BY ORDER OF THE SECRETARY OF THE AIR FORCE

AIR FORCE INSTRUCTION 11-2TH-1H VOLUME 3

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Flying Operations

TH-1H OPERATIONS PROCEDURES

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction implements AFPD 11-2, *Aircraft Rules and Procedures*, and AFI 11-202, Volume 3, *General Flight Rules.* It establishes standard operational procedures to be used by pilots operating Air Force TH-1H aircraft. This instruction applies to all active duty, Department of the AF Civilian (DAF) and contract pilots flying the TH-1H. It does not apply to the Air Force Special Operations Command, Air Force Reserve Command, or the Air National Guard. File a copy of all approved waivers with this instruction.

Major commands (MAJCOM) will coordinate MAJCOM-level supplements to this volume through HQ AETC/A3V to HQ USAF/A3OI for approval prior to publication. Once approved and published, send copies of MAJCOM-level supplements to HQ USAF/A3OI, HQ AETC/A3V, and the user MAJCOM office of primary responsibility (OPR). Field units below the MAJCOM level will coordinate their supplements with their parent MAJCOM office of primary responsibility (OPR) before publication. submit comments or suggested improvement to this instruction on AF Form 847, *Recommendation for Change of Publication*, to the parent MAJCOM through standardization/evaluation (stan/eval) channels, who will forward approved recommendations to HQ AETC/A3V. (AF Form 847 is prescribed in AFI 11-215, *USAF Flight Manuals Program (FMP)*. Refer to that publication for guidance on filling out the form.)

Waiver requests shall be submitted in accordance with **paragraph 1.6**.

The Privacy Act of 1974 applies to certain information gathered pursuant to this instruction. Privacy Act System of Records Notice F011 AF XO A, Aviation Resource Management System (ARMS), applies. The authorities to collect and maintain the records prescribed in this publication are Title 37 United States Code, Section 301a, *Incentive Pay*, Public Law 92-204, Section 715, *Appropriations Act for 1973*, Public Law 93-570, *Appropriations Act for 1974*, Public Law 93-294, *Aviation Career Incentive Act of 1974*, DoDI 7730.57, *Aviation Career Incentive Act and Required Annual Report*, Executive Order 9397, *Numbering System for Federal Accounts Relating to Individual Persons*, November 22, 1943, as amended by Executive Order 13478, and Executive Order 9397, *Relating to Federal Agency Use of Social Security Numbers*, as amended, November 18, 2008.

Ensure all records created as a result of processes prescribed in this publication are maintained in accordance with (IAW) AFMAN 33-363, *Management of Records*, and disposed of (IAW) the Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS) at **https://www.my.af.mil/afrims/afrims/afrims/rims.cfm**. See Attachment 1 for a glossary of references and supporting information used in this publication. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

SUMMARY OF CHANGES

This document is substantially revised and must be completely reviewed. This document has been completely rewritten. Since the 23 FTS is the only user of this manual, the items previously included in the Local Chapter 10 guidance and the 58 OG Supplement Attachment 5 to the 11-202 Volume 3 have been included and all references to the 3-3 have been deleted.

Chapter 1

GENERAL INFORMATION

1.1. General. This directive applies to all TH-1H helicopter aircrews. It consists of this instruction; AFI 11-2TH-1HV3, Checklist 1 (CL-1). Use it in conjunction with aircraft flight manuals, Flight Information Publications (FLIP), and applicable USAF publications. It applies to training, normal, and contingency operations to reduce the need for any procedural changes at the onset of contingencies.

1.1.1. HQ AETC/A3V has overall responsibility for administration of this instruction and checklists. Submit suggested improvements to this instruction on AF Form 847, Recommendation for Change of Publication, through MAJCOM channels to AETC/A3V according to AFI 11-215, Flight Manual Program (FMP).

1.2. Applicability. This instruction is directive to all personnel assigned or attached to USAF TH-1H helicopter units. This instruction, in conjunction with other governing directives, prescribes guidance for TH-1H aircraft. Crewmembers must have a thorough working knowledge of all procedures applicable to their crew position and mission qualification.

1.3. Mission. The primary mission of the TH-1H unit is specialized undergraduate pilot training-helicopter (SUPT-H) at Fort Rucker, AL.

1.4. Pilot Responsibilities. This regulation, in conjunction with other governing directives, prescribes guidance for TH-1H aircraft under most circumstances, but is not to be used as a substitute for sound judgment or common sense. Operations or procedures not specifically addressed (here or in other governing instructions) may be accomplished if they enhance safe effective mission accomplishment.

1.5. Deviations. Do not deviate from the policies and guidance in this instruction except:

1.5.1. For safety, aircraft commanders may deviate from this directive as necessary to protect their crew and aircraft if they believe strict compliance would jeopardize safe operations.

1.5.2. When circumstances require, this publication provides guidance for helicopter operations under most circumstances, but it does not substitute for sound judgment. If within communications range of command and control agencies, deviations due to unusual circumstances should be pre-coordinated.

1.6. Waivers. The waiver authority for this instruction is tiered as described below. For MAJCOM/A3 waivers, submit requests through standardization/evaluation (Stan/Eval) channels. When an operational necessity exists and time does not allow pursuit of a waiver through normal channels, the OG/CC has one-time waiver authority to this instruction.(T-2) Report all deviations without waiver through Stan/Eval channels within 10 days of the occurrence.

1.6.1. Tier requirements refer to waiver authority based on level of risk.

1.6.1.1. “Tier 0” (T-0): Requirement has been determined by non-AF authority; waiver authority is non-applicable or external to AF.

1.6.1.2. “Tier 1” (T-1): Non-compliance with this requirement puts Airmen, commanders or the USAF strongly at risk of mission or program failure, death, injury,

legal jeopardy or unacceptable fraud, waste or abuse. The waiver authority is the MAJCOM/CC, delegable no lower than MAJCOM Director, with the concurrence of the AFI Certifying Official.

1.6.1.3. "Tier 2" (T-2): Non-compliance with this requirement may degrade mission or program effectiveness or efficiency and has potential to create moderate risk of mission or program failure, injury, legal jeopardy or unacceptable fraud, waste or abuse. The waiver authority is the MAJCOM/CC (delegable no lower than MAJCOM Director).

1.6.1.4. "Tier 3" (T-3): Non-compliance with this requirement may limit mission or program effectiveness or efficiency and has a relatively remote potential to create risk of mission or program failure, injury, legal jeopardy or unacceptable fraud, waste, or abuse. The waiver authority is the Wing / DRU / FOA CC (delegable no lower than Group/CC or equivalent).

1.7. Terms Explained:

1.6.1. ***Will*** and ***Shall*** indicate a mandatory requirement.

1.6.2. ***Should*** indicates non-mandatory desired or preferred method of accomplishment.

1.6.3. ***May*** indicates an acceptable or suggested means of accomplishment. ***WARNING:*** Operating procedures, techniques, etc., which may result in personal injury or loss of life if not carefully followed. ***CAUTION:*** Operating procedures, techniques, etc., which may result in damage to equipment if not carefully followed. ***NOTE:*** Operating procedures, techniques, etc., which are essential to emphasize.

1.8. Development of New Equipment and Procedures. Units desiring to use new or not previously approved equipment, to include mission equipment, must obtain AETC/A2/3/10, and Warner Robins-Air Logistics Center (WR-ALC) approval via AF Form 1067, *Modification Proposal*, prior to testing and/or use. (T-2)

Chapter 2

OPERATING POLICIES

2.1. Command and Control. Air Education and Training Command is the Lead Command for TH-1H operations

2.2. Support to Civil Authorities/Civilian Law Enforcement Agencies.

2.2.1. Military Support to Civil Authorities. Request for helicopter support by civil authorities will be handled IAW AFI 10-802, Military Support to Civil Authorities. Mission approval authority is the wing commander (or equivalent).

2.2.2. Assistance to Civilian Law Enforcement Agencies. In general, military units are prohibited by law from participating in civil law enforcement activities (this does not include SAR requests from law enforcement agencies). See AFI 10-801, Assistance to Civilian Law Enforcement Agencies, USC Title 10 Chapter 18, Military Support for Civilian Law Enforcement Agencies or consult with your Judge Advocates office for more information. Report all requests for assistance and coordinate all requests from civilian law enforcement authorities through appropriate command and control channels.

2.2.3. Approval authority to carry civilian law enforcement or medical personnel on each and Rescue (SAR) or Medical Evacuation (MEDEVAC) missions may be delegated to aircraft commanders under certain circumstances. If the Aircraft Commander (AC) determines passengers are essential for the successful completion of the mission, and they are unable to contact their controlling agency for approval, passengers may be carried on the segments of flight requiring their presence. Leave a copy of the passenger manifest with a responsible person IAW AFI 11-202V3, General Flight Rules.

2.2.4. Utilization of Civilian Law Enforcement or Medical Personnel. Civilian law enforcement or medical personnel may be required to perform duties at an incident site. These duties may include death determination or human remains removal. Local/international laws may affect mission prosecution and should be reviewed prior to deployment/pickup of civilian personnel. Units will publish any local restrictions and procedures. This may be accomplished in either a command or unit supplement to this instruction.

2.2.5. Human Remains. Rescue personnel should not normally remove human remains from crash or incident sites. The decision to remove the remains from the site will be made solely by the local authorities. Do not commit resources to body removal until the mission approval and/or releasing authority (normally the Wing/Group Commander) has been informed of the request and has approved the use of resources. The AC is responsible for the safety of resources and should not jeopardize them for body recovery. The AC is responsible for compliance with all directions given by local civil authorities concerning the proper removal and handling of remains in that jurisdiction. Written authorization from the proper local authorities should be received prior to removal; however factors such as accessibility to the area, weather conditions, darkness, etc. may preclude the practicality of receiving written authorization from local authorities. In such cases, a verbal authorization may be accepted if followed by a written authorization.

2.3. Primary Crewmembers. Crewmembers occupying a primary position during flight must be TH-1H qualified and current for the mission events to be flown, or conducting training/recurrency for that crew position/mission IAW AFI 11-2TH-1H, Vol 1, *TH-1H-Aircrew Training* or designated as a supervisory flyer IAW AFI 11-401, *Aviation Management.*

2.4. Crew Complement. The minimum crew is one pilot, except as specified in the sub-paragraphs below (T-2). During single pilot missions, flight engineers and flight surgeons may sit in the left front seat when not required in the cabin area. Flight engineers may sit in the left front seat during FCFs and maintenance support. At no time will personnel not authorized per AFI 11-401 manipulate flight controls which effect climb, descent, pitch, roll, bank, or yaw. ***NOTE:*** Where two pilots are required, an instructor pilot (IP) and a student pilot, or an IP and an instructor enrichment program (IEP) pilot are authorized. (T-2)

2.4.1. The minimum crew for night or night vision goggle (NVG), planned instrument meteorological conditions (IMC), low level, and formation is two pilots. (T-2) An additional crewmember to assist in scanning is recommended.

2.4.2. The minimum crew for student team flights is two student pilots. (T-2)

2.4.3. The minimum crew for emergency procedures (EP) training is two pilots. One must be an IP at a set of controls. (T-2)

2.4.4. The minimum crew for NVG formation is two pilots in each aircraft. An additional crewmember is highly recommended, with approved restraint device (for movement in the cabin), to assist in scanning.

2.4.5. The minimum crew for a functional check flight (FCF) is a pilot and a flight mechanic or flight engineer, or two pilots. (T-2)

2.5. FCIF Library. The 58 OG FCIF Library is the primary reference for publications. The FCIF Library is maintained by 58 OG/OGV and contains all FCIFs and required publications. The 58 OG required publication listing on the 58 OG FCIF Library will be used to determine publication requirements. (T-2)

2.6. Mission Kits. A mission kit is required for all flights, except Functional Check Flights (FCF), and kept in storage when not in use. Prior to departure, aircrew will inspect the mission kits and the aircraft commander or designated representative will ensure a current kit is aboard the aircraft before flight. (T-2) After the mission, return the mission kit and notify CCV of any items that have been damaged. All crewmembers will maintain and carry their applicable abbreviated checklists and AFI 11-2TH-1HV3, and CL-1 to this instruction during flight. During FCF's, a copy of T.O. 1(H)-1(T)H-1 and T.O.1H-1(T)H-6CF-1 are required on board. FLIP shall include coverage for entire area of planned operations.

2.6.1. Mission kits will include (T-3):

2.6.1.1. The appropriate aircraft flight manual.

2.6.1.2. Unit In-flight guide

2.6.1.3. AF IMT 457, *USAF Hazard Report*.

2.6.1.4. AF IMT 651, *Hazardous Air Traffic Report (HATR)*.

2.6.1.5. AFI 11-202, Volume 3, *General Flight Rules*.

2.6.1.6. This instruction.

2.6.1.7. These flight information publications (FLIP):

2.6.1.7.1. The instrument flight rules (IFR) supplement.

2.6.1.7.2. The visual flight rules (VFR) supplement.

2.6.1.7.3. The flight information handbook (FIH).

2.6.1.7.4. Appropriate en route low-altitude charts (one set for each area of operation).

2.6.1.7.5. Appropriate low-altitude instrument approach procedures (two for each area of operation). Two TCNs will be included, as applicable.

2.6.1.7.6. Appropriate VFR sectionals (one set for each area of operation)

2.6.1.8. Air Card user guide (XC kits only)

2.7. Essential Aircraft Equipment. See **Table 2.1** for a list of required equipment. In addition, whenever an aircraft commander considers an item essential for the accomplishment of the mission, he or she will designate the item mission essential, and it will be repaired or replaced prior to the aircraft's departure. (T-2)

Table 2.1. TH-1H Required Equipment.

ITEM	A	B	C	D	E
	Required Equipment (Note 1)	**Day**	**Night**	**IMC (Note 2)**	**NVG (Note 2)**
1	Airspeed Indicator	X	X	X	X
2	Anti-collision Lights/Position Lights	X	X	X	X
3	Attitude Indicator	X	X	X	X
4	Clock or Watch	X	X	X	X
5	Comm Equipment (Note 3)	X	X	X	X
6	Bleed Air Heater (Note 4)	X	X	X	X
7	Outside Air Temperature (OAT) Gauge	X	X	X	X
8	Fuel Quantity Indicator	X	X	X	X
9	Heading Indicator	X	X	X	X
10	Landing/Search Light (Note 5)	X	X	X	X
11	Magnetic Compass	X	X	X	X
12	Navigation Equipment (Note 3)			X	

ITEM	A Required Equipment (Note 1)	B Day	C Night	D IMC (Note 2)	E NVG (Note 2)
13	Pitot Heater (Note 6)			X	
14	Cockpit Instrument Lights		X	X	X
15	Altimeter	X	X	X	X
16	Transponder	X	X	X	X
17	Turn And Slip Indicator	X	X	X	X
18	Vertical Velocity Indicator		X	X	X
19	Air Data Computers (ADC) (Note 7)	X	X	X	X
20	Multi-Function Display (MFD) (Note 8)	X	X	X	X
21	Standby Instruments		X	X	X

Notes:

1. Equipment designated for flight in day, night, IMC, or NVG must be operational and the minimum required, regardless of the intended mission.

2. Required equipment items 1, 3, 9, and 15 must be operational at both pilot and copilot stations. All vacuum and electrical sources for flight instruments must be operational.

3. As determined by the aircraft commander.

4. As required seasonally or on flights of more than 1 hour at temperatures below 0 degrees Celsius.

5. The NVG infrared searchlight must be installed and operational for NVG flights below 20 percent illumination. Failure of the light in flight must be evaluated to determine its impact on the mission and further NVG flight.

6. Must be operational for all anticipated flight below 10 degrees Celsius.

7. Both ADCs are required for all phases of flight.

8. To accept an aircraft for flight all three MFD's must be operational. For a mission already in progress, if one MFD fails, the crew may elect to continue the mission. Two failed MFDs (one pilot's still working) require the flight to return to base.

2.8. Passengers. When the squadron is tasked to fly with passengers on board, follow the requirements of DoD 4515.13 and AFI 11-401, *Aviation Management,* and applicable supplements. Passengers will (T-2):

2.8.1. Be escorted through the safe approach zone when the aircraft is being on- or off-loaded with rotors turning. The aircraft commander or designated representative will brief passengers on procedures to be followed.

2.8.2. Not occupy a cockpit seat with the engine running unless authorized via a formal orientation request, according to AFI 11-401 and appropriate supplements.

2.8.3. Receive egress, aircraft familiarization, and EP briefings.

2.8.4. Have access to hearing protection, provided by aircrew prior to flight.

2.8.5. When passengers are in the cargo compartment, the cargo doors will remain closed during flight unless an aircrew member is also in the cabin.

2.8.6. Off- and on-load for crew changes are authorized while rotors are turning. The new crew will review aircraft forms, weight and balance, and TOLD prior to takeoff.

2.8.7. Restrictions. Simulated emergency procedures are not authorized with passengers onboard. Passengers will be restrained by the safest means possible while still enabling the supported passenger to accomplish their mission. PIC will ensure supported forces are given a safety briefing and are familiar with the mission profile and events before the flight. ***Exception:*** This restriction does not apply to TH-1H flight crew (Instructors, flight engineers, and students) that are passenger manifested on the aircraft as a result of a precautionary landing.

2.9. DNIF. Aircrew who become DNIF will immediately notify the Ops Sup, their Flt/CC, and provide SARM with their grounding AF Form 1042 *Medical Recommendations for Flying or Special Operational Duty* or DA Form 4186 *Medical Recommendation for Flying Duty*. Crewmembers will not be returned to flying status until the AF Form 1042 or DA Form 4186 clearing them to fly is on file with SARM.

Chapter 3

AIRCREW PROCEDURES

3.1. Responsibilities. The responsibility for mission planning/preparation is shared jointly by the individual aircrew members.

3.2. Aircraft Commander Responsibility and Authority. All flights will have an aircraft commander designated on a flight authorization form, or equivalent, in accordance with AFI 11-401, *Aviation Management*, as supplemented by MAJCOMs. Aircraft commanders are:

3.2.1. In command of all persons aboard the aircraft, vested with the authority necessary to manage their crew and accomplish the mission.

3.2.2. Responsible for the welfare of the crew and the safe accomplishment of the mission. This begins upon notification and terminates upon mission completion. If the aircraft commander determines that conditions are not safe to execute the mission, the aircraft will not depart until the condition is corrected.

3.2.3. The final mission authority and will make decisions not specifically assigned to higher authority.

3.2.4. Charged with keeping the applicable commander informed concerning mission progress and/or difficulties. And has the final authority for asking for and accepting waivers affecting the crew or mission.

3.2.5. Responsible for ensuring aircraft security when away from home station.

3.2.6. The focal point for interaction between aircrew and mission support personnel.

3.2.7. Required to debrief maintenance personnel on the condition of the aircraft and equipment. (T-2)

3.3. Flight Engineer Responsibilities:

3.3.1. General. This section contains normal procedures for flight engineers not contained in the flight manual and/or applicable Technical Order. If flight engineers are not being used for the mission, the pilot not flying will complete the requirements of this section.

3.3.2. Flight Engineer Station. The flight engineer station is defined as any position other than the Pilot seat. Due to the diverse mission of a TH-1H flight engineer, duties may be conducted from any station in the aircraft, with the exception of EP flights when the flight engineer should occupy the Jump Seat position. Instructor flight engineers will be secured IAW paragraph 4.6.3 of this AFI.

3.3.3. Aircraft Systems Management. The flight engineer will monitor aircraft systems during ground and flight operations unless the mission dictates otherwise. Notify the pilot of all abnormal indications and take action as directed.

3.4. Mass Aircrew Briefings. The Operations Supervisor or designated representative will conduct the daily briefing and ensure all instructors are thoroughly briefed on mission execution and potential hazards. Student mass briefs are a required part of the Go/No-Go process. Aircrew on Continuation Training (CT) sorties should attend applicable portions of scheduled student mass brief to ensure they comply with go/no-go procedures. If no student briefs are scheduled at

CT sortie brief times, IPs will ensure that they review the mass brief during their crew brief. Student mass aircrew briefings will begin with a time hack given by a student at the scheduled brief time. As a minimum, all items in the mass brief are IAW AFI 11-418.

3.5. Crew Briefing/Debriefing Requirements. Refer to AFI 11-2TH-1H Vol 3 CL1 for briefings. The aircraft commander or flight lead is responsible for presenting a logical briefing that will promote safe, effective mission accomplishment, as well as, ensuring appropriate mission/event briefings are completed prior to accomplishment. Mission elements/events may be modified and briefed airborne as long as flight safety is not compromised. Flight lead/aircraft commanders will ensure changes are acknowledged by all flight members/crewmembers. If feasible, an alternate mission will be briefed. The alternate mission must be less complex than the primary mission. Additionally aircraft commanders and/or flight leads will:

3.5.1. Ensure all crewmembers/passengers attend the briefing unless previously coordinated with squadron supervisors and aircraft commander/flight lead. Anyone not attending the flight briefing must receive a briefing on mission events, duties and emergency procedures prior to flight. (T-2)

3.5.2. Ensure specific items pertinent to all mission events are covered. Those items understood by all participants, and written in squadron standards, may be briefed as "standard".

3.5.3. When dissimilar aircraft are flown in formation, brief flight responsibilities, proper formation position (minimum rotor separation based on the largest rotor diameter), aircraft unique capabilities, tactics, limitations and requirements for each phase of flight.

3.5.4. All missions will be debriefed. Consider using approved, portable PFPS trails to enhance capturing lesson's learned.

3.5.5. Prior to each flight the aircraft commander will ensure all passengers are briefed IAW AFI 11-2TH-1H Vol 3 CL1 and applicable AETC guidance (See paragraph 2.8).

3.5.6. Complete Operational Risk Management prior to flight and update throughout the sortie as risk factors change. Evaluate risk and mitigate appropriately for the flight. Aircraft commanders will ensure the OPS Sup is briefed before stepping.

3.5.7. Ensure aircrew review the FCIF before departure on all missions. The FCIF contains reference material appropriate for squadron operations as designated by the OG/CC. An electronic equivalent may be used. The aircraft commander will provide an FCIF update to all crewmembers who are delinquent in their FCIF review or who join a mission en route. (T-0)

3.6. Post Flight Debriefing. The aircraft commander of each flight will give each crewmember the opportunity to discuss unusual aspects of the mission. These debriefings may be formal or informal, as the situation requires. (T-2)

3.6.1. For training flights, the instructor will review and evaluate the overall training performed, advise the student of future training requirements, answer technical questions, and complete student grade sheets. (T-2)

3.7. Maintenance Debriefing. As soon as possible after arrival, the aircraft commander and other required crewmembers will debrief maintenance on the condition of the aircraft.

3.8. Weather Minimums. Forecast and observed weather (prevailing) must meet minimums specified. Prior to takeoff, ensure an appropriate course of action is identified (and briefed) in the event of an emergency after takeoff. (T-2)

3.8.1. All VFR training flights require a 700-foot ceiling and 2 statute miles (SM) visibility (T-2), except:

3.8.1.1. Night, NVG, Student Cross-Country, and student team flights require a 1,000-foot ceiling and 3 SM visibility.

3.8.2. If observed or forecast weather conditions deteriorate below the specified minimums, terminate training by recovering to an airfield or landing the aircraft. (T-0) If weather improves during recovery or landing, training may continue. ***NOTE:*** Weather minimums in paragraphs 3.8.1 and 3.8.1.1 do not apply to hover and air taxi operations at the aerodrome. Hover/Taxi training at the aerodrome is authorized if observed WX is less than VFR training minimums. When conducting hover/taxi training when weather is below VFR training minimums the aerodrome control tower must be operational and the aircrew will remain in visual contact with the control tower.

3.8.3. Special VFR. Special VFR recovery minimums are 300-½ for day, 500-1 for night. Special VFR departures below 700-2 day, or any time at night are not authorized.

3.8.3.1. For SVFR departures, contact Clearance Delivery to coordinate clearance.

3.8.4. Surface wind limits are 30 knots or less, or a gust spread of 15 knots. For student team sorties, the wind limits are 20 knots or less (including gusts), or a gust spread of 10 knots. (T-2)

3.8.5. The primary source for weather information is the Cairns AAF weather station. Their forecasts take priority over any other weather reporting/forecasting agency. Weather Warnings and Advisories are available via the Local Weather Data Set (LWDS). The Mission Execution Forecast is published for the local area on Fort Rucker's Weather Operations Webpage three times a day. If a hard copy DD 175-1 forecast is required, crews will contact base weather the day prior. Request information on off-station missions directly through the weather shop the day prior, to ensure timely briefings.

3.9. Adverse Weather:

3.9.1. Weather Warning (WW). A weather warning will be issued for forecast or observed weather conditions within a 15 NM radius of Cairns AAF that may pose a hazard to property or life. A weather warning is not prohibitive for flight or training. This issuance does not require pilots to recover early, only to be in a position to respond to changing weather conditions.

3.9.2. Terminal Weather Advisory (TWA). The Cairns AAF weather station will issue a TWA when an established weather condition that could affect aircraft operations exists within a 15 NM radius of Cairns AAF. A TWA is a forecast; pilots will consider it accordingly.

3.9.3. Area Weather Advisories (AWA). The Cairns AAF weather station will issue an AWA when weather conditions could affect aircraft operations or are expected to occur within 60 NM of Cairns AAF. AWAs issued for IFR conditions in low-lying drainages is a forecast for predominantly IFR conditions in the vicinity of large bodies of water and large

rivers. Pilots will consider this a segmented forecast for the 60 NM local flying area (LFA). Aircraft may launch and train provided they avoid the affected low-lying areas.

3.9.4. NVG Adverse Weather. If the forecast prevailing weather in the applicable training area is below 1000/3, the aircraft commander shall plan to depart the affected training area prior to the conditions falling below minimums or return to the aerodrome. If the weather at the recovery aerodrome is forecast to go below 1000/3, aircrew will recover to the aerodrome 30 minutes prior to the forecast conditions. ***NOTE:*** Local weather can deteriorate in a short period of time. While it may be feasible to continue training in the AO, recovery to Cairns AAF may not.

3.9.5. Weather Hold/Recall/Cancel. In all cases, aircraft commanders (AC) are expected to exercise sound judgment after weighing safety, aircraft limitations, and training effectiveness. ACs will coordinate intentions with the Ops Sup prior to launch. When necessary to ensure safe flight operations en route, ACs should not hesitate to land and contact Metro/Hub Radio (Hub)/Ops Sup as time/radio reception permits. When weather advisories are received, ACs will obtain more specific information directly from the weather office as necessary. Weather advisories are not automatically limiting, because they usually refer to the possibility for the weather phenomena to occur at some time during the advisory period, over a wide general area, and may not reflect actual observations or forecasts. If weather will impact the mission, ACs will obtain actual current and forecast conditions for the intended route of flight, flight period, etc. When deteriorating weather conditions affect flying operations, the squadron Ops Sup will utilize all available resources (i.e., weather, radar, tower personnel, pilot reports, etc.) to determine the best course of action for squadron aircraft. This course of action could extend to departures and recoveries as well as diverts or weather recalls. The Ops Sup will determine suitable weather alternates, assign them accordingly, and monitor them. The SQ/CC/DO/ADO or Ops Sup may issue a weather recall/hold/cancel based on forecast, hazardous weather reports, or observed conditions.

3.9.6. Thunderstorms. Flight may be made into areas of known or forecast thunderstorms if visual meteorological conditions (VMC) are maintained and thunderstorm activity is avoided by a minimum of 5 nautical miles (NM). Do not fly into rain shafts beneath cumulonimbus clouds. (T-0)

3.10. Sunset. During certain times of the year, the PM downtime is after official sunset. Instructors may continue to train students in support of the syllabus for 15 minutes past official sunset. This does not include emergency procedures training.

3.11. Flight Plans. Crews operating in Fort Rucker Training area will use flight authorizations as local VFR flight plans for all VFR flights departing the aerodrome, flight following with Hub Radio, and terminating at the aerodrome. Other flights departing the aerodrome and the Hub service area require filing a DD Form 175, Military Flight Plan or civilian equivalent. If base operations is not open, crews will file appropriate flight plans with flight service. (T-3)

3.11.1. The local flying area consists of a surveyed low-level area and outer areas up to 200 NM radius from Ft Rucker but not to exceed autorotational distance from shore. This area includes Columbus AFB MS, Moody AFB GA and Hurlburt Field FL. The boundary for the surveyed low level area is annotated by the yellow line and hazards to flight are posted on the Master CHUM JOG.

3.12. Fuel Planning. Aircraft commanders must plan to arrive at their destination with a minimum fuel reserve of 250 pounds (for both VFR and IFR). (T-2)

3.12.1. Fuel Management. Crews should use 600 lbs/hour as the planned fuel burn rate an hour as a worst case fuel burn rate for any calculations that need to be completed. On flights that require the use of an AF IMT 70, *Pilot's Flight Plan and Flight Log,* aircrew will monitor fuel status throughout the sortie and calculate fuel burns rates as necessary. Crews will also brief and monitor BINGO fuel and JOKER fuel.

3.12.2. Bingo Fuel. Bingo Fuel according to the Joint Brevity words is defined as the fuel state needed for recovery. This is further defined as the minimum computed fuel required at a point in flight that will allow a safe return to a refueling point (with required reserve fuel). Bingo fuels will be calculated using a direct route from the last RT or point of loiter to the planned recovery location with required reserves. For cross-country planning, bingo fuel should be calculated as the half-way point between intended refuel on a point to point flight. This guidance is for planning at the table and does not preclude or account for various circumstances that may occur during flight (wx divert, nav divert, accomplishing training objectives, etc.) in which the crew would need to change/update the bingo for the nearest suitable refuel location. ***NOTE:*** Corridors should be considered when calculating BINGO/JOKER fuel due to the inability to proceed direct to the aerodrome.

3.12.3. Joker Fuel. Joker fuel is defined as the fuel state above Bingo at which separation/bugout/event termination should begin. This fuel will be the amount described as "TOT REMG" on the AF IMT Form 70. Missions will be planned to match sortie duration as depicted on syllabus. Crews shall plan joker fuels at each point of loiter to aide in mission management. Formation crews will also plan lead change joker fuels as required.

3.12.4. Continuation Fuel. Continuation fuel is the minimum fuel required to complete the mission, as planned, and to land at the destination with the required fuel reserves. This fuel will be the amount described as "CONT. FUEL" on the AF IMT Form 70.

3.12.5. Fuel Conservation. Aircrew will manage aviation fuel as a limited commodity and precious resource. Aircrew will also design procedures for optimal fuel use and efficiency throughout all phases of mission execution, to include ground ops, flight profiles. (T-3) Incorporate en route tasks to make maximum use of airborne training opportunities. Terminate the sortie when mission and training objectives are met.

3.13. Weight and Balance.

3.13.1. Verify the canned weight and balance was calculated with the past year.

3.13.2. Compute a new or corrected form if the initial takeoff weight changes by more than 500 pounds. For configuration changes of less than 500 pounds, the aircraft commander ensures the resulting center of gravity is within limits. (T-1)

3.13.3. When available, student Flight Engineers will compute a new Weight and Balance for all flights prior to aircrew brief.

3.14. TOLD. The same TOLD will suffice for consecutive takeoffs and landings when aircraft gross weight or environmental conditions have not increased significantly; that is, by 200 pounds gross weight, 5 degrees Celsius, or 500 feet pressure altitude (PA). Flight Engineers will be primary for computing and updating TOLD inflight unless otherwise specified by the AC.

3.14.1. Complete takeoff and landing data (TOLD) prior to takeoff, and, whenever possible, prior to the aircrew briefing. (T-2)

3.14.2. In aircraft not modified by TCTO-526, Calibrated torque values must be converted to indicated torque using the engine calibration factor (provided by MX in the aircraft forms). This will be accomplished prior to flight and/or every time torque is recomputed in flight if necessary.

3.14.3. Use *Figure A-2. Maximum Torque Available (5 Minute Operation)* in TO 1H-1(T)H-1 for all TH-1H computed power available values.

3.14.4. Aircrew will use worst case weather (PA and temp) when computing hover ceiling. Use *Figure A-7. Hover Ceiling in Ground Effect (IGE) (Continuous Operation) – Heater Off* and *Figure A-11. Hover Ceiling Out of Ground Effect (OGE) (Continuous Operation) – Heater Off* in TO 1H-1(T)H-1. If the calculated gross weight for either IGE or OGE hover does not meet requirements for the mission, run the respective Hover Ceiling chart for 5-minute operation.

3.14.5. Takeoff and Landing/Worst Case data. For Worst Case data on local area flights, crews will use the max area temp and max area PA from the most current Mission Execution Forecast (MEF) available for mission planning. If a new MEF is released after TOLD has been calculated, use criteria in paragraph 3.14 to determine whether TOLD should be recalculated or at the IP/IF's discretion. ***NOTE:*** If max temp and PA are unavailable from the MEF, crews will use takeoff temp plus 5 degrees C and takeoff PA plus 500 feet.

3.15. Altitude Restrictions:

3.15.1. Conduct all operations at or above 300 feet above ground level (AGL) except when lower altitudes are required for takeoff, landing, and operations in approved areas or routes.

3.15.2. The minimum altitude for low-level training is 100 feet above highest obstacle (AHO).

3.15.3. Avoid buildings, farm-related facilities, and structures by 500-foot slant range. (T-3)

3.16. Maps. Pilots will plan flights and fly with current maps, including the most recent edition of the squadron hazards map. Squadron safety will maintain a 1:250,000 joint operations graphic (JOG) hazards map with updates from the chart updating manual (CHUM) posted. **(T-3)**

3.16.1. Monthly/Quarterly Inspection of Training Areas (MITA/QITA) Use the appropriate source document for RT availability and information. The squadron safety officer will ensure a current copy of MITA/QITA is available for crews during mission planning. Crews will check the MITA/QITA, as it applies to their planned sites, prior to each flight.

3.16.2. De-confliction Map. Students will post their RT information on the de-confliction maps located in the mission planning room prior to each flight.

3.16.3. Map Preparation. All local area maps used for navigation will be posted with the current Chart Updating Manual (CHUM) as reflected on the Master CHUM JOG and will include all avoid areas, remote sites, reporting points, etc. The current CHUM date will be posted on each map. For normal student training, instructors will be the quality control reviewers for tactical preparation. ***NOTE:*** 1:50,000 maps and PFPS imagery must be CHUM'd using the current 1:250,000 JOG map and/or computerized E-CHUM'd flight

planning maps and annotated appropriately. Routes will include planning from initial takeoff to final landing. Maps will be printed from the printers in the mission planning room only.

3.16.3.1. Map Scale Reduction/Enlarging. Students will NOT print maps for navigation that have been reduced or enlarged in size to fit a certain size of paper. ***NOTE:*** Reduced/enlarged scaling creates a picture of a map and is detrimental to nav-divert scenarios, basic navigation, threat plot, and tend to lead to common clock-to-map-to-ground errors.

3.16.3.2. Falconview Overlays. Falconview mission maps will be prepared with the following standard format (overlays selected and in following order).

3.16.3.2.1. Mission route

3.16.3.2.2. 23. FTS local points

3.16.3.2.3. Coordinate grid (Lat/Long, MGRS)

3.16.3.2.4. 23. FTS local area drawing

3.16.3.2.5. Current 23 FTS Manual CHUM*

3.16.3.2.5.1. * Manual Chum. In the event the VVOD is corrupt or unavailable, the Master CHUM JOG will be used to mark maps.

3.16.3.2.6. Current Vertical Obstruction Data (VVOD)

3.16.3.2.7. Current ECHUM**

3.16.3.2.7.1. ** Not required with use of current VVOD

3.16.3.2.8. Airspace Boundaries

3.16.3.2.9. Special Use Airspace Boundaries

3.16.3.2.10. Airports

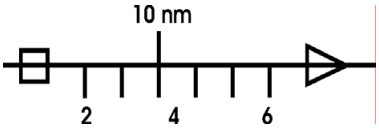
3.16.3.2.11. Heliports

3.16.3.2.12. Navaids

3.16.3.3. Route Markings. 4-point or wider, distance marks (10NM maximum), timing marks, color for best contrast, TP ID for waypoints, and IP/LZ clearly depicted with correct symbols. Route corridor – 500’ above the highest obstruction to flight within 5 NM of route centerline to include the aircraft turn radius. Use an Emergency Safe Altitude (ESA) of 3100’ for the Fort Rucker training area. For all flights out of the local area, calculate the Emergency Safe Altitude (ESA) IAW AFMAN 11-217V2.

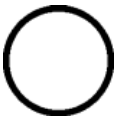
3.16.3.3.1. Course Line and Time or Distance Marks. Draw course lines for the entire route inbound to the objective and continue on to portray the return route. Time marks should be placed on the right side of the course line; distance marks should be placed on the left side of the course line.

Figure 3.1. Course Line and Time or Distance Marks.



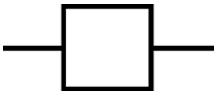
3.16.3.3.2. Way Point. Use a circle to depict en route points where the aircraft course is altered or key actions occur. Label way points consecutively to facilitate identification. Place corresponding Doghouses immediately adjacent to the course line.

Figure 3.2. Way Point.



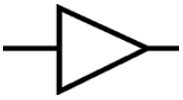
3.16.3.3.3. Initial Point (IP). The IP is identified by a square centered on the point.

Figure 3.3. Initial Point (IP).



3.16.3.3.4. Objective Point. The objective point is identified by a triangle centered on the planned point with the apex pointing in the direction of flight.

Figure 3.4. Objective Point.



3.16.3.4. Doghouses. Doghouses are designed to give the crew the required navigational data from the present way point to the next way point.

3.16.3.4.1. Block 1. Numeric designator of the next way point.

3.16.3.4.2. Block 2. Magnetic heading to the next way point.

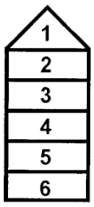
3.16.3.4.3. Block 3. Distance to the next waypoint or leg distance

3.16.3.4.4. Block 4. Estimated time en route (ETE) to the next way point.

3.16.3.4.5. Block 5. Fuel required to complete the planned flight with reserves.

3.16.3.4.6. Block 6. Minimum safe altitude for each leg. (Calculated by adding 500’ above the highest obstruction to flight within 5 NM of route centerline to include the aircraft turn radius)

Figure 3.5. Doghouses.



3.16.3.5. Route Planning. Select routes that will avoid hazards and, if possible, provide safe areas for a precautionary landing. Select routes as follows:

3.16.3.5.1. Avoid flying parallel to wires with less than 1/2 NM lateral clearance. Flights over wires should be at supporting structures or wire marking devices. All microwave, radio, TV and other tall towers will be avoided by 1/2 NM and clear of supporting or "guy" wires.

3.16.3.5.2. Monitor RT frequencies when transitioning within 2 NM and below 800' MSL. Make an appropriate traffic call to RT's when transitioning within 1/2 NM and below 800' MSL

3.16.3.5.3. Aircraft transitioning through or training in active NOE boxes or route will remain 200' AHO or higher. If operating in the confines of the NOE box below 800' MSL, an advisory radio call is required. NOE boxes will always be treated as active.

3.16.3.5.4. For tactical sorties, avoid a direct routing to the objective. Plan sufficient course changes for navigational training to the objective. If possible, do not use the same routing for ingress and egress. Heading changes should be 60 degrees or less.

3.16.3.5.5. Normally, do not exceed 20 NM between checkpoints for dead reckoning. The type of terrain will dictate the selection and distances between checkpoints.

3.16.3.5.6. Establish an IP over a prominent feature that is easily identifiable from low altitudes. The IP is a point near LZs over which final course alterations are made to arrive at the specified objective. The distance from the IP to the objective will vary with the situation, but should be approximately 3 to 12 NM from the objective for training. Attempt to select an IP that can be over flown on the inbound heading, minimizing turns from the last leg flown (recommended 30 degrees or less). ***NOTE:*** The following are minimums to brief during the en-route portion: Turn direction, hazards within 3NM of route, funneling features, turn point description, and barrier features. For all turns greater than 60 degrees, discuss turn mitigation.

3.17. Form 70. Prepare an AF IMT 70 for each contact, instrument, navigation, remote, low-level, and NVG mission. As a minimum, the form 70 will include turn points, headings, distances, estimated times of arrival (ETA), minimum safe altitudes (MSA), and fuel computations. *NOTE*: Canned form 70s are allowed for contact sorties

3.17.1. For student cross country and remote flights, use the AF IMT 70, *Pilot's Flight Plan and Flight Log*, or a more detailed navigation log. (T-3)

3.17.2. Students will use the most current approved electronic Form 70. The electronic Form 70 will be used on all flights after the Day Remote phase. Students may not modify this form or export the form to Excel, etc.

3.18. Mission Smart Pack. Students will prepare the most current approved smart pack for all Cross-Country, Remote, Low-level, Formation and NVG sorties. A copy of the smart pack will be provided to all crewmembers.

3.18.1. The Smart Pack will be ordered as follows: squadron approved frag, IMT Form 70, WETPASTE diagrams (as applicable), airfield diagrams (as applicable), and TOLD cards.

3.18.2. RT WETPASTE diagrams will be included in the mission pack for student tactical and formation sorties. WETPASTE diagrams will be filled out completely and will include power requirements for the maneuvers being flown and landing spots/direction. Approaches will be briefed and flown to the touchdown location unless overriding circumstances become a factor. WETPASTE diagrams DO NOT replace AF4303 *Helicopter Landing Zone Surveys* and crews will check RT currency and the AF 4303 prior to the mass brief.

3.18.3. Tactical and formation refuel diagrams are not required but will be briefed to the crew(s) with the same level of detail.

3.19. Aircraft Servicing and Ground Operations:

3.19.1. Required Documentation. Before applying power to the aircraft or operating aircraft systems, review the AFTO Form 781, *ARMS Aircrew/Mission Flight Data Document.* An authorized maintenance person (or the aircraft commander when off-station) must sign the exceptional release before flight. The fuel identaplate or AIRCARD (aviation credit card) must be aboard the aircraft when off-station refueling is planned or required.

3.19.2. Refueling. At locations with refueling support, aircrew will not personally accomplish the refueling unless extenuating circumstances dictate. (T-3) When not directly involved in the refueling operation, personnel will remain at least 50 feet from the aircraft. Hot refueling requires execution of the hot refueling checklist and post hot refueling checklist. (T-2)

3.19.3. AIRCARD Operations. The AIRCARD is used to pay for services at commercial fixed base operators (FBO). These services include aviation fuel, aircraft oil and fluids, or other minor maintenance items. Charges incurred during this routine aircraft servicing generate a charge receipt. The aircraft commander is responsible for ensuring the receipt is correct and all appropriate signatures are obtained before departing the FBO. The aircraft commander then gives all charge receipts to the unit document control officer (DCO) when the mission is complete. Charges incurred for other services, including landing fees, aircraft de-icing, follow-me trucks, and other airfield-related services might not generate a receipt for the aircrew. If a receipt is not generated and provided to the aircrew, the aircraft commander will note the location and services performed, and provide the information when submitting receipts to the unit DCO after the mission is complete. (T-2) If a separate receipt is generated, turn it in to the unit DCO.

3.20. Aircrew Uniforms and Protective Devices:

3.20.1. When reporting for flying duties, all crewmembers will wear appropriate flight clothing and carry a set of identification (ID) tags on their person. Civilian contract flyers must abide by local contract requirements. (T-2)

3.20.2. The pilot will ensure sufficient quantities of appropriate serviceable aircrew flight equipment, survival equipment, and protective clothing are aboard the aircraft. Crewmembers will wear survival vests on all flights. (T-3)

3.20.3. Aircrew members will wear reflective belts from official sunset to official sunrise and should wear reflective belts while on the flight line during periods of reduced visibility. Reflective materials will not be permanently attached or affixed to flight clothing. (T-3)

Chapter 4

NORMAL OPERATING PROCEDURES

4.1. Instructor Requirements. The student to instructor ratio should not exceed 2 to 1. The squadron director of operations (DO) has waiver authority. All IPs are safety observers and are responsible for their students' actions.

4.2. Pre-Step Requirements. The flight authorization will be signed by the authenticating official and initialed by a SARM representative and the aircraft commander. The SARM representative and aircraft commander's initials signify completion of Go/No-Go checks. In addition, the aircraft commander's initials signify completion of the operational risk management (ORM) assessment. When crewmember(s) are added to the flight authorization, the aircraft commander is required to check Go/No-Go status for the additional crewmember(s) and sign in the appropriate section, certifying the check has been accomplished. Any changes will be coordinated through the Ops Sup and approved by Top 3 IAW AFI 11-418.

4.2.1. Aircraft commanders will conduct a brief with the Ops Sup in person or via telephone before takeoff.

4.3. Aircraft and Line Changes. Aircrew will notify the Ops Sup of aircraft changes prior to takeoff. The Ops Sup will coordinate for Top 3 initials of flight authorization changes.

4.3.1. Aircraft commanders do not have the authority to add lines. All cancellations and additions will be coordinated with the Ops Sup, who will then coordinate with the Top 3 and maintenance as required.

4.4. Prohibited Maneuvers. Do not intentionally accomplish actual engine shutdown in flight, blade stall, or vortex ring state in the aircraft.

4.5. Checklist. Use the challenge (read) and response (accomplish) method when using the checklist. During EPs, the crewmember reading the checklist will read the entire step (challenge and response). (Note: The appropriate response is listed in the checklist. If the listed response is "as required," the response should be the current setting.) The crewmember who is accomplishing the step will repeat the response. A checklist is not complete until all items are completed in sequence. (T-2)

4.6. Seatbelts.

4.6.1. The pilot on the controls has his or her seatbelt and shoulder harness fastened when rotors are turning. (T-1)

4.6.2. When doors are open during flight, all occupants in the cabin area will wear a seatbelt or gunner's belt. (T-1)

4.6.3. When doors are closed during flight, the aircraft commander may direct crewmembers to perform duties in the cabin unrestrained for brief periods, as required. TH-1H crewmembers sitting in the center observer seat may fly without shoulder straps if straps hinder their ability to perform aircrew duties. The shoulder harness will be worn during actual and simulated emergency procedures. (T-1)

4.7. Gunner's Belt. Personnel will not use a gunner's belt unless they have been trained IAW approved courseware by a qualified instructor. All crewmembers who have completed "1H/POC-7 TH-1H General Description" academic class and received hands-on training by an Instructor Pilot or Instructor Flight Engineer are authorized to utilize a gunner's belt to facilitate in scanning and securing items in the cabin with the following restrictions (T-1):

4.7.1. Instructors and Student Flight Engineers (SF) are allowed to check out a gunner's belt for all sortie profiles.

4.7.2. During EP's, all personnel in the cargo compartment should be restrained by a seatbelt. Instructor Pilot/Flight Engineers may use a gunner's belt if it is the only way of enabling them to accomplish their specific duties.

4.7.3. The gunner's belt will be attached to a centralized floor ring. The gunner's belt will not be disconnected or lengthened to a point that would allow the wearer to fall outside the aircraft.

4.7.4. The gunner's belt must be properly secured to the individual and to the aircraft prior to the HOVER/TAXI CHECKLIST. The Aircraft Commander (AC)/Instructors (IP/IF) must also visually check security and proper length.

4.7.5. Anytime the rotors are turning, prior to unfastening the seat belt or 5-point harness, with the gunner's belt on, crewmembers must secure or stow all checklists/guides and receive approval from the IP/AC (e.g. "cleared on gunner's belt").

4.7.6. Due to the crash worthiness of the jump seat this will be the primary seating position in the event of an emergency, if available.

4.7.7. When operating at an RT, the jump seat occupant, can move from his or her seat, with the gunner's belt fastened, and clear the tail down. When cabin doors are closed, students will visually scan out the window.

4.7.8. The cabin doors may be opened when the aircraft is below 50KIAS, the crewmember is secured by a gunner's and the crewmember has received clearance from AC/IP to open doors (e.g. "cleared to open doors"). The doors must be secured/pinned opened or closed completely prior to reaching 50KIAS on takeoff/go-around.

4.8. Radios.

4.8.1. The pilot informs the crew which radio is primary. All crewmembers monitor the primary radio unless the aircraft commander specifically directs otherwise. (T-0)

4.8.2. All crewmembers listen to the intercom. The aircraft commander must provide clearance prior to going off the intercom. (T-0) During critical phases of flight, limit transmissions within the aircraft to those essential for crew coordination.

4.8.3. Monitor ground frequency prior to engine start. Contact ground control for engine start clearance when required.

4.9. Flight Following/Position Reporting. VFR position reporting or flight following with an appropriate agency (Hub, flight service station [FSS], air traffic control [ATC]), or another aircraft is required for all flights. Aircrew conducting formation flights should establish flight following with an agency or aircraft outside of their formation.

4.9.1. Hub Radio. Hub radio is the focal point for local VFR position reporting.

4.9.1.1. Once clear of corridor or airspace, aircrew will contact Hub.

4.9.1.2. When making initial contact with Hub following departure from a corridor, use the Hub frequency that is reflected in the sector of the destination RT. A diagram of the Hub frequency sectors may be found on the squadron low level hazards map. Upon initial contact with Hub relay the following information: Call sign, aircraft type, last 4 digits of tail number, number of personnel on board (POB), position, and destination/intentions.

4.9.1.3. After initial contact is made, continue to update Hub with call sign, position, and destination. Make positive radio contact with Hub at least every 25 minutes unless another time period is specified by Hub that is more restrictive. If contact time will exceed 30 minutes, notify Hub of estimated time of next contact.

4.9.1.4. Advise Hub of any unusual events or if significant weather is encountered but not forecasted and pertinent to other aircraft. Significant weather will also be reported to Cairns AAF Metro, via Pilot Reports (PIREPs), as able.

4.9.2. Hub Radio non-availability. The following coordination will be made for all flights when Hub radio is closed.

4.9.2.1. For local flying aircrew will flight follow via interplane with other squadron aircraft (if available) or Approach Control. Crews making stopovers will call the Ops Desk and notify SDC/Ops Sup with downtime and ETD.

4.9.2.2. For flying outside of the local flying area, once launched, the Ops Sup will be readily available from the office or home on their cell phone. Aircrew will use the Operations desk phone as a point of contact in the remarks section of the DD 175 flight plan that will be used in the event of an overdue aircraft situation.

4.10. Scanners. Crewmembers who are not performing basic crew duties will act as scanners to avoid obstacles during ground taxiing and confined-area operations and to reduce the potential of a midair collision during arrivals, departures, and simulated instrument flight. (T-2)

4.11. Circuit Breakers. The only circuit breakers authorized to be pulled during training is the dome light breaker for NVG flight and the fuselage lights circuit breaker for NVG formation.

Table 4.1. Aircraft Light Procedures.

Flight Phase	Anti-collision Lights	Position Lights	Landing Light
Ground (Rotors Turning or Rotors Untied at Night)	ON[5]	FLASH BRIGHT[5]	OFF
Hover/Taxi	ON	FLASH (T-0) BRIGHT[1]	OFF
Airfields within 5 NM / Corridors	ON	STEADY (T-0) BRIGHT	ON
Enroute	ON	STEADY (T-0)	OFF[2]

		BRIGHT	
RT / LZ Terminal Area	ON[3]	STEADY (T-0) BRIGHT[3,4]	As Required[2]
Formation	Dash Last – ON (T-0) All Others – OFF	STEADY (T-0) BRIGHT[4]	Lead – ON[2] All Others – OFF

NOTES:

1. Position Lights will be Steady Bright when in Hot Gas to reduce risk of static/electric discharge.

2. Landing Light will remain on for all cross country and instrument profiles. At the LZ the landing light may be turned on for traffic avoidance/deconfliction.

3. Anti-collision lights may be turned off and position lights may be set to DIM during RT/LZ terminal operations if distracting to aircrew (NVGs). (T-2)

4. NVG Formation Ops. Dash Last carries STEADY BRIGHT Position Lights; all other aircraft carry STEADY DIM. **Note:** With scanners on board, all aircraft in the formation will set position lights to STEADY DIM. The white fuselage lights are incompatible with NVG formation and the circuit breaker will be pulled during NVG formation operations. Both aircraft should have NVG Position lights on Setting #3 and white taillights taped over.

5. Unless power-limited IAW AFI 11-218. For power limited situations that require some kind of light source (other aircraft/personnel/etc.), the anti-collision light drains less power from the battery than the position Lights.

4.12. Fire Guard Procedures: It is mandatory to have a fire guard during engine start, except when there are only 2 crewmembers. The fireguard will be posted next to the aircraft (inside the tip path) and in plain view of the pilot during engine starts. After engine start the fireguard will check for leaks or fire and ensure all doors are secured.

4.12.1. If there is no fireguard available during engine start, the pilot in the left seat will check the engine compartment after engine start.

4.12.2. Aircrew members performing fireguard duties will have sleeves down and fastened over flight gloves, collar up and visor down. For night flights, the fireguard will have a chemlight or NVG compatible flashlight available.

4.12.3. In case of a fire, the fireguard will make the appropriate hand and arm signals (back and forth movement of the hand across the throat) indicating an emergency shutdown. At night, make the same motion with a flashlight or chemlight. In case of fire, use the fire extinguisher to protect the aircrew until they have evacuated the aircraft.

4.13. Ground Personnel. Aircrew and ramp personnel will not enter or exit the rotor system while blades are turning unless given a thumbs up (day) or signaled with a vertical movement with a flashlight or chemlight (night) from the pilot on the controls.

4.13.1. All personnel will have a chemlight or flashlight on and wear a reflective belt when on the a/c ramps during hours of darkness. Reflective belts are not required when in the immediate vicinity of the aircraft (e.g., preflight, aircraft loading).

4.13.2. Aircrew will ensure hearing protection is available on the aircraft prior to flight. A crewmember will be responsible for distributing these devices to all passengers. Hearing protection will be worn within 50 feet of operating aircraft.

4.13.3. Crewmembers will not wear headgear while on the flight line. Stocking caps may be worn on the flight line during cold weather.

4.14. Starting Engine Checklist. During the engine start when Ng reaches 40%, the pilot in the right seat should state the release of the start switch by saying "Start Switch Release". Additionally, upon reaching 500 EGT, the copilot will state "Start Fuel OFF" after switch is moved to the off position.

4.15. Taxi and Parking Procedures. Aircraft shall hover taxi no faster than 10KGS and IAW local procedures. Without wing walkers, avoid taxi obstructions by 25 feet; with wing walkers, by 10 feet. When taxi clearance is uncertain, use a wing walker(s). If wing walkers are unavailable, de-plane a crewmember(s) to maintain obstruction clearance. Air taxi operations are permitted in open areas or on active/inactive runways at the discretion of ATC.

4.16. Hover Power Checks. Hover power checks will be conducted at a stabilized 4 foot hover into the wind.

4.16.1. If actual power required to hover differs by more than +/- 4% Q from computed power required, evaluate existing parameters (i.e. skid height vs. radar altimeter, actual OAT & PA, current gross weight, and winds) and re-compute TOLD.

4.16.2. If TOLD is recomputed and the indicated torque is still greater than computed +/- 4%, return the aircraft to maintenance.

4.16.3. The TH-1H charts are for a calm wind day. If hovering in substantial winds, indicated torque may be less than computed torque minus 4% and there is currently not a chart to adjust for this factor. The aircraft commander must make a determination, based on wind speed, mission requirements, and experience, whether to return the aircraft to maintenance or continue the flight. If winds are not a contributing factor, return the aircraft to maintenance.

4.17. Power Assurance Check (PAC). Log the PAC results on the TH-1H Power Assurance Log. If the aircraft fails the PAC, do NOT fly the aircraft.

4.18. Takeoff Call. Within the Fort Rucker Training Area, the initial tower call will include planned departure corridor. Aircrew will ensure tower instructions are clearly understood. For night departures, advise tower if NVG aided or unaided.

4.18.1. During peak times, make every effort to minimize time on the helipads or utilize the sod areas. Be prepared to take off early or delay to avoid problems with primary aircraft.

4.18.2. For Bravo SOD takeoffs next to Cairns AAF runway 18/36, aircrew will proceed over the runway on departure unless cleared for present position takeoff by Cairns AAF Tower.

4.19. Power-Available Check. The PF will:

4.19.1. Perform a power-available check on all contact/EP and mission phase sorties. Instrument sorties do not require a power-available check.

4.19.2. Perform the power-available check as near as possible to the same PA and outside air temperature as the site. For training, slowly apply collective pitch without drooping rotor speed (Nr) below 97 percent until reaching out of ground effect (OGE) + 5 percent or a limit defined by the flight manual. An actual power check may also be accomplished. In this case, slowly apply collective pitch without drooping Nr below 97 percent until computed power or a limit (as defined by the flight manual) is reached. It is left to the discretion of the PIC whether to pull beyond computed power available in order to determine actual engine power capabilities. As a minimum, the engine must produce computed power available. If the engine fails to produce the computed power available, terminate the flight. (T-2)

4.19.3. Compare maximum power available with power required for the intended hover heights. This comparison determines the power margin for the operation. When the power margin is 10 percent or less, a second aircrew member will re-compute TOLD to confirm power requirements. (T-2) The smaller the power margin, the more hazardous the approach. Extra caution must be used when operating in conditions that result in small power margins.

4.19.4. Prior to landing, ensure that sufficient power to depart the planned landing site is available. Factor in any weight that will be added at the site (e.g., survivors).

4.19.5. If sufficient power is not available for the approach, landing and departure, lighten the helicopter, locate a more suitable landing site, or abort the mission.

4.20. Crew Changes. Off- and on-load for crew changes are authorized while rotors are turning. One pilot will have seat belt and shoulder harness fastened during pilot change. The new crew will review aircraft forms, weight and balance, and TOLD prior to takeoff.

4.21. Termination. The following items must be accomplished prior to sortie completion:

4.21.1. Aircrew will notify Blue MX 10 minutes out from sortie termination. This call will include: aircraft status with MX Code status (below)

4.21.1.1. A-1: No maintenance write-ups

4.21.1.2. A-2: Minor write-ups.

4.21.1.3. A-3: Any items that would preclude that aircraft from further flights until maintenance is performed.

4.21.2. Crews will make any applicable 781A entries.

4.21.2.1. Crews will make an entry anytime the aircraft if flown in a salt laden environment.

4.21.3. Post Flight. Upon return, the aircraft commander will ensure the alpha status, sortie completion information and any deviations are recorded.

Chapter 5

CONTACT/EMERGENCY PROCEDURES

5.1. General. Contact and emergency procedure training is designed to develop aircrew proficiency, reaction time, planning, and judgment in preparation for actual emergencies. Simulated emergencies must provide realistic training without unacceptably increasing risk. Accomplish simulated emergency maneuvers according to the flight manual and this chapter. ***WARNING:*** Instructors must be alert and take prompt action to terminate simulated emergency maneuvers. They must execute corrective action at the first indication of deteriorating aircraft performance or serious student proficiency problems.

5.1.1. The instructor will emphasize procedures for positive identification of the simulated emergency condition before initiating corrective action. (T-2) System failures must not be unreasonably compounded. When initiating EPs, temper the "surprise" approach to allow for a possible wrong reaction which could jeopardize safety. Practice such emergencies with sufficient airspeed and altitude to ensure a safe recovery.

5.1.2. In high-density traffic areas, do not simulate emergencies that could require in-depth analysis, discussion, or detailed cockpit duties.

5.2. Fort Rucker Stagefield Procedures.

5.2.1. Communications. On initial radio contact with a stagefield, relay the following information: Call sign, aircraft type, last 4 digits of tail number, number of personnel on board (POB), position, and intentions/requests. When operating at a stagefield without an operational control tower, use the stagefield's North or East UHF frequency and monitor the air-to-air FM frequency.

5.2.2. Pilots will confirm the landing direction with stagefield on the appropriate tower frequency prior to entering the traffic pattern. If tower is not open, the first helicopter arriving at the stagefield will establish the traffic pattern and landing direction.

5.2.3. When an emergency or precautionary landing is in progress, unless advised by ATC, only contact maneuvers may be performed.

5.2.4. Crews will use appropriate A/A radio frequencies to call movements on the ramp, to include movement into and out of refuel, and when extending downwind (e.g. Hydraulics-Off slide approach).

5.3. Power Available Check: Accomplish the check once clear of the corridor or airspace by 1/2 NM. May be done in the downwind if the crew elects to remain at the aerodrome for training.

5.4. Contact Maneuver Parameters. Maneuver parameters (traffic patterns, takeoff and landings, hovering maneuvers, contact maneuvers, and EP training) are provided in this instruction to supplement the flight manual. These parameters are intended for all missions, but may not reflect the optimum performance required for some operational situations. Maneuvers will be flown with an emphasis on precise altitude, airspeed, and aircraft control.

5.4.1. Traffic Pattern. The pilot will:

5.4.1.1. Enter the traffic pattern at a 45-degree angle to the center of the downwind leg (or as directed by the controlling agency) and accomplish the before-landing check. Fly the downwind leg at a 500-foot ASE and 90 knots indicated airspeed (KIAS).

5.4.1.2. During the turn to base, descend to 300 feet ASE and slow the aircraft to 70 knots ground speed (KGS). Pattern altitudes may be adjusted to comply with local ATC rules. While flying traffic patterns at stage fields, use the altitudes listed in the unit in-flight guide. ***NOTE*:** These altitudes will be used whenever possible if local conditions will permit, otherwise comply with appropriate local traffic patterns. The before landing checklist should be accomplished prior to turning final.

5.4.1.3. Use caution to avoid excessive bank angles, excessive descent rates, and low airspeeds. The point of rollout on final should allow a controlled, straight approach without the need for aggravated flares, abrupt control movements, or large collective inputs.

5.4.1.4. Use proper power management to climb, level off, and descend, as appropriate. The entry altitude for all approaches will be 300 feet ASE unless otherwise specified in this instruction.

5.4.2. Contact Maneuvers:

5.4.2.1. Normal Takeoff. Initiate from the ground or a hover using 4-foot hover power plus 10 percent. The maneuver is terminated at 70 KIAS. ***NOTE*:** A normal takeoff is one in which the aircraft exposure time to the AVOID area of the height-velocity diagram is minimized.

5.4.2.2. Marginal Power Takeoff. A marginal power takeoff is used when maximum power available/power margin is limited due to environmental factors, gross weight, or other external factors. Initiate from the ground or hover using 4 foot hover power. Simulate a 50-foot obstacle. The maneuver is terminated when clear of the simulated obstacle and above 50 KIAS.

5.4.2.3. Maximum Performance Takeoff. A maximum performance takeoff is used when an obstacle restricts use of a normal takeoff; specifically requiring a near vertical takeoff (altitude over airspeed) in order to avoid the obstacle. Initiate from the ground or 4-foot hover using a simulated maximum power available of 4-foot hover power plus 10-15% or as specified by the IP/EP. Simulate a 100-foot obstacle. The maneuver is terminated when clear of the simulated obstacle and above 70 KIAS.

5.4.2.4. Slide Takeoff. Initiate from the ground using a simulated maximum power available of 4-foot hover power minus 5% or as specified by the IP/EP. Once sufficient altitude and airspeed is attained to clear any obstacles, smoothly accelerate to 50 KIAS and terminate the maneuver.

5.4.2.5. Normal Approach. Use an 8 degree angle for a normal approach (Historically referred to as a 30 degree apparent angle). Initiate the approach from 300 feet ASE and an approximate 50 knots ground speed (KGS). The approach may be completed to a touchdown or a 4-foot hover.

5.4.2.6. Shallow Approach. Use a 3 degree angle for a shallow approach (Historically referred to as a 10 degree apparent angle). Initiate the approach from 300 feet ASE and

an approximate 70 KGS. The approach may be completed to a touchdown, 4-foot hover, or a slide over the intended landing spot.

5.4.2.7. Steep Approach. Initiate the approach at 300 feet ASE, an approximate 30 KGS, and a 13 degree angle (Historically referred to as a 45 degree apparent angle). The approach may be completed to a touchdown or a 4-foot hover. On final approach, monitor the following three parameters: (1) proper rate of closure, (2) rate of descent under control, and (3) power smoothly increasing but below hover power.

5.4.2.8. Turning Approach. A turning approach can be initiated from any position in relation to the intended landing area. For training, normally initiate a 90-degree turning approach from base altitude and airspeed and a 180-degree or more turning approach from downwind altitude and airspeed.

5.5. Emergency Procedure Training Requirements:

5.5.1. Accomplish Emergency Procedure (EP) training only under daytime VMC conditions (after sunrise but before official sunset), with no passengers, and only at local stagefields or airfields contained in the IFG. Student EP training will only be accomplished for training, currency, or evaluation flights. An IP must always be at a set of controls. (T-2)

5.5.2. Use local auxiliary fields and airfields for EP and normal procedure maneuvers that require a slide landing. If accurate wind information cannot be obtained through tower services, a wind detection device, readily discernible to the pilot flying (PF), is required.

5.5.3. Ensure the IFG depicts the auxiliary field, highlighting all normal and unusual conditions, such as size, landing directions, and location of any known obstructions (wind socks, tires, etc.). (T-2)

5.5.4. Crash and fire rescue must be available to conduct EP training. (T-2)

5.5.5. EP training requires aligning the aircraft landing direction within 45 degrees of the wind direction when winds exceed 15 knots (including peak gusts). At or below 15 knots (including peak gusts), align the aircraft landing direction to within 90 degrees of the wind direction.

5.5.6. Planned touchdown in the last 1/3 of the lane at stagefields (or the last 500 ft at airfields without 1/3 lane markers) is prohibited when performing any shallow approaches to run-on landings (including simulated EP's) and autorotations. You may utilize the last 1/3 of the lane at stagefields (or last 500 ft at airfields without 1/3 lane markers) when performing power recovery autorotations, hovering autorotations and SEFs at a hover.

5.5.7. For hovering autorotations, align the aircraft heading within 15 degrees of current wind heading. Wind reporting capability must be available at the location where EPs are conducted.

5.6. Emergency Maneuver Parameters:

5.6.1. Hydraulics-Off Approach (Simulated Hydraulic System Malfunction):

5.6.1.1. Configuration changes shall be initiated prior to running checklists (e.g. enter hydraulics off prior to accomplishing the before landing checklist).

5.6.1.2. Initiate at a minimum of 300-feet AGL and 70 KIAS while the aircraft is straight and level. (T-2)

5.6.1.3. PNF will back-up the PF on the cyclic and identifies the hydraulic control switch (labeled HYD CONT)

5.6.1.4. The PNF moves this switch to the off position:

5.6.1.4.1. If a Flight Control Servo Hardover is encountered, the PNF will execute the Boldface for this EP.

5.6.1.5. If the PF has normal hydraulic off control forces, the PNF can remove their hand from the cyclic and reset the Master Caution annunciator.

5.6.1.6. For SUPT-H students, the Hydraulics off maneuver will be accomplished using a slide landing above ETL or planned go around at 50' AGL. ***NOTE:*** IPs should be familiar with the method of utilizing a steep approach to an approximate 10kt slide.

5.6.2. SEF at Altitude. Minimum entry parameters are 700 feet AGL and no slower than 60 KIAS. The IP will announce, "SIMULATED ENGINE FAILUE", and confirm the proper execution of boldface. ***NOTE:*** If aligned for a runway or taxiway with clearance to land, this maneuver may be initiated using straight ahead autorotation parameters. ***NOTE:*** IP's are encouraged to initiate SEF's at or above 1500 MSL when possible to accommodate for slow student reaction time and to allow for additional training opportunities (turns into the wind, proper verbalization of critical items without rushing, etc.). ***WARNING:*** SEFs at altitude are prohibited in the upwind or crosswind.

5.6.2.1. Upon detecting engine failure, the PF will lower the collective to maintain rotor rpm (Nr) in limits while adjusting the pedals to put the aircraft in trim. He or she will verbally call out the boldface outlined in the aircraft checklist. Once the autorotation is entered, verbally confirm Ng and all of the engine gauges are stabilized. The PF will select a suitable landing area, turn, adjust airspeed as necessary, and maneuver the aircraft for a safe landing to the intended landing area. He or she will maintain airspeed at or above 60 KIAS throughout the descent. ***NOTE:*** Do not turn into or toward a stage field traffic pattern during an SEF. If a turn is required, turn away from the traffic pattern.

5.6.2.2. Prior to reaching 400 feet AGL with the aircraft in a safe autorotative profile, the IP will state one of three commands: (1) power recovery, (2) terminate with power, or (3) touch down. The PF will perform the following actions during these recoveries:

5.6.2.3. SEF Power Recovery. Upon receiving the command "POWER RECOVERY," the PF will immediately establish normal operating rpm by smoothly adjusting the throttle to the fully open position. After normal operating rpm has been regained, the PF will increase the collective to establish a normal climb prior to reaching 200 feet AGL and climb out with no less than 60 KIAS. ***CAUTION:*** Use caution when increasing the throttle to avoid overspeeding the rotor.

5.6.2.4. Terminate with Power. If aligned for a runway or taxiway, with clearance to land, the IP may give the command to "TERMINATE WITH POWER." The PF will continue the autorotative descent and follow the procedures for a straight-ahead autorotation (power recovery).

5.6.2.5. Touch Down. If aligned for a runway or taxiway with clearance to land, the IP may give the command to "TOUCH DOWN." The PF will continue the autorotative descent and follow the procedures for a straight-ahead autorotation.

5.6.3. SEF in a Hover. Initiate a simulated engine failure (SEF) from a 4-foot hover with the call "SEF" or "HOVERING AUTO" by the PNF while smoothly rolling the throttle to the idle position.

5.6.4. Practice Autorotations:

5.6.4.1. General Considerations:

5.6.4.1.1. Accomplish autorotations to a runway or taxiway.

5.6.4.1.2. For autorotations, entry altitude is 800 feet ASE minimum for a 180 degree, 500 feet ASE minimum for straight ahead, 50 feet AHO but no lower than 100 feet ASE at entry point for low level, and 4 feet for hovering. (T-2)

5.6.4.1.3. The initial autorotation for training, currency, or evaluations is a straight-ahead autorotation accomplished by the IP or IP candidate to evaluate aircraft performance. *WARNING:* Avoid low airspeed and/or high vertical descent prior to the flare during practice autorotations because engine power or rotor inertia may not be sufficient to recover under these conditions. Avoid chasing the airspeed with rapid, erratic changes of aircraft attitude. These changes make airspeed and rotor parameters difficult to maintain. Aircraft trim is critical to successful completion of the maneuver. If at any time the safe completion of the practice autorotation is in doubt, initiate an immediate power recovery or a go-around as the situation dictates. *WARNING:* Because of the risk associated with practice autorotations, carefully consider wind, density altitude, aircraft gross weight, and individual pilot proficiency prior to performing this maneuver. Fly each autorotation as if a landing may be required. That way, if a malfunction occurs, the aircraft is in position to execute a safe landing. *WARNING:* IPs must terminate the maneuver and initiate a power recovery at the first indication of abnormally high or low rotor revolutions per minute (rpm), excessive sink rate, low airspeed, or ineffective flare. (T-0)

5.6.4.1.4. By 150-feet ASE, the aircraft must be wings level, have a minimum of 70 KIAS, rotor RPM within limits, and be aligned for landing/recovery heading. If any of these requirements are not met, initiate a power recovery immediately. The wings level requirement does not prohibit minor heading corrections on final.

5.6.4.1.5. The aircraft should be established in the flare between 100 and 75 feet AGL with a minimum of 70 KIAS.

5.6.4.1.6. At approximately 15 feet AGL, apply sufficient collective to control the rate of descent and groundspeed. Adjust the cyclic to attain a landing attitude just before touchdown, and apply the collective as necessary to cushion the landing between approximately 5-25 knots groundspeed, with no lateral drift. After touchdown, maintain ground track alignment with the pedals.

5.6.4.1.6.1. Straight-ahead or 180-degree autorotations may be accomplished to a power recovery or touchdown, but should be briefed during the Before Landing Checklist.

5.6.4.1.7. When practicing turning autorotations in excess of 180 degrees, terminate with power recovery at or above 250 feet AGL. (T-2)

5.6.4.2. Straight Ahead Autorotation.

5.6.4.2.1. Minimum altitude will be 500' ASE at approximately 90 KIAS but no slower than 80 KIAS and no faster than 100 KIAS.

5.6.4.3. Low Level Autorotation.

5.6.4.3.1. Low-level checklist is not required for this maneuver.

5.6.4.3.2. PF can begin descent to 50' AHO abeam the intended entry point while maintaining visual with the intended touchdown point.

5.6.4.3.3. Minimum entry airspeed is 70 KIAS but no faster than 100KIAS and rotor RPM within limits

5.6.4.3.4. Minimum entry altitude is 50' AHO but no lower than 100'ASE.

5.6.4.3.5. Maximum offset angle should not exceed 30-degrees from the intended landing area.

5.6.4.3.6. Low-level autorotations are only practiced to intended touchdowns.

5.6.4.4. 180-Degree Autorotation.

5.6.4.4.1. Minimum altitude and airspeed for entry will be 800' ASE and approximately 90 KIAS but no slower than 80 KIAS and no faster than 100 KIAS.

5.6.4.5. Hovering Autorotation.

5.6.4.5.1. Initiate a Hovering Autorotation from a 4' hover with the call "HOVERING AUTO" by the PF while smoothly rolling the throttle to the idle position. (T-2)

5.6.5. Simulated Fixed Pedal Approach (Anti-Torque).

5.6.5.1. Minimum altitude and airspeed are 70 KIAS and 300-feet AGL.

5.6.5.2. Maximum out of trim condition (right or left) is 10 degree not to exceed 20 degree off runway heading, including crab already applied

5.6.5.3. Entry: While still on downwind, the PF removes the mechanical slack from the throttle while maintaining 100% Nf/Nr and reviews or briefs his/her intentions for the simulated condition. On base leg, PF will descend to the appropriate altitude and airspeed. On final with the aircraft at the proper altitude, airspeed, power applied, and in trim, the PNF will state "THIS IS SIMULATED" and input a nose-right or –left out-of-trim condition

5.6.5.4. Approach: During right pedal settings the approach will be to a slide landing. Left pedal settings may be completed to a slide landing or hover depending on environmental and out-of-trim conditions ***WARNING:*** At no point will the PF reduce Nr below 91%. ***NOTE:*** In case of an in-flight emergency that results in fixed tail rotor pitch settings, use the procedures outlined in the flight manual. ***NOTE:*** After touchdown, the aircraft heading may not be controllable with the throttle

and collective. If this happens, position the cyclic to follow the turn until the aircraft has come to a complete stop.

5.6.6. Emergency Governor Operations.

5.6.6.1. Entry. Nose must be aligned within 20 deg of the wind

5.6.6.1.1. Enter from the ground with the collective full down and rpm stabilized at 100 percent Nf.

5.6.6.1.2. Retard the throttle to engine idle.

5.6.6.1.3. After noting a decrease in engine rpm, request pilot not flying (PNF) move the GOV switch to EMER position. Then smoothly adjust the throttle to 97-100 percent. When operating below 97 percent Nf, the MFD will display Nf in the red; however, there is no harm done to the aircraft or the engine.

5.6.6.1.4. It is permissible to adjust the bleed band operating range by decreasing the INCR/DECR switch if bleed band cycling interferes with the pilot's ability to control Nf. ***CAUTION:*** Make smooth throttle and collective adjustments to prevent engine overspeed, overtemperature, compressor stall, or failure. Closely monitor the Ng, Nf, and exhaust gas temperature.

5.6.6.2. Hover. Bring the aircraft to a stabilized 4' hover by smoothly increasing the collective and adjusting the throttle to maintain Nf at 97-100 percent. Apply the cyclic and pedals as necessary to remain stationary and to maintain constant heading. Clear the aircraft and perform a left- and a right-hovering turn.

5.6.6.3. Landing. Land the aircraft by smoothly reducing the collective and adjusting the throttle to maintain Nf at 97-100 percent. After landing, reduce the throttle to engine idle. After noting a decrease in engine rpm, have the PNF move the GOV switch to the AUTO position. Slowly increase the throttle to the full-open position and adjust the rpm to 100 percent Nf. Ensure the fuel control is operating properly. ***NOTE:*** In case of an actual in-flight emergency that requires emergency governor operations, the aircrew will use the procedures outlined in the flight manual.

5.7. TH-1 Maneuver Restrictions. Emergency governor operations will only be conducted in the TH-1H aircraft for instructor training and proficiency and for FCF pilots. Student training will not include Emergency Governor Operations.

5.8. Circuit Breakers. Crewmembers will not pull engine, transmission, hydraulic, or fuel system circuit breakers in flight to simulate malfunctions.

Chapter 6

INSTRUMENT PROCEDURES

6.1. Instrument Cockpit Check. Complete an instrument cockpit check before takeoff if expecting IMC during flight. See dual systems in AFMAN 11-217, Volume 1. For the purposes of the instrument cockpit check/navigation equipment check, an operable very high frequency omni-directional range station (VOR), tactical air navigation (TACAN), distance measuring equipment (DME) or an IFR-certified global positioning system (GPS) with available RAIM may be used in place of a second like system. (T-2)

6.2. Advisory Calls: Mandatory altitude calls for the pilot not flying (PNF) during IFR include:

6.2.1. Climbout or Descent. Calls will be at 500 and 100 feet below or above assigned altitude and 500 and 100 feet below or above initial approach fix altitude or holding altitude (T-2).

6.2.2. Nonprecision Approaches. Call "one hundred feet above minimums," "minimums" at minimum descent altitude (MDA), and "runway in sight." Do not call "runway in sight" too soon if vision is obstructed by fog, haze, low stratus clouds, etc. Call "go-around" at the missed approach point if the runway environment is not in sight. (T-2)

6.2.3. Precision Approaches. Call "one hundred feet above" when one hundred feet above decision altitude (DA). Then, if the runway environment is in sight and the aircraft is in a position for a normal landing, call "land" at decision height. Otherwise, call "go-around." (T-2)

6.2.4. The PNF will announce heading deviations of 10 degrees, airspeed deviations of 10 knots, and altitude deviations exceeding 100 feet. Any crewmember who sees a deviation of 100 feet in altitude or a potential terrain or obstruction problem will immediately notify the pilot flying. Deviations from prescribed procedures for the approach being flown will also be announced. (T-2)

6.3. Unusual Attitude Training. Accomplish unusual attitude training only under daytime VMC conditions, with no passengers. ***NOTE:*** This restriction does not apply when conducting unusual attitude training in the simulator.

6.3.1. Entry must be at or above 1,000 feet AGL. Simulated unusual attitudes will not exceed 30 degrees of bank; a 20-degree, nose-high attitude; or a 10-degree, nose-low attitude. (T-2)

6.4. Instrument Approaches at Enterprise (KEDN) Airport. ATC will use the EDN VOR 5 missed approach holding pattern as a published holding pattern. This is a non-standard holding pattern, but the holding pattern is used to keep traffic away from Cairns AAF airspace. When established in VOR 5 EDN holding pattern and subsequently cleared the approach, there are two options.

6.4.1. Request the full procedure from ATC. Before commencing the approach, the PF must return to the IAF. Ensure it is clarified with ATC that once holding is complete the intent is to complete full procedure. Upon reaching the VOR and cleared the approach, turn to the maneuvering side and commence the approach as depicted. Upon passing the VOR and

established on the approach you are cleared to descend unless told otherwise by ATC. If anywhere other than the IAF, **do not** intercept the course and fly the barb. IAW 11-217V1 when established in holding and subsequently cleared for the approach and the holding course and PT course are the same do not execute a procedure turn. Therefore, if the full procedure is desired, finish the holding pattern and commence the approach at the IAF.

6.4.2. Request radar vectors to final. ***NOTE:*** Normally there would be the option to complete the 1 minute outbound and then once established on the course inbound fly the approach. This is **not** an option here due to an excessive sink rate and the disorientation that could result while losing 1220 feet in 1 minute. It is **not** allowed to extend your holding pattern out past one minute to complete the approach.

Chapter 7

UNPREPARED LANDING SITE PROCEDURES

7.1. Crew Coordination.

7.1.1. Obstacle Clearance. Crewmembers will announce the clock position, relative to the nose of the aircraft, and the estimated distance of any obstacle whenever horizontal rotor clearance is 25 feet or less. Example: "tree, nine o'clock, 20 feet." (T-2)

7.1.2. Voice Procedures. The PF informs the crew when on final approach heading by stating "ON FINAL" and when beginning the approach by stating "ON APPROACH." Upon commencing the approach, the crew, starting with the PNF then scanners, as applicable, uses the triangle method for clearing the aircraft along the approach path. (T-2)

7.1.2.1. PNF triangle calls will be in 100-foot increments when above 300 feet ASE, and 50-foot increments when below 300 feet ASE. The advisory will include altitude, airspeed/groundspeed, and, at the PF's discretion, descent and power applied, in that order. Example: "250 feet, 40 knots (or knots ground), sink 500, torque 30 percent." After each advisory call, the scanners will provide terrain or hazard clearance inputs.

7.1.2.2. With qualified scanners on board, the PNF will normally transfer calls at 50-100ft by stating "DOOR" after which the scanners will become primary. The frequency of advisory calls should indicate the speed of the helicopter toward the landing area, survivor, or closure rate. A closure rate is not given in a preset distance of feet, yards, or meters. An example would be "SURVIVOR AT TWELVE FOR ONE HUNDRED, SEVENTY-FIVE, FIFTY, FORTY, ETC." When close to the intended point of landing/hover, the primary scanner should count down as follows: "FIVE, FOUR, THREE, TWO, ONE, STOP FORWARD, STOP DOWN." The faster the countdown, the more rapid the closure. If the closure rate is too fast for the conditions, do not hesitate to call "GO-AROUND." Standardized words for directions and motion may be added to better describe necessary actions, e.g., "SLOW FORWARD, TURN RIGHT, STOP BACK." See Table 7.1, Standard Terminology For Motion and Direction. ***NOTE:*** When applicable, PF should acknowledge direction calls (eg. FE/scanner calls: "STOP LEFT" PF responds: "STOPPING LEFT")

Table 7.1. Standard Terminology for Motion and Direction.

Motion	Direction
Fast	Forward
Slow	Back
Stop	Right
Hold	Left
Turn	Up
Raise helicopter (for initial lifting of survivor)	Down

7.2. Power Available Check. The PF will:

7.2.1. Perform a power available check prior to the low reconnaissance. Perform this check en route or at the site. Aircrew may elect to perform another power check once at the site for further demonstration/training accomplishment.

7.3. Power Requirements. Operational power requirements are according to the flight manual.

7.3.1. For training, hover power is required to operate at all landing sites. Additionally, when landing in areas with a restricted escape route minimum power is ***OGE + 5 percent.*** When operating at a pinnacle the minimum power is ***OGE.*** (T-2)

7.3.2. Consider that power available at the site may differ from power available in flight if temperature or PA differs. Re-accomplish the power check if conditions change from worst case which will result in a decrease in power available.

7.4. Site Selection for Training. Refer to AFI 13-217, *Drop Zone and Landing Zone Operations,* for helicopter landing zone dimension and survey requirements.

7.4.1. Aircrew must ensure to check the appropriate AF 4303 and MITA/QITA to ensure legal operation at each site to include noise complaints, traffic restrictions, and maximum aircraft restrictions.

7.5. Communication Requirements. Aircrews will make the first RT call no later than 2 NM from the RT and the second RT call no later than 1/2 NM from the RT. The first call will consist of RT number traffic, callsign, location, intentions, request landing direction and traffic advisories, RT number (eg. "RT 366 traffic, Blue 06 is 2 NM to the South, inbound for multiple high orbits request traffic advisories and landing direction, RT 366"). Appropriate take-off and base turn calls must be made stating RT number traffic, callsign, take-off/landing direction, closed pattern, intentions, etc (eg. "RT 366, Blue 06 is taking off heading 030, remaining right closed, RT 366"). Traffic already in the RT will establish the pattern and inbound aircraft will give way until radio contact is made. If unable to contact aircraft already in the RT, attempt to contact them on an internal frequency.

7.6. High Reconnaissance. Fly the high reconnaissance at 300' ASE, but no less than 100' AHO. Additionally the high reconnaissance will be flown at a minimum of 50 KIAS to reduce exposure within the avoid region of the height velocity diagram. (T-2)

7.6.1. On the high reconnaissance the crew must evaluate the following items before landing:

7.6.1.1. Winds, turbulence, and null areas

7.6.1.2. Elevation of the site

7.6.1.3. Temperature and pressure altitude

7.6.1.4. Power available, required, and margin

7.6.1.5. Approach/departure, obstacles, and go/no-go point

7.6.1.6. Suitability of the site

7.6.1.7. Touchdown point

7.6.1.8. Escape route

7.7. Low Reconnaissance. During the low reconnaissance, the pilot confirms the touchdown point and flies their final approach routing. Minimum altitude is 50-feet AHO and airspeed should be approximately 50 KIAS but in no case slower than effective translational lift (ETL). At the pilot's discretion, the low reconnaissance may be performed on final approach if out-of-ground-effect (OGE) hover power is available. Minimum power to execute a low reconnaissance on final is OGE+5% for student training. (T-2)

Chapter 8

ALTERNATE LOADING/INSERTION/EXTRACTION

8.1. Purpose. This chapter establishes guidelines and procedures for Alternate Loading/Insertion/Extraction (AIE). Alternate insertion/extraction is the insertion or extraction of any personnel by means other than landing the aircraft.

8.2. General. Current Air Force methods of helicopter insertion and extraction include rappelling, fast roping, rope ladder, and hoist. These methods are referred to collectively as AIEs. These methods and procedures apply to both day and NVG operations.

8.3. Alternate Loading Procedures. All personnel flying in rotary-wing aircraft must be restrained by the safest means possible for the type of mission flown. Standard troop seats and seatbelts should be used to the maximum extent possible. (T-1)

8.3.1. Concept of Operation. For alternate loading methods, all seats and equipment not required for the mission may be removed. The cabin floor itself will be defined as the seat. Either tie-down straps, seat belts, or personal restraint lanyards (PRL) will restrain the occupants. The purpose of PRLs is to expedite infiltration and exfiltration, not to replace the use of seat belts. To the maximum extent possible, limit the use of the PRL to the terminal/objective area. Crewmembers should have a seat with seat belts available. All restraints may be removed upon landing in the HLZ or upon direction of the AC. These procedures may only be used during tactical/training/contingency operations when standard seating is inappropriate. ***WARNING:*** Be aware of the possibility of reduced main rotor and/or tail rotor blade ground clearance and ***avoid the upslope side and tail rotor side*** of the helicopter when loading or off-loading.

8.3.2. Alternate Loading of Combat-Equipped Personnel. Mission requirements and helicopter gross weight will dictate the total number of combat-equipped troops to be loaded. Mission equipment may be installed as required in accordance with appropriate directives.

8.4. Operational Authority and Responsibilities. The individuals within this chain of command are the AC, the FE, and the rope master (RM), if required. USAF "customers" do not use RMs, but will designate a member as the Team Lead (TL). Sister service "customers" that require an RM will designate a team member as the RM. When an RM is not required, the TL will perform the RM duties as described below. If only one roper is involved in the AIE operation, he/she will be considered the TL.

8.4.1. AC Responsibilities. In all situations, the AC has full responsibility for the safety of the crew and passengers, and the orderly conduct of all aspects of the flight. The AC exercises final authority to cease or terminate operations.

8.4.2. Pilot Flying Responsibilities. The PF is responsible for communicating with the crew and maintaining a stable hover.

8.4.3. Pilot Not Flying Responsibilities. The PNF is responsible for monitoring torque, aircraft instruments and performance, scanning, and ensuring the pilot maintains a stable hover.

8.4.4. Safetyman. FEs trained and qualified in the AIE event being performed will act as the safetyman. FEs are responsible for the safe conduct of all passengers and proper configuration of the aircraft for rope operations. The safetyman will be in position to monitor all exit activities, relay communications, monitor the deployed ropes to ensure ground contact is maintained, and recover or release the ropes upon completion of the insertion/extraction.

8.4.5. RM/TL. During helicopter operations, the RM/TL is subordinate in authority to the FE and the AC. The RM/TL is responsible for the safety, conduct, and performance of rope personnel. The RM/TL is responsible for inspecting and rigging the aircraft and hooking up and deploying ropers. Only one RM/TL may control an evolution, but any other RM/TL or the FE may assist the primary RM/TL in their duties.

8.4.6. Communication Over ICS. Positive communication over Internal Communication System (ICS) must be maintained throughout any training insertion/extraction evolution between all aircrew members including the RM/TL. During operational missions, if there is a loss of communication or ICS failure, alternate insertion/extraction operations may continue as mission requirements dictate. Live personnel deployment for training will cease if both the RM/TL and FE loses ICS capability. Comm-out procedures may be used for training with no live deployments.

8.5. Mission Briefs. Prior to deployment, the AC will ensure the AIE briefing in 11-2TH-1HVol 3, CL-1, is completed for the applicable device to be used. The RM/TL must conduct an operation brief for all insertion/extraction personnel and a face-to-face mission brief for all aircrew personnel participating in AIE operations. The brief should include a discussion of emergency procedures, comm out hand signals, night signals (if applicable), and number of and how many iterations and team members in each iteration.

8.6. Environmental Factors. Altitude, temperature, wind, and humidity affect aircraft performance and the pilot's ability to safely maintain his position over the target spot. Care should be taken to select a drop/pickup zone that is relatively free of dust, snow, or other objects that could obscure the pilot's vision.

8.6.1. Visibility. Night or limited visibility operations further affect the RM/TL's ability to maintain control of personnel during the evolution. During NVG training, the RM/TL should use chemlights to determine rope and personnel positions. Using a finger light or a chemlight provides a reference for the RM/TL to hook up each team member. A chemlight on each individual's left arm and one on their right leg provides the rope master and/or belayer a reference of the person's position during the evolution. Chemlights can also assist with hand-and-arm signals during night operations. It is imperative that the FE be able to see the rope in contact with the ground at all times after it is deployed.

8.7. Inner Aircraft Safety. When possible, improvise handholds to assist in moving from a seated position to the device stations. Cargo straps, ropes, or webbing can be secured overhead to provide a secure handhold during movement

8.7.1. Mishap Procedures. If a mishap occurs, all training will cease and crewmembers will follow briefed safety procedures. Do not disturb the device rigging if it was a factor in the mishap, unless it interferes with the evacuation of the injured personnel or could cause an unsafe situation landing the aircraft.

8.8. Flight Dynamics.

8.8.1. Hover Height. Numerous factors determine suitable hover heights and, therefore, preclude establishment of a prescribed altitude for helicopter operations.

8.8.1.1. A rope hanging beneath the helicopter can become agitated by rotor downwash and could cause a potentially dangerous situation. Adjust hover as necessary; a slightly higher hover reduces the effect of rotor downwash on the ground and device.

8.8.1.2. While operating in wooded or mountainous areas, hover height is restricted to the lowest possible height commensurate with rope length, obstacle clearance, visual cues, soil stability, rotor downwash, and helicopter performance.

8.8.2. Static Discharge. Static electricity is generated by the rotor and is discharged from the aircraft by contact with the ground. Ropes are non-conductive and do not allow static electricity to be discharged through them. The deployed personnel may experience a slight shock upon touching the ground; this shock should not interfere with normal operations. Ropes may become conductive if wet. Conductivity lessens as the length of the rope increases. ***NOTE:*** A static discharge may be seen up to 16 inches from a device.

8.8.3. Aircraft Emergencies. Aircraft emergencies during live AIE operations are very complex and require excellent crew coordination and skill. Actions to be taken by each crewmember should an aircraft emergency occur during AIE operation should be thoroughly briefed. Discussion should include, but is not limited to, cut/release procedures of AIE equipment, actions to be taken by personnel on AIE equipment, and actions to be taken by crewmembers to assist personnel on AIE equipment.

8.9. Equipment.

8.9.1. Aircraft Surfaces. Cabin floor surfaces must be clean and free of oil and solvents.

8.9.2. Protective Equipment. All personnel accomplishing rope operations are required to wear the following protective clothing/equipment:

8.9.2.1. Any uniform that fully covers the team’s arms and legs which will help to avoid cuts, abrasions and skin irritations.

8.9.2.2. Glove types will be determined by RM/TL.

8.9.2.3. A Kevlar helmet, PROTEC-type helmet, or flight helmet will be worn during rope operations.

8.9.2.4. Approved hearing protection, i.e., ear plugs, muff-type ear defenders, or a flight helmet.

8.9.2.5. Each participant must wear approved protective eyewear, prescription eyeglasses, or an aircrew flight helmet visor. Standard eyeglasses alone will not be sufficient eye protection during any AIE operation.

8.9.2.6. Each participant must wear an approved personal flotation device when conducting rope operations over water or when the aircraft’s route to the drop/pickup zone passes over water and is not within autorotational distance of land.

8.9.2.7. With the cargo door(s) open, all personnel accomplishing AIE operations will wear a restraint device.

8.10. Emergency Procedures. The nature and severity of the emergency dictate the degree of the response to the emergency. Declarative or directive statements indicate actions taken by the FE and RM/TL and should be briefed during mission briefings.

8.10.1. Commands/Signals. Hand/arm signals provide a comm-out means of communication between aircrew and ropers/hoist riders and ground personnel. Hand signals should be made as large as possible when signaling outside the aircraft. See **Table 8.1** Emergency Commands and Hand-and-Arm Signals.

Table 8.1. ***Emergency Commands and Hand-and-Arm Signals.***

VOICE	HAND SIGNAL	DESCRIPTION
ABORT/CEASE OPERATIONS	Hand moving back and forth in front of the neck in a slashing motion.	Initiated by any crewmember to include the RM/TL or ground personnel. Used to cease further operations until an unsafe situation is corrected.
AIRCRAFT EMERGENCY	Hand with fingers extended and palm down is raised and lowered above the head.	Initiated by any crewmember and indicates an aircraft emergency presently exists.
CRASH LANDING	Both hands, each with fingers extended and palms down, raised and lowered above the head in unison.	Initiated by any crewmember to indicate a crash landing.
DEPLOY ROPE LADDER	Fists shoulder width apart, moved in a climbing motion.	Initiated by ground personnel to signal the FE to lower the rope ladder.
ENTANGLEMENT	Forearms raised laterally to the front at shoulder height, clasping hands with palms facing inward and fingers interlocking.	Initiated by the FE or RM/TL. Indicates the rope, device, or ropers are fouled on obstacles. HOLD Forearm raised vertically (as in taking an oath) with a clenched fist in front of the ropers face. Initiated by any crewmember to include the RM/TL. Ropers stand fast and await further instructions.
LOST COMM	Hands placed at the ears with palms open and forward.	Initiated by any crewmember to include the RM/TL. Indicates ICS or air-to-ground communication has been lost.
MOVE IN/MOVE OUT	Wave In/ Wave Out.	Initiated by the FE to indicate to ground personnel to move towards

		or away from the aircraft/device.
OK/AFFIMATIVE	Thumbs Up.	Initiated by any crewmember or roper that all is well or that they understand.
STRAP IN	Double clenched fists at the belt buckle.	Initiated by any crewmember to include the RM/TL. Directs ropers remaining in the aircraft to return to their seats and don their restraint device.

8.11. Rope Ladder Procedures.

8.11.1. General. The rope ladder can be used for both air-to-ground deployment and extraction of personnel (referred to hereafter as a climber) from water or land recovery zones. The major drawback to using the rope ladder is its limited capability due to the ladder length, size, and weight.

8.11.2. Components.

8.11.2.1. Rope Ladder. The rope ladder is made of nylon webbing with aluminum rungs and varies in length from 30 to 60 feet. The rope ladder features six weighted rungs (first six rungs from the bottom), two sets of heavy-duty steel standoff wheels, skid tube anti-abrasion pad (additional padding designed to keep nylon webbing from rubbing against the skid tubes), and a simple quick-release mechanism allowing the ladder to be immediately jettisoned from the aircraft during critical emergencies or tactical situations. A Polyfoam flotation device used during water operations can be attached to the last rung of the ladder. The complete assembly weighs approximately 45 pounds (depending on length) and is load rated at 2,500 pounds. The only authorized rope ladder for use on the H-1 is PN# ELD800PD-1. ***NOTE:*** New rope ladder and detacher assemblies are manufactured and assembled as a "matched set/pair" from the factory. The manufacture has established an identification marking/system and affixed this identification marking/system to both the rope ladder and detacher assembly sections. This identification marking/system will be used to maintain detacher assembly and rope ladder integrity (matched set/pair). Refurbished rope ladder and detacher assembly identification markings/system will be different than the identification markings/system of a new rope ladder, ensuring new and refurbished rope ladder and detacher assemblies cannot be mismatched or mixed.

8.11.2.2. Detacher Assembly. The detacher assembly (quick-release mechanism) includes a base plate containing a rotating release handle and control shaft assembly, safety pip-pin, and two attaching straps. Detacher assemblies are "powder-coated," eliminating the need to oil the assembly as a corrosion prevention measure.

8.11.2.2.1. The detacher assembly design creates a three-step release procedure preventing accidental rotation of the control shaft. To jettison the rope ladder, first depress the safety button on the pip-pin, then remove the pip-pin from the bracket, and finally rotate the release handle. Rotating the release handle raises two fastener

pins, allowing the ladder (under its own weight) to be pulled away from the base plate.

8.11.2.2.2. The FE is responsible for providing, inspecting, and rigging rope ladders. When use of the rope ladder is anticipated, refer to the attachment of the AFI 11-2TH-1HV3, for Rope Ladder Preflight checklist inspection criteria.

8.11.3. Service Life Expectancy. The effective service life for rope ladder P/N #ELD800PD-1 is a total of six years maximum. Service life consists of two three-year periods with the first service beginning the date the rope ladder is removed from its shipping container/package and is placed into initial service. At the three-year point, rope ladders will be removed from service and sent back to the manufacture for an overhaul "standard refurb." After the refurbished rope ladder is returned to the unit, the second three-year service life period begins the date the rope ladder is removed from its shipping container/package and placed into service. Once the rope ladder reaches the end of its second service life period, it will be permanently retired from "live" operations or condemned.

8.11.4. Restrictions. The maximum number of personnel on the rope ladder at any one time is three; this does not include the anchorman who is only performing anchorman duties. If more than three personnel are allowed to climb the rope ladder at the same time, the excess weight could cause loss of aircraft control and/or CG problems. ***WARNING:*** Crews ***will not*** use the rope ladder for emergency extraction of personnel unless the threat to personnel remaining on the ground is higher than the risk associated with an in-flight rope ladder failure. If used in forward flight, altitude will be the absolute minimum, airspeed ***will not*** exceed 30 KIAS, and crews will continuously assess the risks and the possibility for rope ladder failure.

8.11.5. Emergency Extraction. When the rope ladder is used to accomplish an emergency short-haul egress extraction, ensure the individual secures themselves to the center portion of the rung, and have the individual attempt to maintain body weight in the center of rope ladder and attempt to maintain a handhold on the rope ladder. Attaching a carabiner or PRL device to a rung is preferred if available to the climber.

8.11.5.1. Using a rope ladder to accomplish an emergency short-haul egress extraction is a one-time option. Upon completion of emergency short-haul egress extraction, the rope ladder will be immediately categorized as unserviceable; marked and tagged as "Serviceable but Requires Standard Refurb"; and not used again until it has been refurbished. Units will send rope ladder back to the manufacturer stating reason for return and refurbishing. ***WARNING:*** Rope ladders used as an emergency extraction device ***will not*** be used until the refurbishment has been accomplished and the rope ladder is placed back into service.

8.11.6. Aircraft Rigging. The rope ladder will be secured to the aircraft by attaching the ladder straps on the quick-release mechanism via 2 steel locking carabiners (not provided by the manufacturer), with a minimum strength rating of 5,000 pounds per carabiner. Route the locking carabiner through the end of the detacher assembly straps and ensure the carabiners are secured to both the anchor cable and the cargo tie-down fittings (see **Figure 8.6**, TH-1H Rope Ladder Attaching Points [Right Side], and **Figure 8.7**, TH-1H Rope Ladder Attaching Points [Left Side]). When the steel locking carabiners are attached to the anchor cable and cargo tie-down fittings, ensure the gates are facing upward and locked, and the ladder

attaching straps are not twisted and lie relatively flat on the cargo floor. The rope ladder will be fan folded or rolled up and secured before flight. ***WARNING: Do not*** use steel locking carabiners if the spring loaded gates do not operate properly or if the locking mechanisms do not allow the gate to lock in the closed position.

8.11.6.1. An anchor cable fabricated according to TO 1-1A-8 will be used to secure the rope ladder to the aircraft cargo tie-down rings. Ensure the steel bolt is installed through the anchor cable terminal ends from the bottom up with the lock nut and safety pin on top.

8.11.6.2. The cargo tie-down fittings used to deploy the rope ladder from the left side are 9, 10, 14, 22, 27, 30, 31, and 39. These are the only tie-down fittings that can be used.

8.11.6.3. The cargo tie-down fittings used to deploy the rope ladder from the right side are 7, 8, 13, 19, 26, 28, 29, and 36. These are the only tie-down fittings that can be used. ***WARNING: Do not*** use removable Kinedyne® type jaw fittings (i.e., bear claws) to secure the rope ladder to any of the floor/ceiling stud fittings; these jaw fittings and floor/ceiling studs are not approved rope ladder connection points.

Figure 8.1. ***TH-1H Rope Ladder Attaching Points (Right Side).***

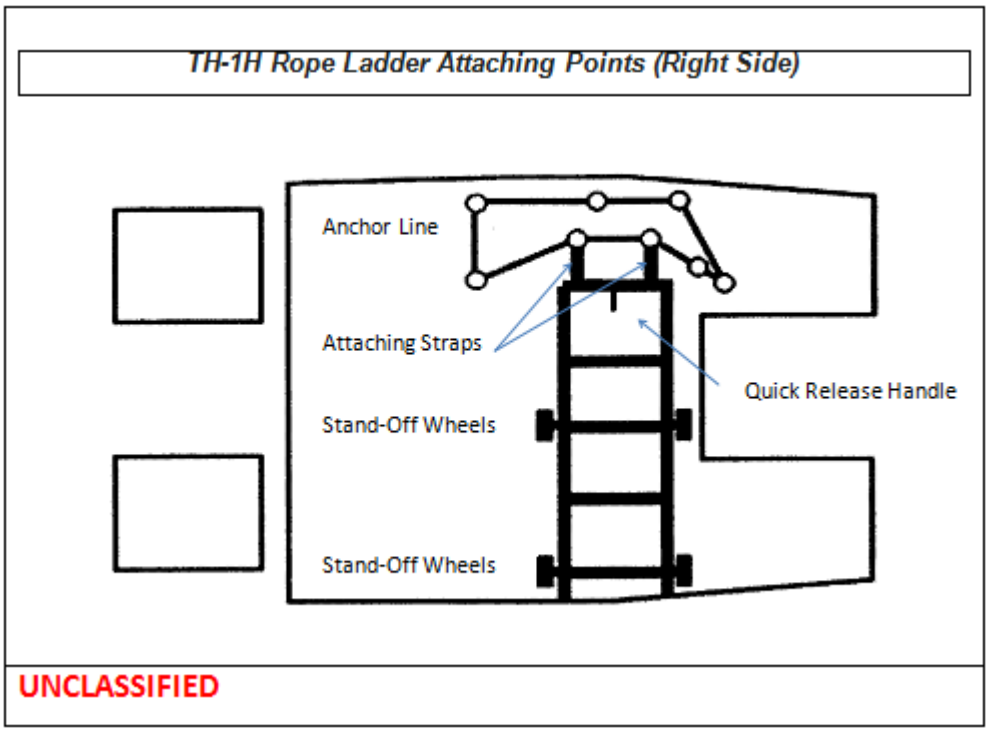
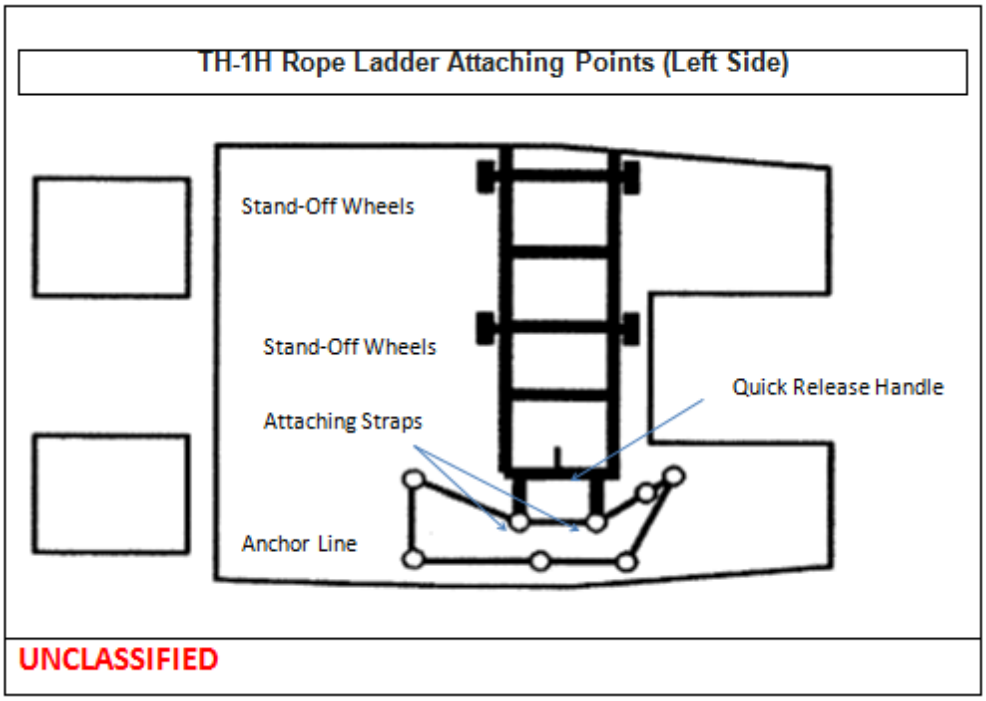


Figure 8.2. ***TH-1H Rope Ladder Attaching Points (Left Side).***



8.11.7. Rope Ladder Deployment. A rope ladder that is knotted or fouled can increase the time it takes to insert or extract personnel. Depending on mission requirements, you may position and secure the rope ladder in the doorway, ready for immediate deployment, or position and secure it out of the way for later use. Once positioned in the aircraft, it may be secured to the cabin floor using a seat belt/cargo tie-down strap. ***NOTE:*** When rope ladders are rolled up instead of fan folded, they are more likely to become fouled during rope ladder deployment.

8.11.7.1. To prepare the rope ladder for deployment, unstrap the ladder, attach it to the anchor cable, and reposition the ladder in the doorway, ensuring it is properly folded for, deployment (this should minimize ladder fouling). Once in the doorway, ladder security may be accomplished by using your body weight, cargo tie-down straps, or seat belts. Deploy the rope ladder by tossing the last weighted rung outside the aircraft. The rope ladder unfolds and falls to the ground. ***CAUTION:*** Exercise care when deploying the rope ladder to avoid striking people on the ground. ***CAUTION:*** During ladder deployment ensure that an adequate amount of clearance is maintained between your body and the rope ladder during payout. Failure to maintain adequate clearance between your body and the deploying rope ladder may cause personal injury.

8.11.7.2. During night operations, a chemlight will be attached to the side of the ladder on the bottom rung. A chemlight will also be placed around the immediate vicinity of the rope ladder quick release handle. Team member(s) should have a chemlight attached to their person for easy identification. Climbers should not wear NVDs climbing the ladder to prevent depth perception issues.

8.11.8. Sequence of Events. Rope ladder procedures follow a standard sequence of events and dialogue. The dialogue transpires in three distinct phases: prior to takeoff, in-flight, and hover. (Dialogue is highlighted in bold capital letters. Any deviation from the following dialogue ***must be*** prebriefed.) (Dialogue is highlighted in bold capital letters. Any deviation from the following dialogue ***must be*** prebriefed.)

8.11.8.1. Prior to Takeoff Phase. Prior to any live operations a thorough team brief will be accomplished, static on/off load training should be accomplished. Following the operations and aircrew briefings and after loading personnel aboard the aircraft, the RM/TL initiates the standard rope ladder dialogue:

8.11.8.1.1. Ensure all personnel are secured with a restraint device. The FE or RM/TL will check all restraint devices for security.

8.11.8.1.2. "**CLEARED FOR TAKEOFF**." The RM/TL advises the FE when the Team is ready for takeoff.

8.11.8.2. In-Flight Phase. All participants remain strapped in and follow the directions of the FE. The PNF should provide crew with advisory time calls, typically 20-, 10-, 5-, and 1-minute out. The RM/TL may require more advisory/time calls. The FE will relay time calls to any pertinent personnel.

8.11.8.2.1. "**TEN-MINUTE OUT**" Call. The PNF will announce to the crew when approximately ten minutes from the objective.

8.11.8.2.2. "**FIVE-MINUTE OUT**" Call. The FE will reposition the rope ladder in the doorway and secure it by seat belt or body weight. The FE will ensure the rope ladder is secure and rigged properly prior to deployment. Chemlights attached to insertion/extraction equipment will be activated prior to the "FIVE-MINUTE OUT" call.

8.11.8.2.3. "**ONE-MINUTE OUT**" Call. The FE may release any seatbelts securing the rope ladder in the doorway and maintain security by using body weight.

8.11.9. Hover Phase. This is the phase of flight where the pilot flying has brought the helicopter to a near complete or complete stop, has adequate hover references to maintain a stable hover (into the wind to the max extent possible), and is at the appropriate hover height to commence ladder operations. The pilot flying will commence ladder operations by announcing "**LADDER**, **LADDER**, **LADDER**."

8.11.9.1. "**LADDER, LADDER, LADDER**." When the pilot flying announces "LADDER, LADDER, LADDER," it implies three things: the aircraft is in a stable hover (or 2 to 5 knot forward hover taxi for water ops, if desired by the customer) at the correct spot at the correct altitude, the ladder is cleared for deployment, and the team are cleared in/out of the aircraft. No other approval from the pilot flying is required to proceed with the rope ladder operations.

8.11.9.2. "**LADDER DEPLOYED**." Once the FE has determined that the rope ladder has deployed safely, with a minimum of 1 rung on the ground without fouling, the FE passes the advisory call "LADDER DEPLOYED" to the pilots.

8.11.9.2.1. Upon verifying that the rope ladder is on the ground, the FE will wave the climbers in and provide the crew with a running commentary of the team's ascent into

the aircraft. During the evolution, the FE will give hover calls, as necessary, to maintain the aircraft over the target area.

8.11.9.3. "**LADDER RELEASED/SECURE**." The FE advises the pilots once the rope ladder has either been released or retrieved into the aircraft and secured. (In an actual tactical/emergency situation, jettison the rope ladder if time is critical.) ***NOTE:*** For multiple training evolutions, the rope ladder may remain attached to the aircraft while ground personnel walk the rope ladder clear of the aircraft as it descends to the ground. ***WARNING:*** Ensure all personnel ***are clear*** from below the aircraft before jettisoning the rope ladder.

8.11.9.4. "**CLEARED FOR FORWARD FLIGHT**" or "**CLEARED FOR LANDING**." The FE confirms to the pilot flying that the rope ladder is clear of the aircraft or obstacles and there is no possibility the rope ladder will become fouled. Once assured that all is clear, the pilot flying transitions the aircraft from a stable hover to forward flight or, during multiple training evolutions, lands.

8.11.10. Emergency Procedures. Aside from the inherent dangers with using a rope ladder, the FE and climbers must be prepared to address aircraft emergencies. Multiple emergencies, adverse weather, or other unusual conditions may require modifications to these procedures. The nature and severity of the emergency dictate the degree of compliance. Therefore, sound judgment is the critical element in corrective action. Declarative or directive statements indicate actions taken by the FE and RM/TL. The decision to jettison the rope ladder will be made by the AC and executed at his/her command or as briefed.

8.11.10.1. Aircraft Emergency. If the helicopter experiences engine failure or other critical aircraft emergencies during rope ladder operations, climbers on the ladder must remain on it until ground or water contact is made. Upon contact, have personnel clear the rope ladder and the area beneath the helicopter to either the 3 or 9 o'clock position (depending on which side the rope ladder is on). The pilot flying attempts to land the helicopter by moving forward, terrain depending. In the event of an aircraft emergency, initiate the following procedures:

8.11.10.1.1. Upon notification by the pilot flying of an emergency situation, the FE will signal the climbers still ascending the ladder "ABORT," and "AIRCRAFT EMERGENCY" (if time permits). If possible, signal ground personnel there is an AIRCRAFT EMERGENCY.

8.11.10.1.2. In an emergency or if the aircraft comes under fire and forward flight is possible, climbers will secure themselves to the rope ladder and the aircraft may depart turning. This twisting and turning causes the rope ladder to become unstable, which could dislodge climbers. Slow forward flight to a safe area should be accomplished if flight characteristics and power requirements allow. Airspeed with climbers on the rope ladder should not exceed 30 KIAS.

8.11.11. Lost Communication/ICS Failure. ICS communications between the pilot flying and the FE are mandatory. In the event of an ICS failure, the FE will initiate the following procedures:

8.11.11.1. Signal the remaining climbers to HOLD or ABORT, and LOST COMMUNICATION. ***NOTE:*** Hand-and-arm signals are only used to complete

the ascent of the climbers on the rope ladder at the time of the ICS failure. At no time are ascents initiated during an ICS failure.

8.11.11.2. If ICS is reestablished, the FE will direct the pilot flying back into position and may continue rope ladder operations.

8.11.12. Hung Climber. This is a member who has started climbing the rope ladder and is unable to complete the ascent. A member can become hung for a variety of reasons: injury, loose clothing, straps, equipment, or physical exhaustion. In the event of a hung climber, initiate the following procedures:

8.11.12.1. The FE will immediately notify the pilot flying of the situation.

8.11.12.2. If possible, the pilot flying will descend to lower the climber(s) to the ground/water.

8.11.12.3. Once the climber(s) reaches the ground/water, have them clear off the rope ladder. If able, land and on-load the climber(s). If unable to land the aircraft for on-loading the climber(s), maintain a low hover and have the climber(s) attempt a second climb.

8.11.12.4. If the aircraft is unable to land or descend to off-load the climber(s) and if power requirements and flight characteristics allow, accomplish procedures in **paragraph 8.14.10.1.2**

8.11.13. Fouled Rope Ladder. A rope ladder may become fouled or entangled on ground obstacles during the course of ladder operations. If the rope ladder becomes fouled or entangled, initiate the following procedures:

8.11.13.1. The FE will immediately notify the pilot flying of the fouling/entanglement and ensure all climbers are clear.

8.11.13.2. If possible, the FE will retrieve or attempt to clear the rope ladder. Once cleared, the FE can deploy the ladder and continue with rope ladder operations.

8.11.13.3. In the event the rope ladder becomes entangled, initiate the following procedures:

8.11.13.3.1. If possible, the pilot will descend, reposition, or land in order to decrease tension or untangle the rope ladder. When tension has been removed from the ladder, the FE will attempt to untangle the ladder. ***WARNING: Do not*** use the helicopter to pull the rope ladder free.

8.11.13.3.2. If unable to land or untangle the rope ladder, the FE will jettison the ladder by pulling the quick disconnect pin, actuating the jettison handle, and letting it fall to the ground.

8.11.13.3.3. In the event the ladder becomes entangled on the ground and aircraft control is questionable, it may be desirable to jettison the ladder. Aircraft and personnel safety will determine the course of action to be taken.

8.11.14. Helicopter Gains Altitude/Drifts off Target Area. If the helicopter gains altitude so rope ladder to ground contact is not maintained, or if the helicopter drifts off the target area, the FE will initiate the following procedures:

8.11.14.1. Direct climbers to HOLD, preventing any additional ascents.

8.11.14.2. Redirect the helicopter back over the target area or descend to the correct altitude; once back on target and/or altitude, continue rope ladder operations.

Chapter 9

LOW-LEVEL PROCEDURES

9.1. General. Flight below 300 feet AGL is considered low-level flying. Low-level flight entails greater risk than normal flight, so it requires additional restrictions. Low-level navigation is used when flight operations permit the use of specific headings and a constant indicated altitude and groundspeed and can be used over flat, open terrain where significant terrain features are not available for navigation reference.

9.1.1. Contour Navigation. During contour navigation, the pilot preplans a route based on charted terrain features leading toward the objective. The groundspeed, obstacle clearance altitude, and heading may vary considerably based on the terrain, weather, visibility, and anticipated threat. The indicated altitude will vary considerably because the pilot will maintain a relatively constant obstacle clearance altitude in order to take advantage of the available contours. Contour Navigation is more demanding than low-level navigation because it does not permit the use of standard dead-reckoning techniques.

9.2. Crew Coordination. Crew coordination is a critical factor during low-level operations. Limit crew conversation to accomplishment of essential tasks. Each crewmember calls out hazardous obstacles and assists navigation by identifying prominent features along the route. ***NOTE:*** Three to four seconds are needed from the time a stimulus (perceived closure rate, crewmember input, etc.) is received and recognized until the reaction (control input, crewmember action, etc.) is complete. All crewmembers must be cognizant of this relationship, especially during critical phases of flight.

9.3. Low-Level Flight Areas. Low-level flight must be conducted in surveyed low-level flight areas. The area or route will have defined boundaries and aircrew must meet these requirements (T-2):

9.3.1. Complete an extensive map study of the selected routes and areas.

9.3.2. Annotate on the flight map all manmade obstacles higher than the lowest altitude to be flown.

9.4. Maps.

9.4.1. For the Fort Rucker Training Area, maintain a master map depicting the low-level flight areas or routes for flight planning purpose. Annotate all manmade obstacles over 50 feet AGL, except when below the tree line. Also, annotate published low-level routes, nap of the earth (NOE) boxes, no-fly areas, air-to-air boxes, and other hazards within the boundaries. (T-2)

9.4.2. Update the master map monthly, using CHUM data and map updates. Annotate the CHUM update date on the master map. Continuously scan for uncharted obstacles. When they are found, temporarily suspend flight operations and record appropriate information (location and approximate height AGL). After landing, immediately pass this information to the unit safety officer. (T-2)

9.4.3. Maps used for flying will reflect the same information as the master map. Crewmembers will ensure the map is updated and annotated, using the latest CHUM.

9.5. Route Selection (Training).

9.5.1. Use the syllabus, combined syllabus guide, and maneuver guide to plan low-level navigation training routes.

9.5.2. Attempt to select an initial point that can be over flown on the inbound heading, minimizing turns from the last leg flown (recommend 30 degrees or less) and 3-12 NM from the RT.

9.5.3. Review and de-conflict low altitude charts for IFR, VFR, and slow-speed, low-altitude training routes, and annotate potential conflict areas along the proposed routes during pre-mission planning. ***NOTE:*** Avoid following roads or wires to an LZ.

9.6. AF IMT 70. Prepare an AF IMT 70 IAW **paragraph 3.16**

9.7. Mission Management. The Low Level Ingress Check will be completed and the aircraft will be cleared down on each side (i.e. "clear down right/left") before descending into the low level environment. Aircraft will descend utilizing "S" turns to ensure the area is clear.

9.7.1. Power-Available Check. Prior to any low-level operations, perform a power available check. At minimum, OGE power must be available for all low-level training operations. (T-2)

9.7.2. Before Landing Check. The Before Landing Check during the LL Ingress Check will be generic in nature such that the aircraft is prepared for an immediate landing if required. A separate Before Landing Check will be accomplished IP inbound to each RT. This checklist briefing will detail the RT particulars and the specific planned approach to be accomplished. Aircrew should reference any kneeboard diagrams at this time.

9.8. Terminal Area Operations. Crosswind turns will not normally be made prior to 50 KIAS. Downwind will be flown at 100-200' AHO and a minimum of 80 KIAS. Deviations will be briefed to the crew or flight. The type of approach being flown will determine the distance from the RT when beginning the approach. Attempt to maintain a constant selected angle until hover/touchdown.

Chapter 10

FORMATION PROCEDURES

10.1. General. The primary purposes of helicopter formation flight are (1) mutual support and control and (2) increased lift capability. In addition, formation flight enhances maneuverability and flexibility. If more than three aircraft are required, consider breaking into smaller elements. The minimum separation between the closest portions of any two helicopters in any formation is 1 rotor diameter (T-2), but the tactical situation will usually dictate more separation. Vertical step-up or step-down is optional for each succeeding helicopter.

10.2. Responsibilities. Every flight member has specific responsibilities that directly affect the safety and mission of the entire formation, as follows:

10.2.1. Flight Lead (Mission Commander). The individual who is responsible for execution of the mission. This individual is identified by the flight authorizing official.

10.2.1.1. Flight lead begins by establishing a logical order of priorities and formulating a plan. Use all available resources to gather pertinent data for the mission. Flight lead should be assertive and communicate the plan and intentions.

10.2.1.2. Designate an alternate flight lead who may assume flight lead responsibilities, if necessary.

10.2.1.3. Resolve conflicts as they arise within the crew or flight. A good flight lead is always evaluating and seeking information to ensure early detection of a possible problem and reduce the potential for a mishap.

10.2.1.3.1. Flight Lead Responsibilities. Flight lead is ultimately responsible for the flight through all phases of flight and delegates formation lead responsibilities as desired. Flight lead is responsible for the following:

10.2.1.3.2. Plan, organize, and brief the mission.

10.2.1.3.3. Delegate tasks within the flight; ensure flight integrity/flight discipline and mission accomplishment.

10.2.1.3.4. Delegate formation lead responsibilities, as required.

10.2.1.3.5. Know the capabilities and limitations of each flight member and the resources each flight member has at their disposal.

10.2.1.3.6. Develop clear and understandable mission objectives and be ready to correct wingmen that are not performing their responsibilities.

10.2.1.3.7. Upon mission completion, flight lead reconstructs the mission and makes an accurate evaluation during the aircrew debriefing.

10.2.1.3.8. Communication/coordination with supporting or supported forces for the mission (i.e., ground forces commander, C2, local authorities, etc.).

10.2.2. Formation Lead (Lead Aircraft). Lead is responsible for:

10.2.2.1. Directing radio channel changes.

10.2.2.2. Making radio calls.

10.2.2.3. Navigating.

10.2.2.4. Ensuring formation clearance from other aircraft and hazards.

10.2.2.5. Directing all formation changes.

10.2.3. Wingman. The wingman is responsible for:

10.2.3.1. Verifying the accuracy of the mission planning.

10.2.3.2. Being prepared to assume responsibilities as lead.

10.2.3.3. Maintaining position in the formation and advising lead when it is necessary to deviate from any directed position.

10.2.3.4. Acknowledging radio channel changes by position prior to initiating the action.

10.2.3.5. Navigating and ensuring terrain or obstacle clearance independent of lead.

10.2.3.6. Backing up lead where necessary and being able to assume the lead if required.

10.2.3.7. Notifying lead if visual contact with formation aircraft is lost, flying safety is jeopardized, or radio failure occurs.

10.2.3.8. Advise lead any time a significant deviation occurs that may jeopardize mission accomplishment.

10.2.4. Tactical Lead. Tactical (TAC) lead is a role flight members may fulfill based upon their SA, relative to the rest of the flight, regardless of their position within the flight, crew position or aircraft. TAC lead is the crewmember in a position to best direct flight actions while defending against threats, executing a particular mission event, or avoiding obstacles (i.e., the FE in Dash-2 becomes TAC lead when directing a go around or an abort.)). Once the hazard/threat is no longer a factor to the formation, flight lead will direct the formation as required. TAC lead may change several times during the course of a mission and may change rapidly during defensive engagements. TAC lead never assumes the responsibilities of flight lead; however, TAC lead may assume the formation lead responsibility to direct the actions of the formation.

10.2.5. Crewmember. Each crewmember is responsible for providing mutual coverage for other aircraft in the formation. This includes scanning the 6-o'clock position of other helicopters in the formation because rear visibility is extremely limited. Scanners are also responsible for notifying the pilot of all changes in the relative position of other aircraft in the formation.

10.2.5.1. Pilot Flying (PF). In addition to basic safety and tactical considerations, the PF is responsible for the following.

10.2.5.1.1. Coordinates defensive maneuvers with wingmen.

10.2.5.1.2. Communicates to the crew intended plans of action to accomplish the mission or defend against threats.

10.2.5.2. Pilot Not Flying (PNF).

10.2.5.2.1. Monitors the flight profile of the aircraft, providing the PF with information about altitude, power requirements, terrain avoidance, airspeed, and angle of bank (AOB).

10.2.5.2.2. Manages aircraft systems, navigates, and communicates with other assets (between flight members and to external agencies).

10.2.5.2.3. Must be able to assume control of the aircraft any time.

10.2.5.2.4. Keeps the entire crew updated on the progress of the mission and enhances their SA whenever possible.

10.2.5.3. Flight Engineer (FE)/Scanner.

10.2.5.3.1. Maintains SA relative to the terrain, threats, and other formation members. This can be extremely demanding in a threat environment, especially during defensive maneuvering, where the crew is often required to direct the actions of the formation.

10.2.5.3.2. Assists in navigation and radio communication outside of the aircraft.

10.2.5.3.3. Visually scans other aircraft in the formation for signs of aircraft status (e.g., smoke, position, and leaks), or attack from enemy forces.

10.2.5.3.4. Notifies the pilot in command of changes in any formation member's status.

10.2.6. In-Flight Supervision. Flight Leads (FL's) may delegate the tactical lead to their wingman for specific tasks or may fly in a chase position on their wingman for authorized events. While leading in this capacity, the wingman may make decisions for the flight, but the FL will retain overall authority and responsibility.

10.3. Safety Considerations.

10.3.1. "Knock-It-Off" Call.

10.3.1.1. This is a radio call any formation member can make to terminate maneuvering. See AFI 11-214, *Air Operations Rules and Procedures*, for specific details. When hearing a knock-it-off call, all participating aircraft will clear the flight path, cease tactical maneuvering, climb or descend as needed, and acknowledge with a call sign.

10.3.1.2. If an aircraft in the formation subsequently loses sight of the formation after a knock-it-off call, the appropriate lost visual radio call should be made and lost visual procedures initiated.

10.3.1.3. If lead has the wingmen in sight and the situation requires immediate aircraft separation, lead should maneuver to ensure aircraft separation. Lead will direct a rejoin only after the wingmen are in a position where a safe rejoin can be accomplished. The wingmen should maintain a minimum of 1,000 feet separation between aircraft until directed to rejoin.

10.3.2. "Break Out" Call.

10.3.2.1. The wingmen must break out of formation when directed by lead, when unable to maintain sight of lead or the preceding aircraft, when unable to safely rejoin or remain

in formation without crossing under or in front of lead or the preceding aircraft, or anytime their presence constitutes a hazard to the formation.

10.3.2.2. When breaking out of formation, each wingman will clear in the direction of the break and notify lead of the intent to break and the direction of break. If the wingman is breaking out due to a lost visual situation, he or she will break away from either leads or the preceding aircraft's last known position, the direction of turn, or in any direction that ensures immediate separation. Lead will continue the current maneuver with the current power setting to aid in aircraft separation. If the wingman is in sight, lead should also maneuver to obtain separation, whenever possible. After obtaining safe separation and when no further complications exist, the wingman may request a rejoin.

10.4. Dissimilar Formation. Formation flights with dissimilar aircraft are authorized when all participating crewmembers are briefed and thoroughly familiar with the other aircraft's performance and tactics. RD separation is based on the largest RD diameter.

10.5. Communications Check. Prior to formation flight, lead will conduct a communications check of all aircraft in the formation. Flight lead will direct an abort for any aircraft failing the check if mission requirements dictate.

10.5.1. Radio Procedures.

10.5.1.1. After initial radio contact has been established between aircraft, lead is responsible for all calls pertaining to the flight. Wingmen need not acknowledge flight lead's transmissions unless specifically stated to "acknowledge." Wingmen acknowledgements will be made using full call signs. Normally, en route frequency changes will be "directed" or "automatic," as follows:

10.5.1.2. Flight lead initiates a "directed" frequency change over interplane radio frequency. If "pushed" to another frequency (for example, "Blue 33 flight, push preset 68"), wingmen will not acknowledge the change. However, if "rolled" to another frequency (for example, "Blue 33 flight, roll preset 68"), wingmen will acknowledge the change on interplane radio frequency (for example, "Blue 99").

10.5.1.3. "Automatic" frequency changes are those made without prompting from lead at a prebriefed time, way point, easily identified terrain feature, or control measure such as a border or phase line.

10.5.1.4. Only lead will initiate frequency changes. Lead may prebrief way points for communication changes. A sequence sheet or communications plan indicating timing and (or) locations for frequency changes and communications check-ins will reduce confusion and enhance mission execution, particularly during communications-out procedures.

10.5.1.5. Before switching to the new frequency or as briefed, each wingman will acknowledge a frequency change by call sign in order of his or her position in the flight. Throughout the formation mission, an acknowledgment of a frequency change indicates all checklists are complete and the wingman is ready for the next event. If the wingman is not ready, the reply will be "standby." The frequency will not be changed until all wingmen have made the normal acknowledgment.

10.5.1.6. Lead will check in on the new frequency, followed by all wingmen in order or as briefed.

10.5.1.7. If a wingman fails to check in after a reasonable length of time, lead will attempt to contact him or her on another radio. If this fails, lead will direct members of the flight back to the previous (or prebriefed) frequency to reestablish contact. As a last resort, lead will initiate a prebriefed chatter mark or a brief radio call on guard frequency in order to establish contact on a prebriefed frequency.

10.5.1.8. The pilot and copilot in each aircraft in the flight will monitor the interplane frequency.

10.5.1.9. Only essential transmissions will be made. Strict radio procedures and discipline must be enforced to avoid jeopardizing safety and mission effectiveness.

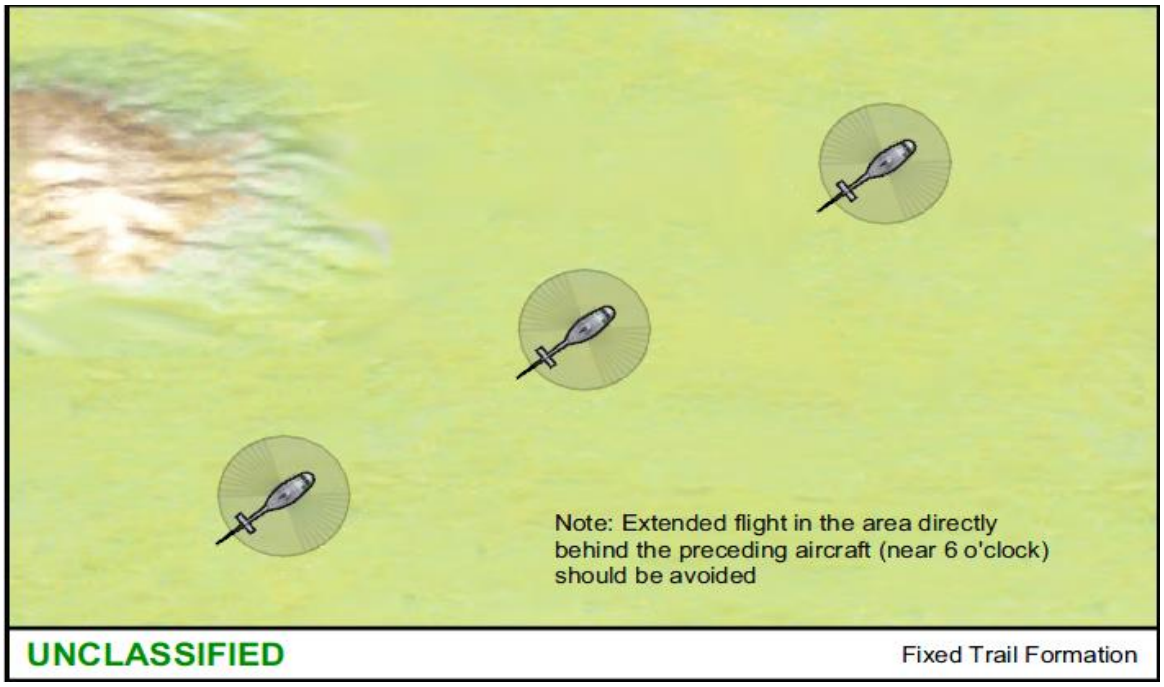
10.6. Types of Formation. The mission determines the type of formation most suitable for the flight. For cross-country, deployment, or redeployment flights, primary consideration should be given to crew fatigue. Unless otherwise specified, formations can be flown low level or above 300 feet AGL. In low-level situations, the formation should allow lead to maintain flight integrity and still maneuver the flight with few restrictions. In low-level formations, each wingman will maintain a position that does not restrict lead's (or the preceding aircraft's) ability to maneuver.

10.6.1. Minimum Separation. The minimum separation between the closest portions of any two helicopters in any formation is 1 rotor disk (RD) diameter, but the tactical situation will usually dictate more separation. Vertical step-up is optional for each succeeding helicopter.

10.7. Formation Positions. Wingmen may maintain formation position by offsetting from leads 6 o'clock position, stacked slightly high with the rotor disk on the horizon. Normally aligning the outside of the synchronized elevator with the outside of the burner can yields a 30-deg offset. Aligning the cross-tubes to form a double arch (McDonald's Arch) will yield a 45-deg offset.

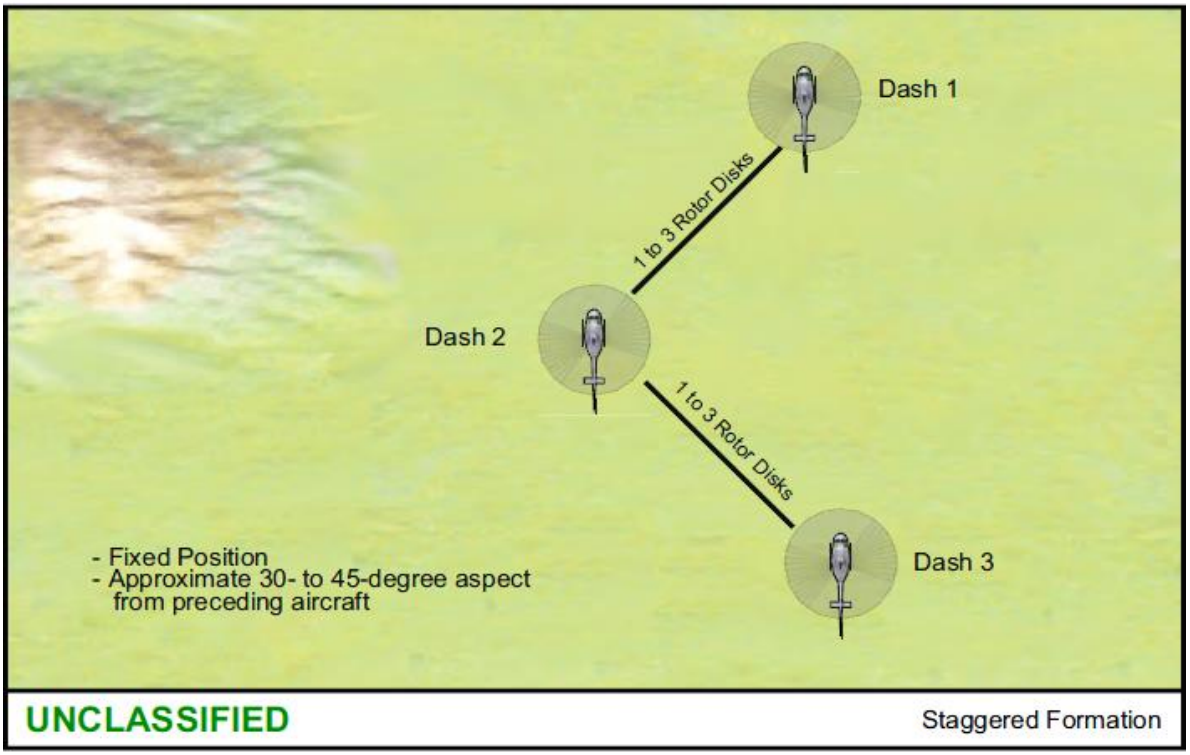
10.7.1. Fixed Trail. Flown at 1-3 RD at the 6 o'clock position. Limit maneuvers to those necessary for landing alignment in the LZ. ***WARNING:*** Flying in the 6 o'clock position at night severely limits the aircrews ability to detect closure and should be avoided whenever possible.

Figure 10.1. ***Fixed Trail Formation.***



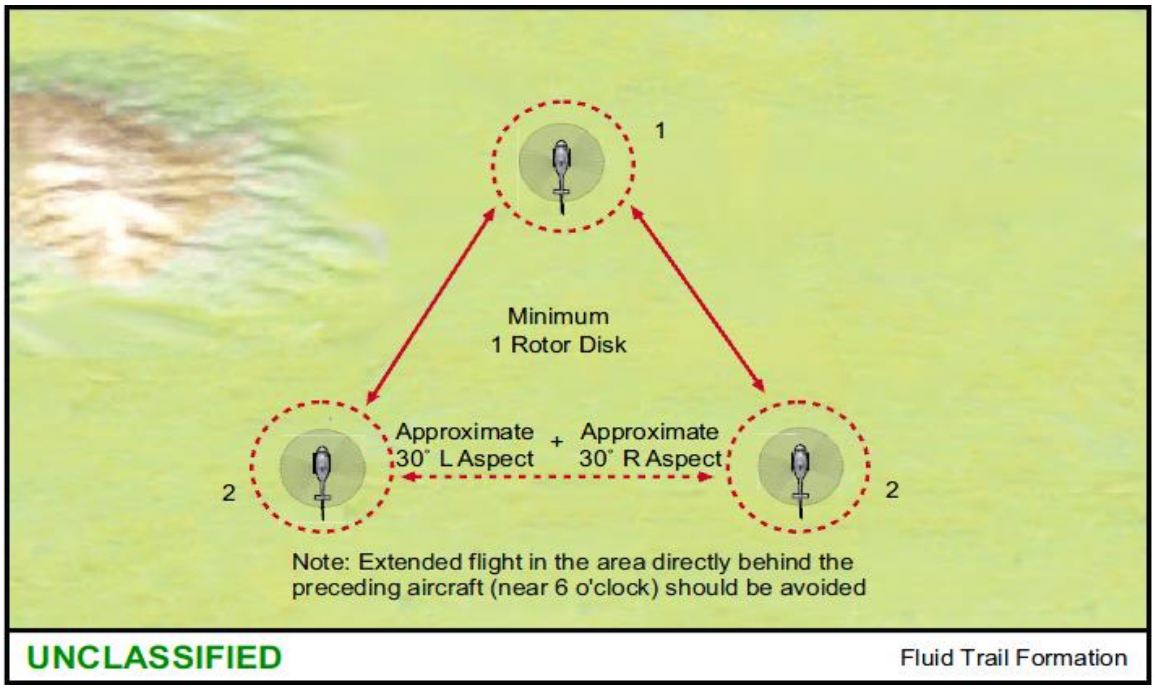
10.7.2. Staggered Formation. Flown at 1-3 RD from the 30-45 deg aspect.

Figure 10.2. ***Staggered Formation.***



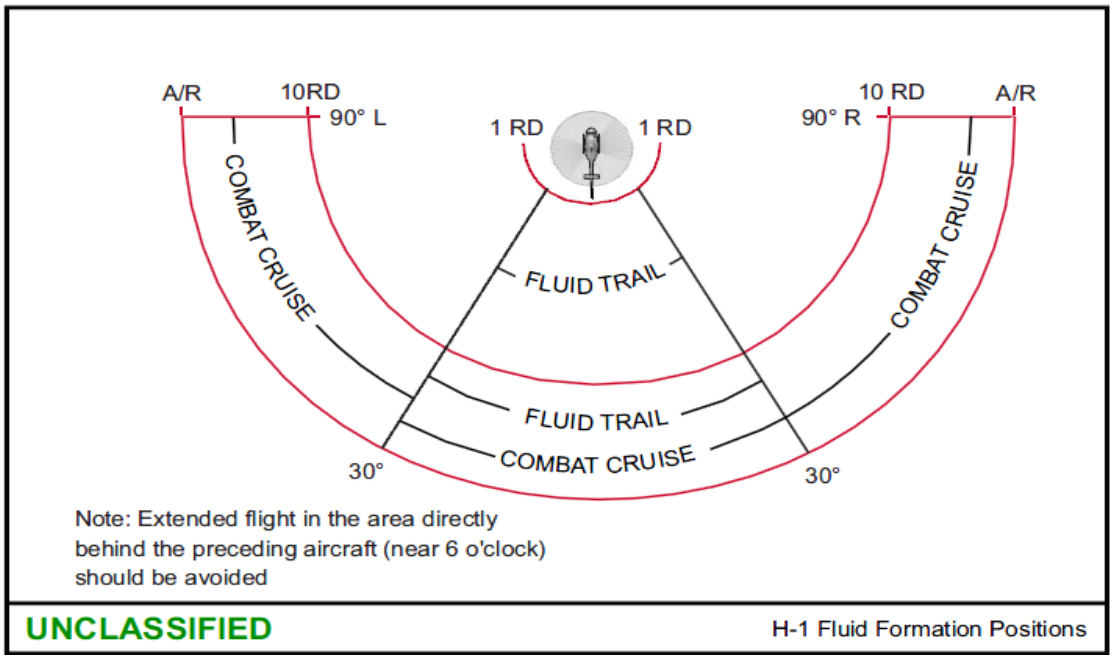
10.7.3. Fluid Trail. Flown at 1 RD out to 10 RD or approximately 500'. Maintain position within a 30-deg cone left or right of lead. Extended flight with less than 10-degree offset from lead's 6 o'clock is not recommended, but may be required in narrowing terrain.

Figure 10.3. ***Fluid Trail Formation.***



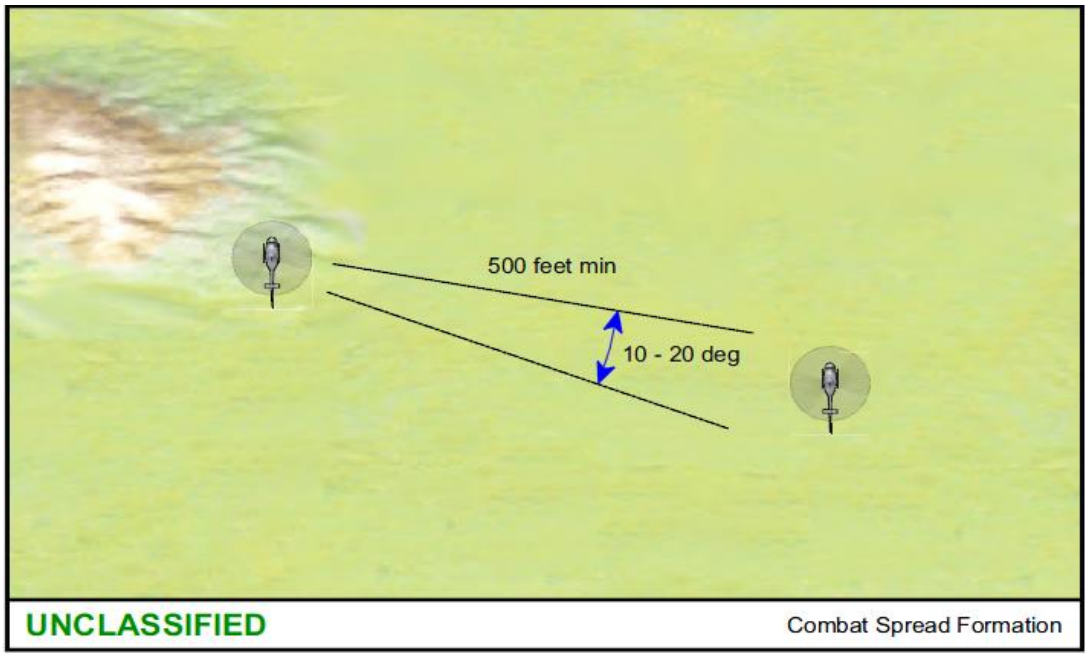
10.7.4. Combat Cruise Formation. Minimum separation is 10 RD or 500 feet between all aircraft. Wingmen have the ability to fly as needed behind the 3-9 line or as directed by lead. It is still dangerous to maintain a position directly behind lead because of the reduced ability to pick up closure rates. Since reduced separation is typically required for landing, lead may direct a change to another formation (fluid trail, fixed trail, or staggered) at any designated point en route (typically the initial point). Aircraft separation distances should be driven by METT-TC (mission, enemy, terrain and weather; troops and support available – time available; civil considerations).

Figure 10.4. ***Fluid Formation Positions.***



10.7.4.1. Combat Spread. This is a subset of Combat Cruise that is flown with the trail aircraft maintaining 10 to 20 deg behind leads 3-9 line.

Figure 10.5. ***Combat Spread Formation.***



10.8. Formation Taxi. The flight normally taxis in order with a minimum of 100 feet of spacing from the main rotor to the tail rotor.

10.9. Formation Take-off. Normal formation take-offs will be from the staggered position. There will be a five second delay from the last take-off call made by the formation (either

acknowledgement of ATC instructions or RT call) and lifting off from the ground. If accomplished during a lead change on the ground, the new wing aircraft will remain on the ground until all aircraft have passed abeam.

10.9.1. Delayed Take-off. For a delayed take-off, wingman will delay five seconds after the preceding aircraft takes off.

10.10. Lead Changes. Formation lead changes require an unmistakable transfer of responsibilities from one flight member to another. The new formation lead aircraft assumes formation lead duties.

10.10.1. Formation lead will direct all lead changes. Do not accomplish formation lead changes and formation changes (position or type) simultaneously.

10.10.2. Lead will maneuver clear of the formation and then reenter the formation as briefed. Formation lead will use scanners to stay clear of the flight. Variations of lead change procedures will be briefed as applicable.

10.10.3. Settings for the transponder and lights typically change during lead changes.

10.10.4. When radios are used, flight lead will direct the lead change by stating flight callsign, dash position, assume formation lead (i.e., "BLUE 05 FLIGHT, TWO ASSUME LEAD"). The aircraft assuming formation lead will state "ABEAM" when approaching abeam position and ready to assume formation lead. Formation lead, when ready to relinquish formation lead, will state "VISUAL." The new formation lead states "ASSUMING LEAD."

10.10.5. Maintain original formation call signs regardless of current position or number of lead changes.

10.11. Breakup Procedures.

10.11.1. VMC Blind. Ensure all members of the formation are briefed on the specific VMC Blind procedures. If one aircraft maintains SA while the other is blind training may continue as long as one aircraft remains visual at all times.

10.11.1.1. If a crew receives a "BLIND" call from a formation partner, a crewmember with sight of the other aircraft should immediately announce it to the PF.

10.11.1.2. If a crewmember who should be visual with the other formation aircraft loses sight of that aircraft, they should immediately announce the loss to the crew. If no crewmember has sight of the other formation aircraft, the pilot should immediately radio to the other formation aircraft (e.g., "BLUE 22 FLIGHT, BLUE 10 IS BLIND").

10.11.1.3. If a crewmember is visual, the pilot should respond with a "VISUAL" call (e.g., "BLUE 22 FLIGHT, BLUE 22 IS VISUAL") followed by clock position and distance FROM the blind aircraft (e.g., "BLUE 22 IS AT YOUR 2 O'CLOCK FOR 1/2 MILE").

10.11.1.4. If no one on the visual aircraft immediately announces "VISUAL," the pilot should respond with "BLIND" confirmation (e.g., "BLUE 22 FLIGHT, BLUE 22 IS BLIND").

10.11.1.5. If neither aircraft is visual, but lead has comfortable SA on the wingman (e.g., knew they were moving south around a mesa, with 0.3 NM spacing), lead could announce "CONTINUE" followed by directions.

10.11.1.6. If neither aircraft is visual, and lead also has poor SA on the wingman, lead might direct the flight to execute standard or prebriefed blind actions.

10.11.2. Instrument Meteorological Conditions Avoidance. When deteriorating weather conditions are encountered en route, consider options that maintain formation integrity until an alternate plan of action can be determined. The following are alternatives to entering IMC.

10.11.2.1. Alter the course to circumnavigate the weather.

10.11.2.2. Reverse the course to remain in VMC.

10.11.2.3. Send a "weather ship" ahead of the formation.

10.11.2.4. Land.

10.11.3. Lost Wingman (IMC). Lost wingman occurs when a wingman loses sight of the preceding aircraft due to IMC. Prior to executing the pre-briefed formation lost wingman procedure, it should be understood that if you are VMC, then stay VMC. If one aircraft goes inadvertent IMC, the situation will only be made worse if a second aircraft enters the clouds as well.

10.11.3.1. When a wingman inadvertently enters IMC and loses visual contact with the preceding aircraft, it is imperative that all members of the formation react quickly and precisely to prevent a midair collision. The aircraft losing visual contact will transmit their call sign, formation position, and "LOST WINGMAN" (e.g., "BLADE 22 FLIGHT, TWO IS LOST WINGMAN"). Lead will immediately initiate a breakup by transmitting "EXECUTE," type of breakup (mountainous or non-mountainous), base heading (mag), airspeed, and MSA for that route segment. Wingmen should execute breakup procedures based on the transmitted heading, airspeed, and MSA. Wingmen need to acknowledge flight lead's formation breakup call and turn their lights and transponders on. Once the formation executes the lost wingman procedure, flight lead will transmit any changes to headings, airspeed, and MSA. Changes may be required to accommodate several situations, such as formation continues on course, formation aborts mission, and MSA changes for next leg of route. During the formation briefing, flight lead must ensure that the wingmen know how formation breakup parameters will be expressed (e.g., Mag heading, indicated airspeed, and mean sea level [MSL] altitude) and that wingmen can readily read the chosen values in the cockpit.

10.11.3.2. If an aircraft calls "LOST WINGMAN" and the preceding aircraft is still in sight, maintain formation position on that aircraft. If visual contact of the preceding aircraft is subsequently lost, execute lost visual contact procedures for the original formation position.

10.11.3.3. If a wingman calls "LOST WINGMAN" and flight lead is still VMC and able to assure terrain and obstacle clearance, lead should stay in VMC. Flight lead must still make base heading, airspeed, and MSA calls for the wingman executing the lost visual contact procedure.

10.11.3.4. Mountainous IMC Formation Breakup. Lost visual procedures in a mountainous environment, especially low-level, is a critical situation and the tactical environment, existing weather conditions, and terrain may require deviations. See **Figure 10.6**, Mountainous IMC Formation Breakup.

10.11.3.4.1. Upon hearing the "LOST WINGMAN" call from a wingman in the formation, lead immediately transmits "EXECUTE MOUNTAINOUS," base heading, base airspeed, and MSA (e.g., "EXECUTE MOUNTAINOUS, HEADING 180, AIRSPEED 90 KIAS, MSA 5,500 FEET"). If possible, the base airspeed should be high enough to allow more maneuvering room and to avoid excessively slow airspeeds for wingmen.

10.11.3.4.2. Formation elements then acknowledge with their Dash position.

10.11.3.4.3. Dash-2 will adjust to maintain base airspeed minus ten knots and climb 300 feet above MSA.

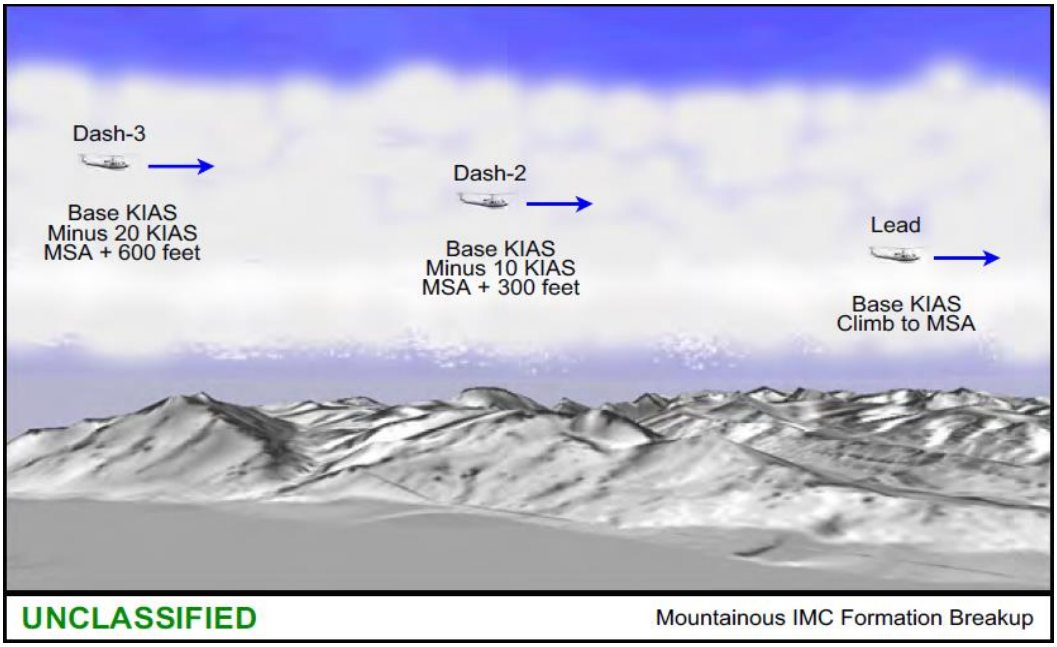
10.11.3.4.4. Dash-3 will adjust to maintain base airspeed minus 20 knots and climb 600 feet above MSA.

10.11.3.4.5. Dash-4 will adjust to maintain base airspeed minus 30 knots and climb 900 feet above MSA.

10.11.3.4.6. Rate of climb will be 500 ft/min unless otherwise prebriefed.

10.11.3.4.7. The airspeed adjustment is maintained for 3 minutes after reaching assigned altitude, and then all aircraft will accelerate to prebriefed KIAS.

Figure 10.6. ***Mountainous IMC Formation Breakup.***



10.11.3.5. Non-Mountainous IMC Formation Breakup. See **Figure 10.7**, Non-Mountainous IMC Formation Breakup.

10.11.3.5.1. Upon hearing the "LOST WINGMAN" call from a wingman in the formation, lead immediately transmits "EXECUTE NON-MOUNTAINOUS," base heading, base airspeed, and MSA (e.g., "EXECUTE NON-MOUNTAINOUS, HEADING 180, AIRSPEED 90 KIAS, MSA 3400 FEET").

10.11.3.5.2. The formation elements then acknowledge with their Dash position.

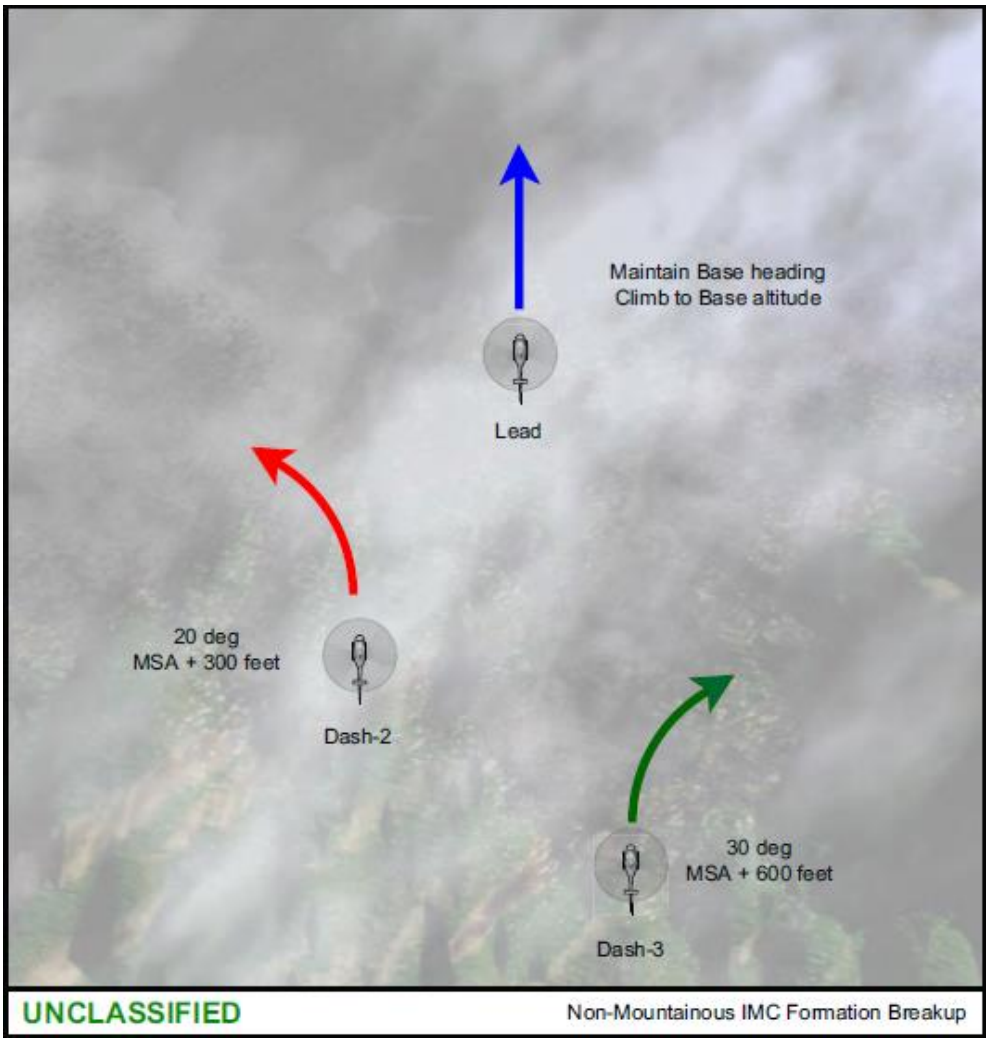
10.11.3.5.3. Formation lead maintains a base heading (usually straight-ahead) and airspeed (this may require an acceleration for large formations), and climbs to MSA.

10.11.3.5.4. Wingmen turn away from the preceding aircraft and climb according to the following procedure: multiply Dash position by ten degrees for heading offset and stack 300 feet above preceding aircraft. If directly behind preceding aircraft, even number Dash turn right and odd number Dash turn left to leave the formation.

10.11.3.5.5. Rate of climb will be 500 feet/minute unless otherwise prebriefed. Airspeed during the maneuver may vary from the base airspeed as needed.

10.11.3.5.6. After reaching assigned altitude, each wingman will time for 30 seconds and then resume base heading.

Figure 10.7. ***Non-Mountainous IMC Breakup.***



10.11.3.6. Instrument Flight Publications. After lost wingman procedures, an aircraft that entered IMC likely requires changes to settings for lights, transponder, pitot heat, and communications radios, as required. Instrument flight publications should be immediately available. The PF should concentrate on maintaining aircraft control via instruments while other crew members scan for terrain and breaks in clouds.

10.11.3.7. Dissimilar Formations. When operating in dissimilar formations, airframe capabilities must be understood and incorporated into mission planning.

10.11.4. Rejoin After Lost Visual Procedures. Flight lead will decide whether to abort or continue the mission.

10.11.5. After completing a breakup, formation lead will contact ATC facilities for an IFR clearance for the entire formation with an appropriate facility. When ATC facilities are not available and/or formation lead is VMC, formation lead may designate a specific letdown point (by waypoint number or distance short of a waypoint) and MSL altitude. ***WARNING:*** Descent from IMC in an attempt to reach VMC without the benefit of ATC is extremely hazardous and should only be used as a last resort.

10.11.5.1. As Dash-2 reaches the letdown point, the pilot will report altitude departing and descend at 500 fpm until reaching the designated altitude. Dash-2 will report reaching VMC, ensure position and anti-collision lights are on, and accelerate to catch formation lead.

10.11.5.2. When Dash-3 reaches the letdown point and Dash-2 reports reaching VMC, Dash-3 will follow the same letdown procedure as Dash-2.

10.11.5.3. When Dash-4 reaches the letdown point and Dash-3 reports reaching VMC, Dash-4 will follow the same letdown procedure as Dash-2.

10.11.5.4. As the flight rejoins, each aircraft will return to mission lighting configuration after the succeeding aircraft rejoins. When the entire flight is rejoined, all aircraft will recheck mission lighting. If any aircraft does not achieve VMC at the designated altitude, it will immediately climb back to its assigned altitude and advise formation lead. As a general guide, formation lead will not clear the flight down until formation lead has appropriate weather minimums for the mission being flown (operational or training).

10.11.6. Formation Procedures after Breakup. After initiating breakup procedures, all aircraft in the formation turn transponder to normal, anti-collision light on (position lights to steady bright for nighttime operations).

10.12. Formation Rejoins.

10.12.1. Straight ahead rejoin. Normally preformed at cruise airspeed with lead directing a specific heading for the formation.

10.12.2. Turning Rejoin. Normally performed at 80 KIAS and 15 degree AOB with a maximum airspeed and AOB of 80 KIAS and 20 degrees. Perform turning rejoins for training purposes during the day only. (T-2)

Chapter 11

NIGHT OPERATION PROCEDURES

11.1. Night Operations (Unaided).

11.1.1. Altitude Restrictions. Minimum en route altitude for unaided night navigation is 500' AHO within 5 NM of the route of flight unless published helicopter routes dictate a lower altitude. (T-2)

11.1.2. Illumination Requirements for Helicopter Landing Areas. Operations into unprepared sites between official sunset and official sunrise are allowed only if the area is outlined by discernible lights. (T-2)

11.1.2.1. Landing and/or searchlights will be on for all unaided night takeoffs and prior to turning final for night approaches unless safety, weather, excessive glare, or aircraft operational procedures dictate otherwise. Departures should use the landing or searchlight until the aircraft is above departure path barriers.

11.1.3. Crew Coordination. Mandatory PNF calls are:

11.1.3.1. During night VFR descents, 1,000 feet above intended altitude, 500 feet above intended altitude, 100 feet above intended altitude, and intended altitude. (T-2)

11.1.3.2. Advisory calls are IAW **paragraph 7.1.2** and succeeding sub-paragraphs.

11.1.3.3. On final approach when rates of descent are greater than 500 feet per minute (fpm). "Go-around" if rate of descent exceeds 800 fpm. (T-2)

11.2. Night Operations (NVG).

11.2.1. Altitude Restrictions. The minimum en route altitude is 100' AHO in surveyed low-level areas. (T-0)

11.2.2. Exterior Aircraft Lighting. Follow guidance written in **Table 2.1 and Table 4.1**.

11.2.3. Terminal Area Operations.

11.2.3.1. Do not leave the en route altitude until reaching the terminal operations area. Brief and conduct an unprepared site evaluation prior to the approach according to daytime unprepared site procedures in **Chapter 7**. (T-2) ***NOTE*:** An unprepared site evaluation is not required for tactical approaches at sites discussed in mission planning and briefing prior to flight.

11.2.3.2. Approaches at night are generally flown with slower rates of closure and descent than approaches during the day. As closure rates decrease, the time the aircraft remains in the unsafe area of the height velocity envelope increases. Coordinate advisory calls and visual cues throughout the approach to reach approximately 200' ASE with an approximate groundspeed of 30 knots. During the last 100 feet of the approach, limit the descent rate to approximately 300 fpm. During the final approach, consider using the infrared searchlight to enhance visual cues.

11.2.4. Crew Coordination:

11.2.4.1. Cruise flight on NVGs is similar to unaided cruise flight. The PF is primarily responsible for aircraft control; the PNF navigates; and the scanner provides terrain and obstacle clearance inputs. The PNF will monitor the gauges and keep the crew informed of the aircraft's position, significant obstacles, and mission progress. (T-2)

11.2.4.2. Crew coordination during terminal operations is critical. The entire crew will help each other maintain orientation to the landing site while in the pattern. Dropping chemsticks during the low reconnaissance may help establish a reference point for identifying the intended landing spot.

11.2.4.3. PNF mandatory calls are:

11.2.4.3.1. During night VFR descents, 1,000 feet above intended altitude, 500 feet above intended altitude, 100 feet above intended altitude, and intended altitude. (T-2)

11.2.4.3.2. Advisory calls are IAW **paragraph 7.1.2** and succeeding sub-paragraphs.

11.2.4.3.3. On final approach, when rates of descent are greater than 500 fpm. "Go-around" if rate of descent exceeds 800 fpm and airspeeds less than 40 KIAS. (T-2)

11.2.4.4. Reduced peripheral vision degrades the ability to perceive motion, especially while in a hover. Closure rate, descent rate, hover drift, and altitude must be consciously and deliberately perceived because peripheral and instinctive analysis are insufficient. Frequent, deliberate head-turning to examine groundspeed and hover-drift is required. Scanners are particularly valuable in helping the PF with early detection of excessive closure rates, descent rates, and any unintended drift. The scanner's primary duties are obstacle clearance, hover altitude reference, and drift detection.

Chapter 12

ADDITIONAL OPERATING PROCEDURES

12.1. Acceptance and FCF Procedures.

12.1.1. General. Acceptance and functional check flights are inherently more dangerous than normal flights. In order to be safely flown, aircrew must be knowledgeable of aircraft systems, limits, and check flight procedures.

12.1.2. Maintenance Briefing. Prior to any FCF, the crew will receive a maintenance briefing. (T-2) The briefing should outline FCF requirements, ensure a review of maintenance documentation, and clarify any questions. After aircraft release, or at the end of the day, the FCF crew will provide a thorough debrief to maintenance. Maintenance will ensure FCF checklists and documentation are complete. (T-2)

12.1.3. Local Procedures. Units define their local FCF area. Follow guidance in TO 1-1-300, *Acceptance/Functional Check Flight and Maintenance Operational Checks*, for flight conditions.

12.2. Search and Rescue Procedures.

12.2.1. General. All SAR requests and information should flow through a single point of contact, such as the squadron duty controller or operations supervisor. Their primary role is to collect all pertinent facts necessary to initiate the mission planning. They will also seek flight authorization from the commander or the commander's representative, and advise the Joint Rescue Coordination Center of the unit's ability to support the search.

12.2.1.1. All SAR missions are potentially increased risk. Unit and wing leadership must consider mission requirements and weigh the risk potential before accepting a SAR mission.

12.2.2. On scene Procedures. Perform a power available check prior to search operations. Perform the power available check either enroute or at the search location. Perform the power check as near as possible to the same PA and outside air temperature as the recovery site. Compare maximum power available with power required for the intended hover heights. ***NOTE:*** This comparison determines the power margin for the operation. When power margin is ***10 Percent*** or less, a second aircrew member will confirm power requirements. Do not assume power available in flight is equal to power available at the site.

12.3. Dropped Object Prevention. During preflight inspections, the aircrew will pay particular attention to panels and components, which are potential dropped objects. Secure all cargo and mission equipment inside the aircraft prior to any aircraft movement. (T-1) ***WARNING:*** Loose objects can become hazardous projectiles during any violent maneuver or hard landing. Secure objects to prevent personnel injury or aircraft damage.

12.3.1. Dropped-Object Prevention Program. In addition to requirements in KAFBI 21-122, *Foreign Object Damage (FOD) and Dropped Object Prevention Program* the following applies to 23 FTS aircrew:

12.3.1.1. If an item is unintentionally dropped during flight, aircrew will discontinue training, note the approximate location, and report the incident as soon as possible to the Ops Sup via Blue Operations or other means.

12.3.1.2. Ensure the dropped-object worksheet is completed prior to leaving maintenance debrief. An AETC Form 645-4 must also be completed if the dropped object is known or suspected to have caused damage or injury or was a result of an aircraft malfunction.

12.3.1.3. While off-station, notify the Ops Sup by telephone of a dropped-object incident. Upon return, complete the dropped-object worksheet during the maintenance debrief.

12.3.1.4. Assist Wing Safety in determining the cause of the dropped object.

12.3.1.5. If the dropped-object worksheet is not completed at debrief, the aircraft commander will forward a completed worksheet to Squadron Safety and MOC as soon as possible.

12.4. Wake Turbulence Avoidance. Pilots will be familiar with and apply the wake turbulence avoidance procedures in FLIP during all operations. Use caution when operating in refueling areas with other aircraft in close proximity. In addition, wake turbulence must be considered when operating near other aircraft, particularly around small, fixed-wing aircraft. If in doubt, increase your distance or land well clear to preclude damage.

12.5. Laser Exposure Reporting. IAW 58 SOWI 48-139. If aircrew suspects laser exposure, immediately contact the Operations Supervisor and the Safety On-call Officer.

12.6. In-flight Emergency Procedures. In the event of an actual in-flight emergency during student training, the crewmember on the controls will apply the MATR principle and work with the crew. When the situation permits, the IP will assume the controls with a 3-way verbal transfer. The student will then assist the IP as directed. Notify controlling agencies as soon as practical after completing emergency procedures. Refer to AETC Form 645-4 (IMT) in Attachment 3 for emergency/precautionary landings trend data reporting. After termination of the flight, refer to the IFG PL checklist to ensure follow-up actions are completed.

12.6.1. Forced or Precautionary Landings. The helicopter has a unique ability to land nearly anywhere, which provides the pilot with a tremendous safety advantage. If the pilot becomes doubtful of the helicopter's airworthiness (**see paragraph 12.6.1.1**) or encounters hazardous weather conditions (**see paragraph 12.6.1.2**), he or she will execute a precautionary landing, provided landing conditions are not more hazardous than the in-flight problem. Aircrew safety takes priority over aircraft security and maintenance accessibility. Report all precautionary landings through appropriate channels as soon as communications are established. For all forced or precautionary landings reference the IFG procedures as soon as practical.

12.6.1.1. Forced or Precautionary Landings Due to In-Flight Malfunction. The aircrew will comply with the flight manual and local procedures. In the event a forced or precautionary landing occurs at a location where communications are not available, the aircrew will remain at the landing site and await assistance. However, if a greater hazard exists to the crew or aircraft by landing at a site, the aircrew will continue to the nearest

safe landing area. Base the decision to resume flight under these circumstances on a thorough evaluation of all the hazards and risks involved.

12.6.1.2. Precautionary Landings Due to Weather. If weather deteriorates during VFR operations, a precautionary landing is a viable option. Course reversal, course deviation, or continuation under IFR are also viable options. The aircraft commander may authorize further flight after a precautionary landing for weather. He or she will make a reasonable effort to notify appropriate agencies of the precautionary landing, and to gain additional weather information.

12.6.1.3. Precautionary Landings Due to Low Fuel. If it becomes necessary to land due to a low fuel status, the aircraft commander will remain with the aircraft until recovery is affected. Aircraft will be landed at the nearest available safe landing area after illumination of the low fuel warning system.

12.6.2. Downed Aircraft Site. The crew of the first aircraft discovering an accident/incident will orbit the area not lower than 500' AGL, squawk emergency, and contact Approach Control, giving approximate location and request that radar position be marked and reported to Crash Control. The aircraft will continue to orbit as long as practical, or until FLATIRON or a maintenance recovery aircraft arrives.

12.6.2.1. Extreme care will be exercised if landing is necessary to render emergency assistance to the downed aircrew. Aircraft landing at the crash site will ensure adequate safe landing area remains for FLATIRON. Pilots will monitor frequencies 30.10, 243.0, and 121.5 as able.

12.6.3. Aircraft Recovery Following a Precautionary Landing (PL). When recovering an aircraft following a PL for maintenance reasons, aircrew must receive SQ/CC or designated representative, approval prior to takeoff, whenever possible. Prior to takeoff, the pilot will ensure all maintenance actions are completed in the aircraft forms. Additionally, SQ/CC, or designated representative, must approve all one-time flights for maintenance (e.g. downgrade Red X condition) and the approval must be properly documented in the aircraft forms by the designated aircrew or maintenance member. For other than maintenance reasons, the aircraft commander is the approval authority. Aircrew will contact the maintenance operations center (MOC) as soon as possible and notify the Ops Sup of the incident.

12.7. Fort Rucker Mishap Reporting.

12.7.1. Aircraft Mishap Reporting. Hub radio will be notified of all aircraft incidents as soon as possible. An AETC FORM 645-4 will be completed for any aircraft damage, whether in-flight or on the ground. An AETC FORM 645-4 may be filled out at any time even though it does not meet the above requirements if, in the opinion of the individual initiating the form, the incident warrants the attention of 23 FTS/SE. Copies of the initial AETC FORM 645-4 will be provided to 23 FTS/SE.

12.7.2. Ground Mishap Reporting. Supervisors will notify 23 FTS/SE of all flightline mishaps or ground injuries. Supervisors will ensure an AETC Form 435, Mishap Data Worksheet, is accomplished and forwarded to the squadron safety office within 1 duty day after the incident. Upon notification of a mishap, SE will inform the wing operations center (WOC) and MOC as soon as possible. 58 SOW/SE will determine if further investigation is required. Report the following types of situations: Personal injury, regardless of severity.

Property or equipment damage. Injury or death to non-Air Force civilian due to an Air Force operation. Damage to civilian property or vehicles due to an Air Force operation.

12.8. Hazardous Wildlife Reporting. Report any hazardous wildlife activity to the OPS Desk as soon as possible. The OPS Desk will notify aircrew of any changes to the bird condition via Blue Ops Internal or via landline if unable. The OPS desk will also provide this information to appropriate controlling agencies in a timely manner.

12.9. Bird Strikes. For suspected bird strikes, the crew should land as soon as practical to investigate for any damage. Once on the ground, the crew may elect to shutdown and investigate the aircraft more thoroughly for any bird strikes. The aircraft commander is the approval authority to continue the mission or return to the home aerodrome if no damage is noted. Do not RED X the aircraft if there is no damage but notify maintenance of the bird strike as soon as practical. If there is damage to the aircraft, maintenance will determine if the aircraft is airworthy. However, the aircraft commander still reserves the right to discontinue flying for damage and declare a PL. If it cannot be returned, the aircraft will then be "turned over" to maintenance, who will recover IAW their standard procedures for PL recovery. In all cases, the AF IMT Form 853 will be filled out immediately upon returning to home base and a copy given to maintenance and the safety office. If there's bird strike damage, complete AETC FORM 645-4 and report to SE. The party discovering the bird strike will ensure any bird remains are collected and forwarded to SE.

12.10. In-flight Physiological Incidents/Airsickness. In addition to requirements in AFMAN 91-223, *Aviation Safety Investigations and Reports*, AFI 48-123, *Medical Examinations and Standards*, and the appropriate syllabus, the following applies to 23 FTS aircrew:

12.10.1. If aircrew members aboard 23 FTS aircraft become airsick, all training shall cease until the situation is resolved. Airsickness is defined as either active or passive. Active airsickness includes vomiting. Passive airsickness does not include vomiting but, because of discomfort or nausea, results in a significant deviation in the lesson profile or the student's ability to complete tasks. Following any flight physiological incident, immediately stop training and contact the Ops Sup as soon as practical.

12.10.2. If passive airsickness can be resolved by temporarily halting aggressive maneuvers or landing, training may resume once the aircraft commander is satisfied that the aircrew member experiencing airsickness is able to perform his or her duties. If the airsickness is not resolved by this break in training or returns following it, the aircraft commanders will RTB. In all cases, ensure all appropriate actions are taken upon landing IAW AETCI 36-2205.

12.10.3. If active airsickness is experienced, the aircrew may land at a suitable landing area (stagefield, FBO, RT, etc.) in order to establish the feasibility of continuing training. If the active airsickness is resolved, training may be resumed at the discretion of the aircraft commander. If the airsickness is not resolved by this break in training or subsequently returns, the aircraft commander will RTB. In all cases, ensure all appropriate actions are taken upon landing IAW AETCI 36-2205.

12.11. In-flight Injuries. If an aircrew member sustains an injury while flying and requires medical attention, the aircraft commander will take the following steps:

12.11.1. Declare an in-flight emergency with ATC or Hub as appropriate and contact Blue Ops, if able.

12.11.2. Proceed direct to home aerodrome immediately, landing at first available B pad or as directed by Tower for transload. If unable to proceed to direct to home aerodrome due to fuel state, coordinate with ATC/Hub for the closest suitable location for transload.

12.11.3. If a life threatening emergency exists, the aircraft commander can proceed direct to the closest hospital with an emergency room. Coordinate with Hub/Ops to allow the hospital to prepare for the aircrafts arrival.

12.12. Emergency Coordination. The goal of the above procedures is to get medical attention to the injured personnel as quickly as possible. The aircraft commander and the Ops Sup will have to make real-time decisions to determine the best course of action.

TOD D. WOLTERS, Lt Gen, USAF
DCS, Operations

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

Executive Order 9397, *Numbering System for Federal Accounts Relating to Individual Persons*, 22 November 1943

Title 37 United States Code, Section 301a, *Incentive Pay*, 5 January 2009

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AFPD 11-2, *Aircraft Rules and Procedures*, 14 January 2005

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AFI 13-217, *Drop Zone and Landing Zone Operations*, 10 May 2007

AFI 91-202, *The US Air Force Mishap Prevention Program*, 1 August 1998

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TO 1-1-300, *Acceptance/Functional Check Flight and Maintenance Operational Checks*, 1 August 2004

TO 12S10-2AVS9-2, *Maintenance Manual - Intermediate With Illustrated Parts Breakdown, Image Intensifier Set, Night Vision, Type AN/AVS-9(V)*, 1 April 2006

Adopted Forms (or IMTs)

DD Form 175, *Flight Plan, Military*

DD Form 175-1, *Flight Weather Briefing*

AF IMT 70, *Pilot's Flight Plan and Flight Log*

AF IMT 457, *USAF Hazard Report*

AF IMT 651, *Hazardous Air Traffic Report (HATR)*

AF Form 847, *Recommendation for Change of Publication*

AFTO Form 781, *ARMS Aircrew/Mission Flight Data Document*

AETC Form 645-4 *Trend Data Report*

Abbreviations and Acronyms

AC—aircraft commander

AGL—above ground level

AHO—above highest obstacle

AIE—alternate insertion extraction

ASE—above site elevation

ATC—air traffic control

CC—commander

CHUM—Chart Updating Manual

DCO—document control officer

EMI—equivalent moon illumination

EP—emergency procedure

ETA—estimated time of arrival

ETD—estimated time of departureETE—estimated time en route

FCF—functional flight check

FCIF—flightcrew information file

FE—Flight Engineer

FLIP—flight information publications

fpm—feet per minute

ID—identification

IFG—inflight guide

IFR—instrument flight rules

IMC—instrument meteorological conditions

IP—instructor pilot

JOG—joint operations graphic

KIAS—knots indicated airspeed

KGS—knots ground speed

LZ—landing zone

MSA—minimum safe altitude

NM—nautical mile

Nr—rotor speed (in rpm)

NVG—night vision goggles

OG—operations group

OGE—out of ground effect

OPR—office of primary responsibility

PA—pressure altitude

PF—pilot flying

PNF—pilot not flying

PSI—pounds per square inch

RD—rotor disk

RM—rope master

RPM—revolutions per minute

RT—Remote training site

SEF—simulated engine failure

SM—statute mile

SUPT-H—specialized undergraduate pilot training - helicopter

TACAN—tactical air navigation

TL—team leader

TM—training manual

TOLD—takeoff and landing data

VFR—visual flight rules

VMC—visual meteorological conditions

VOR—very high frequency omni-directional range station

Terms

Abort—To terminate a specific maneuver, or turn back from or cut short a mission before successful completion for reasons other than enemy action. This may occur after an aircraft is airborne or on the ground before takeoff.

Blind—No visual contact with friendly aircraft (wingman). The opposite of "visual."

Caution—An operating procedure, technique, or information that may result in damage to equipment if not carefully followed.

Contact—Term used to acknowledge sighting of a specific reference point.

Divert—An operational term for the in-flight change to a mission's intended point of landing or mission location.

Emergency Procedures Evaluation (EPE)—A verbal evaluation used to evaluate emergency procedures and systems knowledge.

Effective Translational Lift (ETL)—The point where the main and tail rotor systems fly into undisturbed air and become more efficient, approximately 20 knots for the H-1.

Inadvertent IMC—The unplanned entry into IMC during VMC flight. Requires immediate change from VFR to IFR flight.

Initial Point—A point near LZ when final course alterations are made to arrive at the specified objective.

Knock It Off—A call by anyone in the crew or formation to discontinue maneuvering. Usually called when an unsafe situation is developing.

Note—Operating procedures, techniques, etc., which are essential to emphasize.

Objective Point—A drop zone, LZ, or extraction zone or point at which a low-level route terminates.

Rejoin—The procedure for two or more aircraft in a formation to close the separation distance after a breakout.

Rotor Disk (RD)—A measure of separation within a helicopter formation based on the largest rotor size of any aircraft within the formation.

Visual—Sighting of a friendly aircraft/ground position. The opposite of "blind."

Warning—An operating procedure, technique, or information that may result in death or injury if not carefully followed.

Attachment 2

HELICOPTER MISSION EQUIPMENT CLEANING AND INSPECTION PROCEDURES

A2.1. This publication attachment contains information and procedures for inspecting and maintaining mission equipment currently approved for and being used on the TH-1H. Flight Engineers (FEs) will use only those checklists covering equipment applicable to their unit/mission. Members are authorized to carry only those checklists applicable to their unit/mission.

A2.2. Supplemented information is additional steps or more restrictive guidance and will be published as a MAJCOM supplement. MAJCOMs can further supplement this publication with additional USAF approved mission equipment information. Forward supplements to parent MAJCOM through Stan Eval channels for approval and implementation.

A2.3. ROPE LADDER PROCEDURES.

A2.3.1. The rope ladder preflight checklist will be accomplished prior to the first rope ladder deployment of a particular evolution or mission. Preflight requirement is once per flight/sortie regardless of the number of evolutions performed.

A2.3.1.1. ***WARNING***: If any nicks, excessive fraying or broken strands are found, do not use the rope ladder for live operations. Serious injury or death may result. Reference **Figure A2.1**

Figure A2.1. ***Excessive Fraying.***

A2.3.1.2. Excessive fraying would not allow you to see the flow/run of the fabric.

Figure A2.2. ***Cut Webbing.***

A2.3.2. Nicks/cuts normally occur from the side and are usually caused by improper use of a knife.

Figure A2.3. ***New Rope Ladder Nylon Webbing.***

A2.3.3. No rust allowed on the rivet/washer assembly. Nylon webbing holes for the rivet/washer area are not allowed to be elongated.

A2.3.4. The nylon webbing is a rough texture, not smooth like a vehicle seat belt.

A2.4. ROPE LADDER PREFLIGHT CHECKLIST.

A2.4.1. Rope Ladder Forms - **Checked.** Review form(s) for equipment serviceability, overdue inspections, and maintenance/delayed discrepancies. Prior to using equipment, ensure data indicating the preflight checklist was accomplished is annotated on the applicable form(s). Annotate any discrepancies found during preflight.

A2.4.2. Anchor Cable - **Checked.** (IAW T.O. 1-1A-8 and this checklist.)

A2.4.3. Cargo Tiedown Fittings - **Checked.** Inspect for cracks, security and serviceability.

A2.4.4. Cabin Floor and Lower Doorframe - **Checked.** Inspect for sharp edges and tape as necessary. Ensure cabin floor is clean of oil, grease and solvents.

A2.4.4.1. ***WARNING:*** Do not use carabiners if the spring-loaded gates do not operate properly or if the locking nut cannot be manipulated (loosened and tightened) by hand.

A2.4.5. Detacher Assembly Attachment Straps and Carabiners - **Checked.** Inspect for serviceability, webbing for abrasions, cuts, fraying, kinks and knots. Check carabiners for cracks and corrosion; ensure the spring-loaded gates operate freely and are spring-loaded to the closed position and the locking nut can be manipulated (loosened and tightened) by hand.

A2.4.6. Detacher Assembly - **Checked.** Inspect for corrosion, cracks, loose or missing hardware and serviceability.

A2.4.6.1. ***CAUTION:*** Detacher assembly and rope ladder are manufactured and assembled as a "matched set" and must never be separated. Do not mix and match differently numbered detacher assemblies and rope ladders.

A2.4.7. Detacher Assembly and Rope Ladder Manufacture ID Numbers Match - **Checked.** Ensure identification numbers between the detacher assembly and rope ladder match.

A2.4.7.1. ***CAUTION:*** When positioning the rope ladder eyelet's onto the base plate assembly, ensure eyelet's are placed underneath the bolt heads. Failure to do so will cause eyelet's to bind on the fastener pins during the jettison sequence, preventing the rope ladder from being jettisoned.

A2.4.8. Release Handle and Control Shaft Assembly - **Checked.** Inspect release mechanism for proper operation, corrosion and cracks. Fastener pins for corrosion, cracks and serviceability. Pip-pin for proper operation and security. Rope ladder eyelet's for corrosion, cracks, security and proper engagement.

A2.4.9. Standoff Wheel Assemblies - **Checked.** Inspect assemblies for corrosion, cracks, and freedom of movement, serviceability and locking nuts for security.

A2.4.9.1. ***CAUTION:*** During the rope ladder preflight or while setting up the ladder for deployment, dragging the rope ladder on concrete/asphalt should be kept to a minimum to reduce abrasion/fraying.

A2.4.9.2. ***NOTE:*** Ensure both sides of the rope ladder are visually inspected.

A2.4.10. Rope Ladder Nylon Webbing - **Checked.** Inspect entire length for abrasions, cuts, dry rot, excessive fraying, kinks, knots and twisting. Pay close attention to the nylon webbing area underneath the anti-abrasion pad.

A2.4.11. Rope Ladder to Skid Tube Anti-Abrasion Pad - **Checked.** Check to ensure the anti-abrasion pad is not excessively worn and does not have any holes worn through the padding.

A2.4.12. Rope Ladder Rungs - **Checked.** Inspect for corrosion, cracks, security and worn or missing grip tape. Pay close attention to the rivet areas, rivet heads and washers for corrosion, cracks, loose or missing hardware and for stretched nylon webbing around rivet areas.

A2.5. Detacher Assembly.

A2.5.1. Separate Assembly from Rope Ladder.

A2.5.2. Place Assembly into Wash Tank.

A2.5.3. Wash Assembly.

A2.5.4. Place Assembly in Primary Rinse Tank and Rinse.

A2.5.5. Place Assembly in Secondary Rinse Tank and Rinse. (If using the hose method to rinse, rinse until the detacher assembly is free of soap).

A2.5.6. Set Assembly Out to Dry. Ensure any entrapped water is removed by thoroughly drying assembly.

A2.6. Rope Ladder.

A2.6.1. ***CAUTION:*** Dragging the rope ladder on concrete/asphalt should be kept to a minimum to reduce abrasion/fraying.

A2.6.2. ***NOTE:*** Rope ladders will be soaked in the detergent/water mixture for a minimum of 30 minutes. It may be necessary to occasionally agitate the rope ladder while it is soaking.

A2.7. Rope Ladder Cleaning Procedures.

A2.7.1. **Place Rope Ladder into Wash Tank.**

A2.7.1.1. ***NOTE:*** Once the rope ladder has been entirely worked through the primary rinse tank, repeat the procedure using the secondary rinse tank.

A2.7.2. **Place 3 - 4 Rungs at a Time into Primary Rinse Tank.** Work or agitate the rungs until they are free of heavy soap residue. Work the entire length of the rope ladder through the primary rinse tank (in this fashion.)

A2.7.3. **Place 3 - 4 Rungs at a Time into Secondary Rinse Tank.** Work or agitate the rungs until this section of the rope ladder is visibly free of soap. Work the entire length of the rope ladder through the secondary rinse tank (in this fashion.)

A2.7.3.1. ***NOTE:*** When using the hose method to rinse a rope ladder, extend the rope ladder out flat on a firm relatively clean surface. Turn the water volume on to establish a continuous low pressure flow and rinse nylon webbing until no soap residue bleeds through nylon webbing.

A2.7.3.2. ***NOTE:*** Drying time under direct sunlight, is not considered ”excessive” and should not damage the nylon webbing. Do not store the rope ladder in direct sunlight.

A2.7.4. **Lay Rope Ladder Out Flat (horizontally) and Allow to Dry.** Allow the rope ladder to dry in the open air on a firm dry and relatively clean surface (i.e. concrete, asphalt, planking, plywood, cardboard, etc.). Ensure any entrapped water is removed by thoroughly drying rope ladder.

A2.7.4.1. ***CAUTION:*** Ensure the rope ladder is completely dry before it is repacked into its container and placed back into storage. Storing wet or damp nylon webbing will cause the webbing to deteriorate and fail prematurely.

A2.7.4.2. ***CAUTION:*** Detacher assembly and rope ladder are manufactured and assembled as a “matched set” and must never be separated. Do not mix and match differently numbered detacher assemblies and rope ladders.

A2.7.4.3. ***CAUTION:*** When positioning the rope ladder eyelet’s onto the base plate assembly, ensure eyelet’s are placed underneath the bolt heads. Failure to do so will cause eyelet’s to bind on the fastener pins during the jettison sequence, preventing the rope ladder from being jettisoned.

A2.7.5. **Attach Detacher Assembly to Rope Ladder once they are Completely Dry.**

A2.7.6. Forms Documentation - **Completed.**

A2.8. ANCHOR CABLE PROCEDURES.

A2.8.1. **ANCHOR CABLE ASSEMBLY PREFLIGHT CHECKLIST (IAW T. O. 1-1A-8 and this checklist.)**

A2.8.1.1. The following preflight procedures apply to the anchor cable assembly used for Rope Ladder operations. Preflight checklists will be accomplished prior to using the equipment on a particular maneuver or mission. Preflight requirement is once per flight/sortie regardless of the number of evolutions performed.

A2.8.2. Anchor Cable Assembly Forms - **Checked.** Review form(s) for equipment serviceability, overdue inspections, and maintenance/delayed discrepancies. Prior to using equipment, ensure data indicating the preflight checklist was accomplished is annotated on the applicable form(s). Annotate any discrepancies found during preflight.

A2.8.2.1. ***CAUTION:*** No broken or cracked wires are allowed in the critical fatigue area. Do not use an anchor cable assembly if a broken or cracked wire is found in the critical fatigue area. If any broken or cracked wires are found in the critical fatigue area, the cable assembly has must be removed from service and replaced.

A2.8.3. Inspect Entire Length of Cable – **Checked**. Inspect for broken wires, bird caging, abrasions, excessive kinking and corrosion.

A2.8.4. Steel Bolt, Locking Nut and Safety Pin – **Checked.** Inspect for cracks, corrosion, damaged threads. Ensure nut can be threaded on (by hand) to allow safety pin to be installed.

A2.8.5. Cable Assembly Fork and Eye Terminal Ends – **Checked.** Inspect for corrosion, cracks, deformation, security and sharp edges.

A2.8.5.1. ***CAUTION:*** If any evidence of cable slippage exists the cable assembly must be removed from service and replace.

A2.8.6. Inspect Cable Assembly *Bitter Ends* for Cable Slippage Paint - **Checked.** Inspect the cable assembly *bitter ends* (2 total) to ensure they are flush or slightly extending past their respective swaged fitting/sleeve. Ensure cable assembly bitter ends are painted. Ensure an unpainted gap **does not** exist between paint mark(s) and swaged fittings/sleeves. Evidence of a gap indicates cable slippage.

A2.8.7. Initial Manufacture and Weight Tested Capacity - **Checked.**

A2.8.7.1. Ensure the date of initial manufacture and weight tested capacity (2500 lbs) are permanently stamped/etched) on the fork terminal end.

A2.8.8. **ANCHOR CABLE ASSEMBLY CLEANING PROCEDURES (IAW T. O. 1-1A-8 and this checklist.)**The following maintenance and cleaning procedures apply to the cable assembly used for Rope Ladder operations. The anchor cable assembly requires an initial inspection and cleaning prior to being placed into service. The anchor cable assembly also requires recurring inspections and cleaning once every 90 days and anytime the anchor cable assembly is used in a salt water environment or becomes encrusted/imbedded with dirt or mud.

A2.8.8.1. ***CAUTION:*** No broken or cracked wires are allowed in the critical fatigue area. Do not use an anchor cable assembly if a broken or cracked wire is found in the critical fatigue area. If any broken or cracked wires are found in the critical fatigue area, the cable assembly has must be removed from service and replaced

A2.8.8.2. ***CAUTION:*** Any cable assembly that has 3 broken wires in the uncritical area must be removed from service and replaced.

A2.8.8.3. ***CAUTION:*** Any cable assembly that has a popped core or loose strands regardless of wear or broken wires must be removed from service and replaced.

A2.8.8.4. ***NOTE:*** Critical Fatigue Area is defined as any point within 1 foot of a swaged fitting/sleeve, the remaining area of the cable assembly is defined as the Uncritical Area.

A2.8.8.5. ***NOTE:*** Document any broken wires found in the uncritical area of the cable assembly on the equipment forms.

A2.8.8.6. ***NOTE:*** Any time a cable assembly is immersed or comes in contact with salt water, wash the cable assembly to remove all salt water residue. Allow cable assembly to completely dry prior to inspecting the assembly.

A2.8.8.7. Inspect Cable Assembly for Broke Wires - **Checked.** Inspect for broke wires by passing a cloth over the entire length of the cable assembly to snag broken wires. Pay particular attention to the Critical Fatigue Area for broken or cracked wires.

A2.8.8.7.1. ***CAUTION:*** Corrosion on the interior strands of the cable assembly constitutes failure and the cable assembly must be removed from service and replaced.

A2.8.8.8. Inspect Anchor Cable Assembly for Corrosion - **Checked.** If surface of the cable assembly is corroded, force the cable assembly open by reverse twisting and visually inspect the interior of the cable.

A2.8.8.8.1. ***CAUTION:*** Do not use metallic wools or solvents to clean cable assembly.

A2.8.8.9. Cleaning Surface Corrosion (if required) - **Completed.** If no internal corrosion is detected; remove loose surface corrosion and rust with a clean dry “course-weave” rag or fiber/nylon brush.

A2.8.8.10. Anchor Cable Assembly General Cleaning - **Completed.** Using a clean dry “course-weave” rag, clean the entire cable assembly including the terminal ends.

A2.8.8.10.1. ***CAUTION:*** Any bolt, nut or safety pin that is found cracked or with corrosion that cannot be removed must be removed from service and replaced.

A2.8.8.11. Anchor Cable Assembly Bolt, Nut and Safety Pin - **Checked.** Inspect bolt, nut and safety pin assembly for cracks, excessive wear and corrosion. Remove surface corrosion and rust with a “course-weave” rag.

A2.8.8.11.1. ***CAUTION:*** Any fork or eye terminal end that is found cracked or with corrosion that cannot be removed is unserviceable and the cable assembly must be removed from service and replaced.

A2.8.8.12. Fork and Eye Terminal Ends - **Checked.** Inspect the fork and eye terminal ends for cracks, excessive wear and corrosion. Remove surface corrosion and rust with a "course-weave" rag.

A2.8.8.13. Corrosion Preservative - **Applied.** After thoroughly cleaning the cable assembly, apply Mil Spec MIL-C-16173, Grade 4 (or equivalent) corrosion preventive compound. Wipe off any excess and place cable assembly back into service.

A2.8.8.14. Forms Documentation - **Completed.**

A2.9. HELICOPTER ROPE SUSPENSION (HRS) EMERGENCY HAND SIGNALS.

A2.9.1. The following commands are not part of the normal HRS sequence of events. They are used to either suspend or terminate HRS operations whenever unsafe or questionable situations arise. These commands and signals are general in nature and can and will be applied to all TH-1H HRS operations.

A2.9.2. **(Commands are highlighted in bold letters.)**

A2.9.2.1. **Abort -** Signal is moving a hand horizontally, fingers extended, palm down, back and forth in front of the neck in a slashing motion.

A2.9.2.2. **Aircraft Emergency -** Signal is a hand with fingers extended and palm down is raised and lowered above the head.

A2.9.2.3. **Crash Landing -** Signal is both hands, each with fingers extended and palms down, raised and lowered above the head in unison.

A2.9.2.4. **Cut Rope -** Signal is a hand with fingers extended and joined moving in a chopping motion against the opposite wrist.

A2.9.2.5. **Entanglement -** Signal is forearms raised laterally to the front at shoulder height, clasping hands with palms facing inward and fingers interlocking.

A2.9.2.6. **Hold -** Signal is a forearm raised vertically (as in taking an oath) with a clenched fist in front of the face.

A2.9.2.7. **Lost Communications -** Signal is hands placed at the ears with palms open and forward.

A2.9.2.8. **Rope Deployment -** Signal is a sweeping horizontal motion of the hand with the index finger extended towards the exit.

A2.9.2.9. **Strap In -** Signal is double clenched fists waist height moving back and forth from your sides to your belt buckle.