effectively the examinee employs the air crew coordination basic qualities outlined in Chapter 6.

d. In all phases of evaluation, the evaluator is expected to perform as an effective crew

member. 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 pass this task back to the examinee effectively. 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.

8-2. GRADING CONSIDERATIONS

a. Oral Examination. The examinee must demonstrate a working knowledge and understanding of the subject areas presented.

b. Flight Evaluation. Task standards are based on an ideal situation. Grading is based on meeting the minimum standards. The evaluator must consider deviations (high wind, turbulence, poor visibility) from the ideal during the evaluation. If other than ideal conditions exist, the evaluator must make appropriate adjustments to the standards.

8-3. CREW MEMBER FLIGHT EVALUATION

This evaluation is conducted to determine the crew member's ability to perform appropriate duties. The evaluation sequence consists of the four phases given below. The evaluator will determine the amount of time devoted to each phase. When the examinee is an evaluator/trainer or a unit trainer, the recommended procedure is for the evaluator to reverse roles with the examinee. When the evaluator uses this technique, the examinee must understand 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. Phase 1--Introduction. In this phase, the evaluator--

(1) Reviews the examinee's records to verify that the examinee meets all prerequisites for the rating.

(2) Confirms the purpose of the flight evaluation, explains the evaluation procedure, and discusses the evaluation standards and criteria to be used.

NOTE: If the examinee is an IP, SP, FI, SI, IE, ME, or UT, he will be evaluated on his ability to apply the learning and teaching process outlined in the Instructor's Handbook. He must demonstrate a working knowledge of the conditions, standards, and descriptions of the tasks he will be instructing/evaluating. The examinee must also demonstrate an ability to determine when tasks are not performed to standards and how to train to standards.

b. Phase 2--Oral Examination. The examinee must have a working knowledge and

understanding of all applicable topics in the respective subject areas below. As a minimum, the evaluator will select two topics from each appropriate subject area. An evaluator/trainer will also demonstrate an ability to instruct and evaluate any topic. A unit trainer will demonstrate an ability to instruct topics in the areas in which he performs UT duties. Aerodynamics, tactical and mission tasks, and night tasks are not required for ME, MP, or instrument evaluations.

(1) Regulations and publications (AR 95-1, AR 95-2; DA Pam 738-751; DOD FLIP; TC 1-210; TM 1-1500-328-23; and local SOPs and regulations). Topics in this subject area are--

(a) ATP requirements.

(b) SOP requirements.

(c) DOD FLIPs and maps.1

(d) VFR minimums and procedures.1

(e) IFR minimums and procedures.1

(f) Weight and balance requirements.

(g) Flight plan preparation and filing.1

(h) Test flight weather requirements.2

(i) Local airspace usage (test flight).2

(j) Publications required in the aircraft.

(k) Maintenance operational check requirements.1

(l) MTF requirements.1

(m) Forms and records.

(2) Operating limitations and restrictions (TM 1-1520-237-10). Topics in this subject area are--

(a) Systems limits.1

(b) Power limits.1

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1 Denotes topics that pertain to rated crew members only.

2 Denotes topics that pertain to MEs or MPs only.

(c) Loading limits.1

(d) Airspeed limits.1

(e) Maneuvering limits.1

(f) Environmental restrictions.1

(g) Other limitations.1

(3) Aircraft emergency procedures and malfunction analysis (TM 1-1520-237-10). Topics in this subject area are--

(a) Emergency terms and their definitions.

(b) Emergency exits and equipment.

(c) Engine malfunctions.1

(d) Rotor, transmission, and drive system malfunctions.1

(e) Chip detectors.1

(f) Fires.

(g) Fuel system malfunctions.1

(h) Electrical system malfunctions.1

(i) Hydraulic system malfunctions.1

(j) Landing and ditching procedures.

(k) Flight control malfunctions.1

(l) Stabilator malfunctions.1

(m) AFCS malfunctions.1

(n) Mission equipment.

(4) ME and MP system operations--systems malfunction analysis and troubleshooting (TMs 1-1520-237-10, 1-1520-237-23 series, 1-1520-237-MTF, 1-1520-237-T-1, 11-1520-237-23 series, and 55-2840-248-23). Topics in this subject area, which are for MEs and MPs only, are--

(a) Engine start.

(b) Instrument indications.

(c) Electrical system.

(d) Caution panel indications.

(e) Power plant.

(f) Engine performance check.

(g) Power train.

(h) Hydraulic system.

(i) Flight controls.

(j) Vibrations.

(k) Fuel system.

(l) Communication and navigation equipment.

(m) SAS/FPS system.

(n) Leak detection isolation.

(o) Automatic flight control system.

(5) Aeromedical factors (AR 40-8, FM 1-301, and TC 1-204). Topics in this subject area are--

(a) Flight restrictions due to exogenous factors.

(b) Hypoxia.

(c) Stress.

(d) Middle ear discomfort.

(e) Spatial disorientation.

(6) Aerodynamics (FM 1-203 and TM 1-1520-237-10). Topics in this subject area are--

(a) Airflow during a hover.1

(b) Retreating blade stall.1

(c) Total aerodynamic force.1

(d) Compressibility.1

(e) Dynamic rollover.1

(f) Settling with power.1

(g) Translating tendency.1

(h) Transverse flow.1

(i) Dissymetry of lift.1

(7) Tactical and mission tasks (FMs 1-112, 1-116, 1-400, 1-402, 55-450-2, 55-450-3, 55-450-4, 55-450-5, and 90-4; TCs 1-201, 1-204, and 1-210; TM 1-1520-237-10; and unit SOP). Topics in this subject area are--

(a) Mission statement and employment methods.

(b) Terrain flight planning and safety.1

(c) Terrain analysis.1

(d) Navigational chart, map, and tactical overlay interpretation.1

(e) Battlefield environment.

(f) Fratricide prevention.

(g) Aircraft survivability equipment.

(h) Evasive maneuvers.1

(i) Tactical reports.1

(j) Fire support.1

(k) Tactical formation

(l) Downed aircraft procedures.

(m) Mission equipment.

(n) External load operations.

(o) Internal load operations.

(8) Night mission operation and deployment (TC 1-204 and TM 1-1520-237-10). Topics in this subject area are--

(a) Types of vision.

(b) Dark adaptation, night vision protection, and central night blind spot.

(c) Distance estimation and depth perception.

(d) Visual illusions.

(e) Use of internal and external lights.

(f) Unaided night flight.

(g) Night vision limitations and techniques.

(h) Flight crew night and NVD requirements.

(i) NVD characteristics and operation.

(j) NVD limitations and techniques.

c. Phase 3--Flight Evaluation.

(1) Briefing. The evaluator will explain the flight evaluation procedure and tell the examinee which tasks he will perform. When evaluating an evaluator/trainer or a unit trainer, the evaluator 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.

(2) Flight tasks. As a minimum, the evaluator will evaluate those tasks required by the type of evaluation he is conducting. He may select for evaluation any other tasks listed on the task list established by the commander. An evaluator/trainer must demonstrate an ability to instruct appropriate flight tasks and perform flight evaluations. A unit trainer must demonstrate an ability to instruct tasks in the areas in which he performs UT duties. When used as part of the proficiency flight evaluation, the evaluation may include a local area orientation.

NOTE: During flight evaluations, the evaluator will have the examinee identify at least two aircraft components and discuss their functions.

d. Phase 4--Debriefing. During this phase, the evaluator will debrief the examinee. The evaluator will--

(1) Discuss any tasks not performed to standards.

(2) Discuss the examinee's strengths and weaknesses.

(3) Offer recommendations for improvement.

(4) Tell the examinee whether he passed or failed the evaluation.

(5) Complete the applicable forms per TC 1-210.

(6) Ensure that the examinee reviews and initials the applicable forms.

APPENDIX A

FLIGHT MEDIC CREW TRAINING

This appendix describes training requirements for 91B flight medic NCMs. It also contains the mission tasks required to be preformed by the flight medic.

A-1. QUALIFICATION TRAINING

MOS qualification and additional medical crew member training is conducted at the appropriate DA school. Flight medics must complete nonrated crew member qualification training per Chapter 2.

A-2. REFRESHER TRAINING

Refresher training will be accomplished per Chapter 3.

A-3. MISSION TRAINING

Mission training will be accomplished per Chapter 4. Figure A-1 lists the mission tasks that will be selected by the commander. The commander will designate the mode each task must be performed in and will designate which tasks will be mandatory standardization evaluation tasks. In addition, the commander may select tasks listed in Figure 5-3.

Task	Title
2120	Prepare patient for hoist recovery and departure.
2126	Relay patient information to medical control.
2130	Load, secure, and unload litter and ambulatory patients.
2131	Identify and treat adverse effects of altitude on a patient with chest and/or head injuries.
2132	Perform a preflight inspection of medical equipment.
2133	Restrain a patient during flight.
2137	Provide treatment to a patient.

Figure A-1. Flight medic mission task list

A-4. CONTINUATION TRAINING

Continuation training will be accomplished per Chapter 5.

A-5. TASK CONTENTS

a. Task Number and Title. Each task is identified by a number and a title that correspond to the tasks listed in Figure A-1.

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 the 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. Common standards for all tasks include the following:

(1) Maintain airspace surveillance (Task 1014).

(2) Correctly perform crew coordination actions.

NOTE: Chapter 6 contains a brief description of the 13 basic qualities found in the Aircrew Coordination Training Program.

d. Description. The description explains how the task should be done to meet the standards.

e. References. The references listed for each task are sources of information about that particular task. The following references are common to all tasks in this appendix:

(1) FM 1-301, Aeromedical Training for Flight Personnel.

(2) FM 8-10-6, Medical Evacuation in the Theater of Operations.

(3) FM 8-230, Medical Specialist.

(4) TMs 1-1520-237-10/CL.

(5) Unit SOP and treatment protocol.

TASK 2120

Prepare patient for hoist recovery and departure.

CONDITIONS: In a UH-60 helicopter with hoist, given appropriate hoisting equipment, and with actual or simulated patient.

STANDARDS: Common standards plus the following:

1. Correctly prepare the appropriate hoisting equipment.

2. Correctly prepare the patient for recovery.

3. Correctly secure the patient and equipment for departure.

DESCRIPTION: Prepare the patient for recovery and departure per FM 8-10-6 and local directives. The SKED, stokes litter, and poleless semirigid litter must be used with a tag line and weak link.

REFERENCES: Common references plus FM 8-15.

TASK 2126

Relay patient information to medical control.

CONDITIONS: In a MEDEVAC-configured UH-60 helicopter or orally, and given symptoms of a patient, a communication radio, and an estimated time of arrival.

STANDARDS: Common standards plus the following:

1. Correctly perform radio procedures.

2. Correctly relay essential patient information.

3. Correctly relay ETA and proposed landing site.

4. Correctly respond to medical control's directives.

DESCRIPTION: The crew member will use established communication procedures. Inform the PC before transmitting on the radio to avoid radio transmission conflicts. Rotate the ICS selector switch to the correct position and listen to ensure the net is clear. Using correct radio procedures, relay patient information and give ETA. Carry out instructions from medical control and advise them of any pertinent changes in information.

REFERENCE: Common references.

TASK 2130

Load, secure, and unload litter and ambulatory patients.

CONDITIONS: In a MEDEVAC-configured UH-60 helicopter with a crew, patients, and the appropriate number of litters.

STANDARDS: Common standards plus the following:

1. Configure the aircraft for loading patients.

2. Determine the patient's loading category.

3. Correctly brief litter teams and passengers on procedures for approaching, loading, and leaving the aircraft.

4. Correctly secure patients to litters.

5. Correctly load and secure litter and ambulatory patients.

6. Correctly secure medical equipment and patients' baggage.

7. Correctly unload patients at destination.

DESCRIPTION:

1. Crew actions.

a. The MO will coordinate loading and unloading procedures.

b. The CE will assist with loading and unloading as directed by the MO.

2. Procedures. Direct/escort ambulatory patients to their seats. Ensure they are properly secured and have been briefed. Load and secure litter patients as required. Secure any medical equipment and baggage. Advise the PC when all patients are prepared for departure. Upon landing, direct/escort ambulatory patients away from the aircraft and unload litter patients as required.

NOTE: If the aircraft is equipped with ESSS, loading and unloading of patients must be performed from both sides of the aircraft because the litter support unit has to be placed at a 45-degree angle from load position.

WARNING

Be alert for untrained personnel approaching the aircraft. Ensure ground personnel are clear of the aircraft before takeoff.

CAUTION

Check for loose items of medical or personal gear as patients approach the aircraft and are exposed to the rotor wash.

REFERENCES: Common references.

TASK 2131

Identify and treat adverse effects of altitude on a patient with chest and/or head injuries.

CONDITIONS: In a MEDEVAC-configured UH-60 helicopter or orally, with oxygen administration equipment and standard medical equipment available, and with a patient having actual or simulated chest and/or head injuries and exhibiting signs of the adverse effects of altitude.

STANDARDS: Common standards plus the following:

1. Correctly identify the adverse effects of altitude on patients with chest and/or head injuries.

2. Correctly initiate the appropriate medical treatment.

3. Correctly communicate the need for low-altitude flight, if required.

DESCRIPTION:

1. Chest injuries.

a. Identify the adverse effects of altitude on patients with chest and/or lung injuries by observing the patient. The patient may exhibit one or more of the following symptoms: breathing difficulty, rapid respiration, cyanosis, restlessness.

b. Treat the patient by administering oxygen and positioning the patient in a sitting position if not otherwise contraindicated. Check the chest tubes or needle decompression site, if present, to ensure that the one-way valve is functional.

c. Notify the PC of the need for low-altitude flight as soon as the patient shows signs of an adverse reaction to the present altitude.

2. Head injuries.

a. Identify the adverse effects of altitude on a patient with head injuries. The patient may show evidence of increased drainage of cerebrospinal fluid into dressings or from the ears or nose. He also may exhibit changes in the level of consciousness from hyperactivity to coma; in blood pressure, respiration and pulse rates; or in the pupillary reaction to light.

b. Treat the patient by keeping him as calm as possible and hyperventilate by administering high-flow oxygen by a bag-valve mask. If the respirations are less than eight, intubate when possible.

c. Provide artificial ventilation and CPR as needed. Maintain an open airway by inserting an oral or nasal airway, or by repositioning one already inserted.

d. Notify the PC of the need for low-altitude flight as soon as the patient shows signs of an adverse reaction to the present altitude.

REFERENCES: Common references plus the following:

FM 8-273-1
FM 8-273-2
TB MED 289

TASK 2132

Perform a preflight inspection of medical equipment.

CONDITIONS: In a MEDEVAC-configured UH-60 helicopter, and given the medical equipment checklist, TM 1-1520-237-CL, and manufacturer's instructions.

STANDARDS: Common standards plus correctly perform a preflight inspection of all on-board medical equipment.

DESCRIPTION: Visually check the appropriate equipment for serviceability (oxygen levels and drug/IV solution), cleanliness, and accountability. Test the battery charge levels of all battery-operated equipment. Familiarize the assisting crew members on the use and location of all on-board medical equipment.

REFERENCES: Common references plus the following:

Manufacturer's instructions
Medical equipment checklist

TASK 2133

Restrain a patient during flight.

CONDITIONS: In a MEDEVAC-configured UH-60 helicopter, with an actual or simulated patient, and given a restraint set and litter straps.

STANDARDS: Common standards plus the following:

1. Correctly restrain the patient as necessary.

2. Correctly keep the PC informed of the patient's condition.

DESCRIPTION: Reassure the patient that the restraining devices are for his safety and to prevent further injury. Restrain the patient as follows:

1. Place the anklets and wristlets with the suede side against the patient, padding them as needed, and insert the metal loop in the slot with the tightest position.

2. Insert the anklet or wristlet straps through the loops and lock them.

3. Use the litter straps, as needed.

4. Check for proper circulation in the patient's extremities.

WARNING

Keep all patients clear of the cockpit area. The normal reaction of a confused patient is to resist restriction of movement.

REFERENCES: Common references.

TASK 2137

Provide treatment for a patient.

CONDITIONS: In a MEDEVAC-configured UH-60 helicopter with an actual or simulated patient.

STANDARDS: Common standards plus the following:

1. Correctly provide treatment for the patient.

2. Correctly use available medical equipment.

3. Correctly direct crew member assistance.

DESCRIPTION: Provide required treatment for the patient using medical equipment configured in the aircraft. Pay special attention to equipment with air bladders that are adversely affected by altitude and temperature; for example, masks, endotracheal tubes, and Foley catheters. Use procedures per the unit SOP and treatment protocol.

NOTE: The unit commander should identify required medical tasks based on his combat and local missions in cooperation with the senior flight medic and flight surgeon.

REFERENCES: Common references.

APPENDIX B

QUICK FIX VOICE INTERCEPT OPERATOR TRAINING

This appendix describes training requirements for EH-60 98G voice intercept operator NCMs. It also contains the mission tasks required to be performed by the voice intercept operator.

B-1. EH-60 MISSION EQUIPMENT QUALIFICATION

To qualify to operate EH-60 mission equipment, a voice intercept operator must successfully complete the training conducted at the US Army Intelligence Center and Fort Huachuca, Fort Huachuca, AZ, and be eligible for a Top Secret clearance per AR 611-101 and DA Pam 351-4. He must also complete NCM qualification training per Chapter 2. Qualification training will include a 50-question AN/ALQ-151(V)2 operator's manual written examination.

B-2. REFRESHER TRAINING

Refresher training will be accomplished per Chapter 3 and will include a 50-question AN/ALQ-151(V)2 operator's manual written examination.

B-3. MISSION TRAINING

Mission training will be accomplished per Chapter 4. Figure B-1 lists the minimum mission tasks. All tasks in Figure B-1 are mandatory for standardization flight evaluations and must also be performed at night. In addition the commander may select tasks listed in Figure 5-3.

Task	Title
2151	Perform preflight inspection, power-up, shutdown, and postflight inspection on an AN/ALQ-151(V)2.
2156	Key cryptographic systems.
2157	Perform initialization and BITE procedures.
2158	Program C-10026/USQ receiver control unit.
2159	Locate an emitter of interest using the AN/ALQ-151(V)2.

2160	Perform file management procedures.
2161	Operate the countermeasures set, AN/TLQ-17A.
2163	Perform aircraft net mission.
2165	Operate the AN/ALQ-151(V)2 under unusual conditions.
2169	Perform mission planning requirements.
2170	Perform INTEROP mission.

Figure B-1. Voice intercept operator mission task list

B-4. CONTINUATION TRAINING

Continuation training will be accomplished per Chapter 5.

B-5. TASK CONTENTS

a. Task Number and Title. Each task is identified by a number and a title which correspond to the tasks listed in Figure B-1.

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 the 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. Common standards for all tasks include the following:

(1) Maintain airspace surveillance (Task 1014).

(2) Correctly perform crew coordination actions.

NOTE: Chapter 6 contains a brief description of the 13 basic qualities found in the Aircrew Coordination Training Program.

d. Description. The description explains how the task should be done to meet the standards.

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

TASK 2151

Perform preflight inspection, power-up, shutdown, and postflight inspection on an AN/ALQ-151(V)2.

CONDITIONS: In an EH-60A, and given TM 32-5865-012-10 and the aircraft logbook.

STANDARDS: Perform a preflight inspection, power-up, shutdown, and postflight inspection on the AN/ALQ-151(V)2 per TM 32-5865-012-10.

DESCRIPTION: Perform preflight inspection per TM 32-5865-012-10. Annotate any faults or deficiencies on DA Form 2408-13-1. Perform power-up procedures per TM 32-5865-012-10 before taxi. Upon notification from the pilots that Quick Fix power is applied in the cockpit, apply power to the AN/ALQ-151(V)2 system in the correct sequence. When required to power down the mission equipment, perform shutdown per TM 32-5865-012-10 in the proper sequence. Failure to follow the proper sequence may result in classified information being left in computer memory or SI fills to be left in the cryptographic devices. After the mission is complete, perform a postflight inspection per TM 32-5865-012-10. Record any faults or deficiencies on DA Form 2408-13-1.

NIGHT OR NVG CONSIDERATIONS:

1. When performing the preflight or postflight inspection during the hours of darkness, a flashlight without a lens filter should be used.

2. The AN/ALQ-151(V)2 is not NVG compatible. Therefore, do not apply to the system until advised by the pilots. Blackout curtains will be installed during NVG operations.

REFERENCES:

Aircraft logbook
FM 34-10-7
TM 32-5865-012-10

TASK 2156

Key cryptographic systems.

CONDITIONS: In an EH-60A during mission flight or with an auxiliary power unit applied and system fully powered-up, and given TM 32-5865-012-10 and a KYK-13 with variables.

STANDARDS: Correctly key cryptographic systems, KY-58 and KG-45 with proper fill and set for mission operation.

DESCRIPTION: Key the cryptographic systems properly to ensure mission security and to enable the system to operate in both net and INTEROP modes. Take appropriate measures to safeguard any classified media. If the data link variable is different from the UHF voice variable, ensure that the UHF voice KY-58 is set to proper variable after the BITE is complete. Annotate any discrepancies on DA Form 2408-13-1 and correctly follow command prompts for initialization.

NOTE: Contact C&E maintenance if any problems are noted.

NIGHT OR NVG CONSIDERATIONS: The AN/ALQ-151(V)2 is not NVG compatible. Therefore, the operator cannot complete this task on the ground when doing NVG training.

REFERENCES:

Aircraft logbook
FM 34-10-7
TM 11-5810-292-13&P
TM 11-5810-301-13&P
TM 32-5865-012-10

TASK 2157

Perform initialization and BITE procedures.

CONDITIONS: In an EH-60A during mission flight or with an auxiliary power source applied, with the system fully powered up and given TM 32-5865-012-10.

STANDARDS: Perform initialization/BITE per TM 32-5865-012-10.

DESCRIPTION: Complete initialization/BITE procedures and key the cryptographic systems before taxi. Annotate any discrepancies on DA Form 2408-13-1.

NIGHT OR NVD CONSIDERATIONS: The AN/ALQ-151(V)2 is not NVG compatible. Therefore, the operator cannot complete this task on the ground when doing NVG training.

REFERENCES:

Aircraft logbook
FM 34-10-7
TM 32-5865-012-10

TASK 2158

Program C-10026/USQ receiver control unit.

CONDITIONS: In a preflighted EH-60A, with an operational C-10026/USQ RCU, and given frequencies and tuning parameters to enter.

STANDARDS: Operate the RCU in all modes per TM 32-5865-012-10.

DESCRIPTION: Operate the RCU in the manual, Auto-Sweep, and Auto-Step modes per TM 32-5865-012-10.

REFERENCES:

FM 34-10-7
TM 32-5865-012-10

TASK 2159

Locate an emitter of interest using the AN/ALQ-151(V)2 system.

CONDITIONS: In an EH-60A in mission flight with the AN/ALQ-151(V)2 fully initialized and BITE procedures complete, and given mission tasking and emitter frequencies with at least two stations in a net.

STANDARDS: Gather LOB and Fix information per TM 32-5865-012-10.

DESCRIPTION: Gather LOB and Fix data per TM 32-5865-012-10. Use both the one-touch keys and the keyboard to enter the different commands. Delete unwanted or errant LOBs and editing Fix information. Take appropriate measures to safeguard all classified media.

REFERENCES:

FM 34-10-7
TM 32-5685-012-10

TASK 2160

Perform file management procedures.

CONDITIONS: In an operational, initialized EH-60A, and given active target files, audible emitters of interest, and mission tasking.

STANDARDS: Execute all file management procedures per TM 32-5685-012-10.

DESCRIPTION: Use both one-touch keys and keyboard commands when appropriate. Perform file management by manipulating collected data in the BDHI, file 0, the catalog, the gist, and the scratchpad pages.

REFERENCES:

FM 34-10-7
TM 32-5865-012-10

TASK 2161

Operate the countermeasures set, AN/TLQ-17A.

CONDITIONS: With an operational countermeasures set AN/TLQ-17A(V)3, and given TM 32-5865-012-10 and a mission tasking.

STANDARDS: Operate the TLQ-17A(V)3 in all modes per TM 32-5865-012-10.

DESCRIPTION: Using mission tasking, manipulate the TLQ-17A in Manual, Search, Scan, Monitor, Priority, and automatic and manual jamming modes.

REFERENCES:

AR 525-22(S)
FM 34-10-7
TM 32-5865-012-10

TASK 2163

Perform aircraft net mission.

CONDITIONS: With up to three EH-60As, or any combina tion of EH-60 and Teammate not to exceed a total of 3 platforms, with full crews and given a mission tasking for net operations.

STANDARDS: Perform an aircraft net mission or aircraft/teammate mission per TM 32-5865-012-10.

DESCRIPTION: Using mission tasking, perform net operations per TM 32-5865-012-10.

NIGHT OR NVG CONSIDERATIONS: The AN/ALQ-151(V2) is not NVG compatible. Therefore, if performing task during NVG operations, do not apply power to initialize the system until the pilots advise.

REFERENCES:

FM 34-10-7
TM 32-5865-012-10

TASK 2165

Operate the AN/ALQ-151(V)2 under unusual conditions.

CONDITIONS: In an EH-60A with mission equipment inoperative or mission operations in adverse climatic conditions.

STANDARDS: Troubleshoot system equipment problems and demonstrate how to operate the system in adverse climatic conditions per TM 32-5865-012-10.

DESCRIPTION: Using simulated or actual failures of different mission equipment, perform the appropriate troubleshooting procedures for the malfunctioning piece of equipment.

REFERENCES:

FM 34-10-7
TM 32-5865-012-10

TASK 2169

Perform mission planning requirements.

CONDITIONS: At the ACE, the EH-60A crew with threat map with overlays, mission planning cards, and ACE tasking.

STANDARDS: The EH-60A crew will plan a miss and viable track profile per FM 34-10-7.

DESCRIPTION:

1. As a crew, plan ingress/egress routes, track profiles, and ROZs based on--

(a) METT-T.

(b) Intercept considerations.

(c) 5 DF deployment considerations.

(d) 4 EA considerations.

(e) Named areas of interest (METT-T).

(f) Threat proximity (METT-T).

(g) Specific tasking (ACE).

(h) Local weather.

2. Ensure coordination for the--

(a) Data link and voice fills.

(b) Data link and voice frequencies.

(c) Call signs.

(d) Fulltime or intermittent interoperability.

(e) Assignment of platform numbers in net mode.

REFERENCES:

FM 34-10-7
TM 32-5865-012-10

TASK 2170

Perform INTEROP mission.

CONDITIONS: With up to three EH-60As and full crews, 1 to 5 Trailblazers, 1 to 4 Teammates, and given a mission tasking for INTEROP operations.

STANDARDS: Perform an INTEROP mission per TM 32-5865-012-10.

DESCRIPTION: Using tasking for an INTEROP mission--

1. Set up equipment for an INTEROP mission per TM 32-5865-012-10.

2. Establish communications with the other aircraft and, if possible, with the trailblazer or teammate MCS during BITE procedures.

3. Place the RF power meter to "DATA forward."

4. Net on the ground with other Quick Fix platforms after BITE is completed and before aircraft taxi.

a. When the aircraft is acting as the tasking station, ensure that--

(1) The watt meter needle moves.

(2) Other aircraft designators (Y, Z) appear on the Plasma Display with LOB data.

NOTE: Confirm with other aircraft that a request was or was not received.

b. When the aircraft is acting as the tasked station, ensure that the--

(1) RFI light flashes.

(2) DF button lights.

(3) Watt meter needle moves.

NOTE: Confirm with other aircraft that the system was or was not tasked.

5. Inform the trailblazer/teammate MCS that Quick Fix is ready to go into INTEROP. Once you establish net with other Quick Fix platforms --

a. Set the CPCI for full-time INTEROP.

b. Ensure trailblazer/teammate MCS re-initializes for INTEROP.

c. Ensure trailblazer/teammate MCS initiates DF tasking.

6. Ensure that the--

a. RFI light flashes once every 1 to 2 seconds.

b. DF button lights.

c. Watt meter needle moves.

7. Confirm with the trailblazer/teammate MCS that a response was or was not received from the aircraft.

8. When the aircraft is acting as the tasking station, ensure that--

a. The watt meter needle moves.

b. Other station designators (Y, Z) appear on the Plasma Display with LOB data.

9. Operate in both Intermittent and Full-time INTEROP, as required.

NIGHT OR NVG CONSIDERATIONS: The AN/ALQ-151(V2) is not NVG compatible. Therefore, if performing this task during NVG operations, do not apply power to initialize the system until the pilots advise. Blackout curtains must also be installe d during NVG operations.

REFERENCES:

FM 34-10-7
TM 32-5865-012-10

GLOSSARY

ACE	analysis control element
ACFT	aircraft
ACP	air control point
ADF	automatic direction finder
AFCS	automatic flight control system
AGL	above ground level
AH	attack helicopter
AHO	above highest obstacle
AIM	Aeronautical Information Manual
ALSE	aviation life support equipment
ALTR	alternate
AMC	air mission commander
△AMCOM	Aviation and Missile Command (U.S. Army)
ANVIS	aviator's night vision imaging system
APART	annual proficiency and readiness test
APU	auxiliary power unit
AR	Army regulation
ARNG	Army National Guard
ARTEP	Army training and evaluation program
ASE	aircraft survivability equipment
ASET	aircrew survivability equipment trainer

ASR	airport surveillance radar
ATC	air traffic control
ATF	aircraft torque factor
ATIS	automatic terminal information service
ATM	aircrew training manual
ATP	aircrew training program
ATTN	attention
AZ	Arizona
BDHI	bearing-distance-heading indicator
BII	basic issue items
BITE	built-in test equipment
△C	Celsius
C&E	communication/electronics
CDU	central display unit
CE	crew chief (maintenance personnel)
CG	center of gravity
CIS	command instrument system
CL	checklist
COMPT	compartment
CONT	continuous
CONUS	continental United States
CP	communications process; control point
CPCI	communications processor control indicator
CPU	central processing

CTR	crew training record
DA	Department of the Army
DAC	Department of the Army civilian
DD	Department of Defense (applies to form)
DEC	digital electronic control
DECU	digital electronic control unit
D/F	direction finder
DF	direction finding
DFCU	direction finding control unit
△DEG	degree
DH	decision height
DIR	direct
DMF	drag multiplying factor
DOD	Department of Defense
EA	electronic attack
ECCM	electronic counter-countermeasures
ECU	electrical control unit
EH	electronic helicopter
EMER	emergency
EMS	emergency medical service
END	endurance
ENG	engine
ERFS	extended range fuel system

ESSS	external store support system
ETA	estimated time of arrival
ETE	estimated time en route
ETF	engine torque factor
ETL	effective translational lift
ETP	exportable training packet
F	Fahrenheit
FAA	Federal Aviation Administration
FAC	flight activity category
FAR	Federal Aviation regulation
FAT	free air temperature
FI	nonrated crew member instructor
FIH	Flight Information Handbook
FLIP	flight information publication
FM	field manual; frequency modulated
FPM	feet per minute
FPS	flight path stabilization
FS	flight simulator
ft	feet
FW	fixed wing
GEN	generator
GPS	global positioning system
GR	grade
GWT	gross weight

HDG	heading
Hg	mercury
HIRSS	Hover Infrared Suppressor System
HIT	health indicator test
HQ	headquarters
hr	hour
HSI	horizontal situation indicator
HUD	heads-up display
I	instructor
IAS	indicated airspeed
IATF	individual aircrew training folder
ICAO	International Civil Aviation Organization
ICS	intercommunication system
ID	identification
IE	instrument examiner
IFF	identification, friend or foe (radar)
IFR	instrument flight rules
IGE	in-ground effect
IINS	integrated inertial navigation system
ILS	instrument landing system
IMC	instrument meteorological conditions
IOP	interoperability
IP	instructor pilot

IR	infrared
△IRP	intermediate rated power
IV	intravenous
KIAS	knots indicated airspeed
kt	knot
KTAS	knots true airspeed
KTS	knots
LOB	lines-of-bearing
LOC	localizer
LS	left seat
LSE	landing signalman enlisted
LZ	landing zone
MAP	missed approach point
max	maximum
△MCP	maximum continuous power
MCS	master control station
ME	maintenance test flight evaluator
MEDEVAC	medical evacuation
METL	mission essential task list
METT-T	mission, enemy, terrain, troops, and time available
MIJI	meaconing, intrusion, jamming, and interference
min	minimum
MO	flight medic or other medical personnel
MOPP	mission-oriented protective posture

MOS	military occupational specialty
MOU	memorandum of understanding
MP	maintenance test pilot
△MSL	mean sea level
MTF	maintenance test flight
N	night
NA	not applicable; ungraded (for grade slip purposes)
NAS	National Airspace System
NATO	North Atlantic Treaty Organization
NAV	navigation
NAVAID	navigational aid
NBC	nuclear, biological, chemical
NCM	nonrated crew member
NDB	nondirectional beacon
Ng	engine gas generator speed
NGR	National Guard regulation
no	number
NOE	nap of the earth
NORM	normal
NOTAM	notice to airmen
Np	engine power turbine speed
NVD	night vision device
NVG	night vision goggles
NVS	night vision system

OGE	out-of-ground effect
P	pilot not on the controls
P*	pilot on the controls
PA	pressure altitude
pam	pamphlet
PAR	precision approach radar
PC	pilot in command
PCL	power control lever
PDU	pilot's display unit
PI	pilot
PMS	preventive maintenance service
PNVS	pilot night vision system
POI	program(s) of instruction
POS	position
PPC	performance planning card
psi	pounds per square inch
PTT	push to talk
pub	publication
PZ	pickup zone
R	reproducible
R/C	rate of climb
RCM	rated crew member
RCU	receiver control unit
REL	release

RF	radio frequency
RFI	radio frequency interference
RL	readiness level
ROM	read only memory
ROS	remote out station
ROZ	restricted operating zone
RPM	revolutions per minute
RPM R	revolutions per minute rotor
RS	right seat
RW	rotary wing
SALUTE	size, activity, location, unit, time, equipment
SAS	stability augmentation system
SAT	systems approach to training
SDU	signal display unit
△SE	single-engine
SEL	select; selection
SFTS	synthetic flight training systems
SI	nonrated crew member standardization instructor
SIF	selective identification feature
SINCGARS	single-channel ground and air radio system
SKED	(company trade name for litter)
SM	statute mile
SM-TG	soldier's manual-trainer's guide
SOI	signal operation instructions

SOP	standing operating procedure
SP	standardization instructor pilot
sq	square
SSN	social security number
STAB	stabilator
STABO	a system for extracting personnel by helicopter (the combined first letters of the surnames of the five persons who designed the system)
STANAG	standardization agreement
std	standard
STP	soldier training publication
sys	system
TADS	target acquisition and designation system
TAS	true airspeed
TB	technical bulletin
TC	training circular
TGT	turbine gas temperature
TM	technical manual
TR	torque ratio
TRADOC	United States Army Training and Doctrine Command
△TRQ	torque
UH	utility helicopter
UH-60FS	UH-60 flight simulator
UHF	ultra high frequency
US	United States (of America)
USAAVNC	United States Army Aviation Center

USAF	United States Air Force
USAR	United States Army Reserve
USARI	United States Army Research Institute
UT	unit trainer
VFR	visual flight rules
Vh	maximum speed in level flight with maximum power
VHF	very high frequency
VMC	visual meteorological conditions
Vne	velocity never exceed (airspeed limit)
VOR	VHF omnidirectional range
VSI	vertical speed indicator
WB	wideband
WX	weather
XFD	cross-feed
Z/Zulu	coordinated universal time (UTC)

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INDEX

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UH-60 PERFORMANCE PLANNING CARD

For use of this form, see TC 1-212: The proponent agency is TRADOC.

DEPARTURE

AIRCRAFT GWT: lbs	PA: /	FAT: °C / °C		
FUEL WEIGHT: lbs	DUAL-ENGINE	SINGLE-ENGINE		
STORES WEIGHT: lbs		#1	#2	
SLING WEIGHT: lbs	ATF:	ETF:	ETF:	
ZERO FUEL WEIGHT: lbs	TR:	TR:	TR:	
MAX TORQUE AVAILABLE	%	%	%	
MAX ALLOWABLE GWT OGE / IGE	/			
GO/NO-GO TORQUE OGE / IGE	% / %			
MAX HOVER HEIGHT IGE	ft			
PREDICTED HOVER TORQUE	%	%	%	
MIN SE-IAS - W/O STORES / W/STORES		kts / kts		

REMARKS:

CRUISE

PA: ft	FAT: °C	MAX ANGLE: °	Vne-IAS: kts

		DUAL-ENGINE	SINGLE-ENGINE	
			#1	#2
		TR:	TR:	TR:
MAX TORQUE AVAILABLE	CT %	%	%	%
MIN / MAX Vh - IAS		kts/ kts	kts / kts	
CRUISE - IAS / TAS		/	kts/ kts	
CRUISE / CONTINUOUS TORQUE		%/ %	%/ %	
CRUISE FUEL FLOW		pph	pph	
MAX END - IAS / TORQUE		kts/ %		
MAX RANGE - IAS / TORQUE		kts/ %		
MAX R/C - IAS / TORQUE		kts/ %		
MAX ALLOWABLE GWT		lbs	lbs	
OPTIMUM IAS AT MAX ALLOWABLE GWT		kts	kts	
MAX ALTITUDE - MSL		ft	ft	
EMERGENCY SE - IAS			kts	

DA FORM 5703-R

ARRIVAL			
LANDING GWT: lbs	PA: ft	FAT: °C	
	DUAL-ENGINE	SINGLE-ENGINE #1	#2
	TR:	TR:	TR:
MAX TORQUE AVAILABLE	%	%	%
PREDICTED HOVER TORQUE	%	%	%
MAX ALLOWABLE GWT OGE / IGE	/		
MAX HOVER HEIGHT IGE	ft		
MIN SE-IAS - W/O STORES / W/STORES		kts /	kts

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TC 1-212
8 MARCH 1996

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