DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND

AFMAN11-2HH-60WV3_AETCSUP_AETCGM2026-01
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MEMORANDUM FOR AETC COMMANDERS

FROM: AETC A3/6
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SUBJECT: Air Education and Training Command Guidance Memorandum to AFMAN 11-2HH-60W Volume 3, *HH-60W Operations Procedures*

By Order of the Commander, Air Education and Training Command (AETC), this Guidance Memorandum (GM) is the first instance of a to-be published AETC supplement to AFMAN 11-2HH-60W Vol 3, *HH-60W Operations Procedures*. Compliance with this memorandum is mandatory. To the extent its directions are inconsistent with other AETC publications, the information herein prevails, in accordance with Department of the Air Force Instruction (DAFI) 90-160, *Publications and Forms Management*.

This AETC GM expands upon procedures for the use of the HH-60W rescue hoist and electrostatic discharge cable (ESDC) for AETC aircrew. It also provides guidance for aircrews experiencing abnormal static discharge while operating the rescue hoist. This guidance is applicable to all AETC assigned, attached, and gained HH-60W aircrew.

Ensure all records generated as a result of processes prescribed in this publication adhere to Air Force Instruction (AFI) 33-322, *Records Management and Information Governance Program*, and are disposed in accordance with the Air Force Records Disposition Schedule which is located in the Air Force Records Information Management System.

The authorities to waive wing/unit level requirements in this GM are identified with a Tier ("T-0, T-1, T-2, T-3") number following each compliance statement. See DAFMAN 90-161, *Publishing Processes and Procedures*, for a description of the authorities associated with the Tier designators. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the GM's OPR for non-tiered compliance items, as applicable.

This memorandum becomes void after one year has elapsed from the date of this memorandum, or upon publication of AFMAN11-2HH-60WV3_AETCSUP, whichever is earlier.

CHRISTOPHER R. AMRHEIN
Brigadier General
Director of Operations and Communications

Attachment:
AETC Use of HH-60W Rescue Hoist ESDC

Attachment

AETC Use of HH-60W Rescue Hoist ESDC

4.23.5. (Added) “Abnormal static discharge experienced while operating the rescue hoist. The ESDC was/was not utilized. Extent of discharge was ____, radios impacted were ____, and environmental conditions were ____.” Crews should be as descriptive as possible in providing environmental conditions (i.e. relative humidity, blowing dust/snow, temperature, etc.)

6.12. **Hoist Operations.** AETC HH-60W aircrew are approved to utilize the ESDC while executing hoist operations. Aircrew will review Flash Bulletin (FB) 24-14, "*HH-60W Hoist Electrostatic Discharge Cable*” prior to executing hoist operations utilizing the ESDC. **(T-2)** Aircrew will use an ESDC correctly attached to the rescue hook eyelet while hoisting when relative humidity (RH) is at or below 40%. **(T-2)** To further reduce the risk of electrostatic discharge, ESDC usage is recommended even when RH is above 40%. Non-live hoisting is authorized without restriction (with or without the use of an ESDC correctly attached to the rescue hook eyelet).

6.12.12. (Added) Crews will terminate hoist operations if any crewmember encounters abnormal static discharge. **(T-2)** Abnormal static discharge includes repetitive popping or clicking noise over the ICS which interferes with normal communication, any static shock while not in contact with the ground, or continued discharge not related to the device.

6.12.12.1. (Added) Aircrew experiencing abnormal static discharge during missions must weigh the risk to personnel against the need to continue hoisting. Aircrew should also consider alternative insertion/extraction methods and other training remaining on the mission.

6.12.12.2. (Added) Log abnormal EDC IAW **paragraph 4.23**. Additionally, crews will log abnormal EDC incidents in the "Tiger Team Hoist Data Worksheet" located on the ACC/A3JO SharePoint at: https://usaf.dps.mil/sites/ACC-A3/A3J-PR/A3JO. **(T-2)**

6.12.12.3. (Added) Any personnel experiencing a static shock will complete the appropriate flight safety forms with unit flight safety officers and report to flight medicine for a medical evaluation. **(T-2)**

BY ORDER OF THE SECRETARY OF THE AIR FORCE

AIR FORCE MANUAL 11-2HH-60W, Volume 3

5 JANUARY 2022

Flying Operations

HH-60W OPERATIONS PROCEDURES

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This volume implements Air Force Policy Directive (AFPD) 11-2, *Aircrew Operations*, and supports AFPD 11-4, *Aviation Service*; Air Force Instruction (AFI) 11-200, *Aircrew Training, Standardization/Evaluation, and General Operations Structure*; and is consistent with Air Force Manual (AFMAN) 11-202V3, *Flight Operations*. This volume, with its complementary unit-specific *Local Procedures Supplement*, prescribes standard operational and weapons employment procedures to be used by all aircrew operating on United States Air Force (USAF) HH-60W aircraft. It applies to all civilian employees and uniformed members of the Regular Air Force (RegAF), Air Force Reserve (AFR) and Air National Guard (ANG) performing aircrew duties in HH-60W aircraft. This publication does not apply to the United States Space Force. Ensure that all records generated as a result of processes prescribed in this publication adhere to Air Force Instruction 33-322, *Records Management and Information Governance Program*, and are disposed of in accordance with the Air Force Records Disposition Schedule which is located in the Air Force Records Information Management System. Send comments and suggested improvements to this publication using Air Force (AF) Form 847, *Recommendation for Change of Publication*, through command channels to Air Combat Command (ACC) Personnel Recovery Aviation Branch (A3JO). This publication may be supplemented at any level, but all supplements must be routed to the Office of Primary Responsibility (OPR) of this publication prior to certification and approval. The authorities to waive wing/unit level requirements in this publication are identified with a Tier ("T-0, T-1, T-2, T-3") number following the compliance statement. See Department of the Air Force Instruction (DAFI) 33-360, *Publications and Forms Management*, for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the requestor's

commander for non-tiered compliance items. See **paragraph 1.5** for waiver approval authorities for non-tiered compliance items. 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. Compliance with the attachments in this publication is mandatory.

Chapter 1

GENERAL INFORMATION

1.1. Purpose. This volume, in conjunction with aircraft flight manuals, flight information publications (FLIPs), and other governing directives, prescribes procedures for operating the HH-60W. When guidance in this volume conflicts with another source document, the source document takes precedence. ACC/A3 Personnel Recovery Operations Division (ACC/A3JO) has overall responsibility for administration of this publication and associated checklists.

1.2. ***Abbreviations, Acronyms, and Terms.*** *See* **Attachment 1.**

1.3. Key Words Explained.

1.3.1. "Will" and "shall" indicate a mandatory requirement.

1.3.2. "Should" is normally used to indicate a preferred, but not mandatory, method of accomplishment.

1.3.3. "May" indicates an acceptable or suggested means of accomplishment.

1.3.4. **Warning** : Operating procedures, techniques, etc., which may result in personal injury or loss of life if not carefully followed.

1.3.5. **Caution** : Operating procedures, techniques, etc., which may result in damage to equipment if not carefully followed.

1.3.6. **Note** : Operating procedures, techniques, etc., which are essential to emphasize.

1.4. Deviations. Do not deviate from policies in this AFMAN except when the situation demands immediate action to enhance safety and/or an urgent requirement exists. In this case, the pilot in command will evaluate all options and take the appropriate action to ensure the safe recovery of the aircraft, crew, and survivors. **(T-2)** Combat Search and Rescue (CSAR) Combined Test Force aircraft may deviate from the contents of this volume as outlined in individually approved test plans required for test and evaluation purposes.

1.4.1. Units will report all deviations without an approved waiver in accordance with AFMAN 11-202V3. **(T-1)**

1.4.2. When it is necessary to protect the aircraft and its occupants from a situation not covered by this publication and immediate action is required, the Aircraft Commander (AC) has ultimate authority and responsibility for the course of action to be taken.

1.5. ***Waivers.*** *See DAFI 33-360, for a description of the authorities associated with the Tier numbers. Unless otherwise directed or annotated by a specific tier level, waiver authority for contents of this publication is the requestor's commander for non-tiered compliance items. File a copy of all approved waivers with this volume.*

1.5.1. Waivers are issued for a maximum of one year from the effective date. Provide ACC/A3J info copies of all MAJCOM/A3 or COMAFFOR-issued waivers within 72 hours of approval.

1.5.2. Submit waivers using AF Form 679, *Air Force Publication Compliance Item Waiver Request/Approval*, through local channels to Air Combat Command, Personnel Recovery and Joint Integration Division (ACC/A3J) (ACC units); United States Air Forces Europe,

Operations Support Division (USAFE/A3A) (USAFE units); Pacific Air Forces, Operations Support Division (PACAF/A3T) (PACAF units); 19th Air Force, Directorate of Graduate Operations (19 AF/A3M) (Air Education and Training Command (AETC) units); Air Force Reserve Command, Personnel Recovery and Special Operations Division (AFRC/A3J) (AFRC units); Air National Guard, Personnel Recovery and Special Operations Division (ANG/A3J) (ANG units); or Air Force Material Command (AFMC)/A3V (AFMC units).

1.5.3. Units will maintain a copy of approved waivers and track the following information:

1.5.3.1. Waiver type. **(T-2)**

1.5.3.2. Approval authority. **(T-2)**

1.5.3.3. Approval date. **(T-2)**

1.5.3.4. Waiver number. **(T-2)**

1.5.3.5. Waiver expiration date. **(T-2)**

1.6. Development of New Equipment and Procedures. Units are encouraged to suggest new equipment and tactics. MAJCOM and ACC approval must be obtained prior to testing and/or use. **(T-2)**

1.6.1. Tactics Recommendation or Modification. Submit tactics changes in accordance with AFMAN 11-260 *Tactics Development Program* to MAJCOM/A3TW Weapons and Tactics Branch (ACC, USAFE-AFAFRICA, and PACAF units), HQ AETC/A3Z (AETC units), NGB/A3J (ANG units), AFRC/A3J (AFRC units) using an AF Form 4326, *Tactic Improvement Proposal.* MAJCOMs should forward approved changes to ACC/A3TW.

1.6.2. Equipment Modification Proposal. Submit new equipment (to include aircrew flight equipment (AFE) or modification requests to respective MAJCOM/A3T (USAFE-AFAFRICA and PACAF), NGB/A3J PR/SOF Division, AFRC/A3DJ (AFRC units), HQ ACC/A3J Personnel Recovery Division (ACC units), HQ AETC/A3Z (AETC units), or HQ AFMC/A3T (AFMC units) using an AF Form 1067, *Modification Proposal*. Forward approved changes to ACC/A3J.

1.6.3. Electronic Equipment Approval. Submit requests for approval of new electronic mission equipment and aircraft equipment through local channels to ACC/A5RA (NGB/A5RS for ANG units and AFRC/A3DJ for AFRC units).

1.7. Roles and Responsibilities.

1.7.1. ACC, Director of Air and Space Operations (ACC/A3), is designated as the responsible agency for this volume in accordance with AFPD 11-2.

1.7.2. MAJCOM Responsibilities:

1.7.2.1. Determine MAJCOM specific requirements as required to fulfill primary and secondary Designed Operational Capability statement missions and unit taskings. Using MAJCOMs may adopt lead MAJCOM guidance as outlined in this manual.

1.7.2.2. *Review subordinate unit supplemental instructions as directed by MAJCOM guidance.*

1.7.3. *Additional specific operational responsibilities are addressed within this manual.*

Chapter 2

GENERAL OPERATING GUIDANCE

2.1. Aircraft Commander (AC) Responsibility and Authority. All flights will have a designated pilot-in-command in accordance with DAFMAN 11-401, *Aviation Management*. **(T-1)** ACs are:

2.1.1. In command of all persons aboard the aircraft. **(T-1)**

2.1.2. Vested with the authority necessary to manage their crew and accomplish the mission.

2.1.3. Responsible for the welfare of the crew and the safe accomplishment of the mission.

2.1.4. The final mission authority and makes decisions not specifically assigned to higher authority.

2.1.5. The final authority for requesting and accepting any waiver affecting the crew or mission.

2.1.6. Responsible for ensuring aircraft security when away from home station. **(T-1)**

2.1.7. Charged with keeping the applicable commander informed concerning mission progress as able without impacting mission accomplishment.

2.1.8. Responsible for ensuring all applicable briefings and checklists are completed prior to the event.

2.1.9. Responsible for debriefing maintenance personnel on the condition of the aircraft and equipment.

2.2. Mission Clearance Decision. The final decision to delay a mission may be made either by the commander with operational or tactical control or the AC when, in the opinion of either, conditions are not safe to start or continue a mission. Final responsibility for the safe conduct of the mission rests with the AC. If the AC determines that conditions are not safe to prosecute the mission, the aircraft will not depart until the conditions have been corrected or improved so that the mission can continue safely. **(T-3)** Another AC and/or crew will not be designated to take the same mission under the same conditions unless in the judgment of the squadron commander those conditions do not violate or exceed published operating guidelines (e.g., weather, rules of engagement, performance, etc.). **(T-3)**

2.3. Defense Support of Civil Authorities. Request for helicopter support by civil authorities is handled in accordance with AFI 10-801, *Defense Support of Civil Authorities*. In cases of extreme emergencies, in order to prevent the loss of life, prevent human suffering, or mitigate great property damage, a military commander may offer helicopter assistance to civil authorities and casualties necessary to meet immediate needs until sufficient resources are available.

2.4. Medical Evacuation Missions. Medical evacuation flights may be operated to transport seriously ill or injured persons, and/or to transport medical personnel, equipment, or supplies under emergency conditions when other means are not suitable or readily available. Ensure mission requests are coordinated through the appropriate Rescue Coordination Center.

2.5. Aircrew Qualification. Aircrew members occupying a primary position during flight must be HH-60W qualified and current for the mission events to be flown, or conducting training or re-

currency for that crew position/mission in accordance with AFMAN 11-2HH-60WV1, *HH-60W Aircrew Training*, unless exempted by DAFMAN 11-401. **(T-1)**

2.6. Crew Complement. The minimum crew is specified in the flight manual and **Table 2.1** **(T-1)** This document defines low level flight as maneuvers (except for departures and arrivals) involving flight below 500 feet above ground level (AGL). Except for profiles identified in **Table 2.1**, low level flight requires 2 Special Mission Aviators (SMA). **(T-1)**

2.6.1. A MAJCOM-designated flight test engineer may fly in place of a copilot in accordance with DAFMAN 11-401. Flight test engineers will not control the aircraft during critical phases of flight. **(T-1)**

2.6.2. Waiver Authority. The Operations Group Commander (OG/CC) may waive crew complements outlined in **Table 2.1** but not lower than the minimum crew prescribed by the flight manual.

Table 2.1. Crew Complement.

MISSION/EVENT	CREW COMPLEMENT	
	P	**SMA**
Maintenance Ground Run (**Note 1**)	1	1
"H3": Health Indicator Test (HIT) Check, Hover, Hoist (**Note 2**)	2	0
EP sortie, Contact or Remote Operations (**Note 3**)	2	1
Ferry Flight/Cross Country (**Note 4**)	2	1
Instrument Sortie	2	1
Sling Load/Bambi Bucket	2	1
Day Water Operations	2	1
Functional Check Flight (FCF) Sortie (**Note 5**)	2	1
Shipboard Ops	2	2
Day or Night Vision Goggles (NVG) Low Level/Formation	2	2
Helicopter Air-to-Air Refueling (HAAR) (**Note 6**)	2	2
Restricted Visibility Operations	2	2
Aircraft Handling Characteristics	2	2
NVG Water Operations	2	2

NOTES:

1. Aircraft taxi and flight prohibited. The SMA must be engine-run certified. **(T-2)** Two pilots are authorized to perform maintenance ground runs without a SMA provided a SMA accomplishes the preflight inspection. A pilot or engine-run certified SMA may perform maintenance ground runs with engine-run qualified maintenance personnel for non-rotors turning operations. The pilot crew position is considered any HH-60W qualified mission pilot/first pilot (MP/FP).
2. A current and qualified SMA must still accomplish the preflight and hoist check.
3. NVG remote operations and NVG autorotations requires 2 SMAs.
4. Tactical maneuvering or low-level flight requires 2 SMAs. Formation requires the SMA to be positioned in the cabin on the same side as the trail aircraft.

5. When FCF-certified aircrew members are not available, non-certified aircrew members may be designated by the squadron/deployed commander or his/her representative on the flight authorization.
6. Day single ship HAAR requires 1 SMA. The SMA will be positioned in the cabin on the same side as the tanker. **(T-2)**

2.7. Mission Essential Personnel (MEP).

2.7.1. Supporting/Supported Personnel. The approving authority for Department of Defense (DoD) supporting/supported personnel for tactical training and operational missions is in accordance with DAFMAN 11-401.

2.7.2. Supporting personnel are required to accomplish mission or training tasks in-flight and at the objective area. These tasks include but are not limited to in-flight medical care, mission monitoring and management, performance of alternate insertion/extractions (AIE), survivor or asset role-play, and actions at the objective.

2.7.3. Supported personnel are those required to be onboard the helicopter to accomplish their mission or training. Tasks include but are not limited to in-flight medical care, mission monitoring and management, performance of AIEs, participation in FCFs, military dog handlers, and actions at the objective. Squadron Commander (SQ/CC) must weigh the benefits and risks of flying supported personnel and ensure that mission requirements are met for both parties.

2.8. Passengers.

2.8.1. Passenger Travel. The HH-60W is designated as a personnel recovery (PR) platform. Passenger travel is not authorized on HH-60W aircraft unless all organic airlift and rotary-wing requirements of Department of Defense Directive (DoDD) 4500.56, *DoD Policy on the Use of Government Aircraft and Air Travel* are met. DoDD 4500.56 outlines criteria for passenger movements on DoD aircraft. Passengers will not occupy a seat with access to a set of flight controls. **(T-2)**

2.8.2. Passengers not classified as MEP will not be carried on flights involving low level flight, pilot re-currency, aircraft handling characteristics (AHC), basic helicopter maneuvering (BHM), air combat maneuvering (ACM), unusual attitudes, or any water operations sorties. **(T-2)** Passengers will not be carried on flights involving practice emergency procedures. **(T-2)** Additionally, air refueling and threat reaction maneuvers are prohibited during spouse orientation flights. **(T-2)** DAFMAN 11-401 provides additional guidance. **Exception**: The OG/CC with operational control of the aircraft will determine mission restrictions on flights with MEP or passengers on familiarization flights.

2.8.3. When authorized, passengers (including MEP) occupying a cabin crew position should be on intercom, will have appropriate restraint devices worn, and will not occupy a seat with a weapon that contains live ammunition unless under direct supervision of an instructor qualified and certified on the weapon. **(T-2)**

2.9. Inter-fly. Inter-fly is the temporary exchange or substitution of aircrew members and/or aircraft between MAJCOMs. Approval authority for aircrew inter-fly is the requesting and supporting OG/CC. The OG/CC and service equivalent is the approval authority for qualified H-60 aircrew members from other United States (US) military services. AFMAN 11-2HH-60WV1,

paragraph 2.3., specifies HH-60W familiarization training for H-60 aircrew from other US military services. Inter-fly approval is not required for:

2.9.1. 34th Weapons Squadron (WPS) aircrew or students during syllabus or related events which also include:

2.9.1.1. Weapons Instructor Course looks or squadron visits.

2.9.1.2. Aircrew supporting either the 34 WPS Weapons Instructor Course or the Advanced Tactics Course/Advanced Instructor Course syllabi or related flight events.

2.9.2. Aircrew supporting 512th Rescue Squadron (512 RQS) syllabi or related events.

2.9.3. Any UH-60M/HH-60U/W/G test aircrew members assigned or attached to ACC, AFMC, NGB, and AFRC.

2.9.4. MAJCOM approved joint exercises and training (e.g., High-Altitude Army National Guard Aviation Training Site, Deck Landing Qualification Training).

2.9.5. Higher headquarters unit visits, staff assistance visits, aircrew qualification checks, formal visits, operational readiness inspections, and operational readiness exercises.

2.9.6. Senior supervisory and staff aircrew members approved in accordance with DAFMAN 11-401.

2.9.7. Aircrew serving on an operational deployment or humanitarian mission with other units of different MAJCOMs.

2.10. Intrafly. Intrafly is the exchange and/or substitution of aircrew members from separate units under the same MAJCOM to accomplish flying training or missions. The OG/CC possessing the aircraft is the approval authority, delegable to SQ/CC.

2.11. Alert Procedures. Alert crews will conduct a briefing at the beginning of each alert period. **(T-3)** The briefing will be updated every 24 hours to include weather, notices to airmen (NOTAMS), recently published flight crew information files, special instructions (SPINS), and appropriate items as determined by the SQ/CC, flight lead, or AC. **(T-3)**

2.11.1. A DD Form 365-4 *Transport/Tactical Weight and Balance Clearance Form F,* will be completed and signed for the alert aircraft. **(T-2)** A canned DD Form 365-4 is authorized provided the aircraft configuration for the alert period does not change.

2.11.2. Alert crews are authorized to prepare takeoff and landing data (TOLD) using the worst weather conditions expected during the alert period. This TOLD will be used only for alert scrambles. **(T-3)** If the alert aircraft is flown for other reasons, TOLD will be computed using existing weather conditions. **(T-3)**

2.12. Alert Aircraft. Prepare the aircraft by performing the required alert procedure flight manual checklists. Additionally, configure required equipment.

2.12.1. Hoist-equipped alert aircraft will plan for an alternate means of recovery in the event of hoist malfunction or failure. **(T-3)**

2.12.2. Once accepted for alert, make the following entry in the Air Force Technical Order (AFTO) Form 781A, *Maintenance Discrepancy and Work Document*: "INFO NOTE: Aircraft accepted for alert (time/date). HIT, Hover and Hoist Checks completed."

2.12.3. To ensure integrity of the preflight, no maintenance (aircraft or weapons) will be performed without the approval of the AC. **(T-3)** A qualified HH-60W aircrew member will be present whenever maintenance is performed, or at the completion of the maintenance, check the area(s) in which maintenance was performed, to include the appropriate cockpit configuration. **(T-3)**

2.12.3.1. If the AC approves any maintenance action on an aircraft after being accepted on alert, make the following entry in the AFTO Form 781A: "INFO NOTE: Aircraft remains on alert. Maintenance cleared to work (equipment/system) only."

2.12.3.2. Once a qualified HH-60W aircrew member inspects and accepts the aircraft following maintenance actions, make the following entry in the AFTO Form 781A: "INFO NOTE: Post maintenance look-over completed (time/date). Aircraft remains on alert." This entry complements and does not replace the original alert aircraft acceptance entry.

2.12.4. For aircraft remaining on alert after a maintenance preflight, prepare the aircraft by performing the required alert procedure flight manual checklists. Additionally, configure required mission equipment.

2.12.5. A thru-flight inspection consisting of asterisked items of the Before Exterior Inspection, Exterior Inspections and Interior Inspection checklists will be accomplished after each flight (e.g., alert launch, mission rehearsal). **(T-3) Note**: Completion of a thru-flight inspection does not reset the maintenance preflight requirement. **Exception**: Immediate follow-on missions that preclude the accomplishment of inspections. In this situation, at a minimum, a walk around will be accomplished to verify the aircraft did not sustain damage.

2.12.6. Alert aircraft may be flown for purposes other than actual alert missions provided the following conditions are met:

2.12.6.1. Alert requirements can be met with sufficient fuel and ammunition to meet mission requirements.

2.12.6.2. Communication contact is maintained with the primary controlling agency.

2.12.6.3. Controlling agencies are notified any time the alert aircraft departs the local area.

2.13. Armed Aircrew. SQ/CCs may direct arming of aircrew members as deemed necessary by mission threat analysis. During all operations with an aircraft weapon system on board, an aircrew member will be armed with an approved Air Force small arms weapon. **(T-1)** Protect aircraft weapons in accordance with AFI 31-117, *Arming and Use of Force by Air Force Personnel* and AFMAN 31- 129, *USAF Small Arms and Light Weapons Handling Procedures.* **Exception**: Units operating outside the continental United States (OCONUS) are exempt from being armed if prohibited by host nation laws or a status of forces agreement.

2.14. Aircraft Security. The AC is ultimately responsible for the security of their aircraft when located away from US military installations. Pre-mission planning should ensure that adequate enroute security is available. To the maximum extent possible, unattended aircraft will overnight at secure military facilities. **(T-3)** If mission requirements dictate remaining overnight at an unsecure airfield, the AC will ensure adequate aircraft security. **(T-2)** Refer to Air Force Life Cycle Management Center (AFLCMC)/WIH *Combat Rescue Helicopter (CRH) HH-60W Security Classification Guide* and AFMAN 31-101V1, *Integrated Defense (ID) Planning*, for security requirements of Protection Level 4 assets.

2.14.1. If the aircraft is parked in a restricted or controlled area on a DoD facility or US-controlled location, remove all removable classified materials (data transfer device (DTD)s, crypto ignition key (CIK), etc.). **(T-2)**

2.14.2. If the aircraft is not parked in a restricted or controlled area on a DoD facility:

2.14.2.1. Zeroize all communications security (COMSEC) using the Flight Management System (FMS) ZEROIZE screen (do not zeroize integrated vehicle health management system (IVHMS)). **(T-2)**

2.14.2.2. Remove removable classified (DTDs, CIK, etc.). **(T-2)**

2.14.2.3. Lock the flight engineer (FE)/aerial gunner (AG) windows from the inside. **(T-2)**

2.14.2.4. Lock the nose compartment, transition bay, cockpit, and cabin doors from the outside. **(T-2)**

2.14.2.5. When returning confirm all doors/windows remain locked and that none of the tamper evident safety wires have been broken. **(T-2)**

2.14.3. If located at a non-US controlled location, and constant surveillance by cleared US government (USG) personnel is not available, follow the instructions in **paragraph 2.14.2** and conduct aircraft checks every 12 hours (within 1-hr after completion of crew rest if no other USG personnel are available). **(T-2)**

2.14.4. If aircraft is confirmed or suspected tampered (e.g., broken safety wire(s)), the AC will report the incident to their home base Chief of Information Protection. **(T-2)**

2.14.5. DTDs are considered unclassified regardless of their data, due to the NSA Type 1 encryption used to encrypt them. Blue (user) CIKs are not considered COMSEC items.

2.15. Armed Passengers. The AC is the approving authority for armed passengers.

2.16. Utilization of Civilian Law Enforcement or Medical Personnel. With Wing/CC approval, civilian law enforcement or medical personnel may be transported to mishap/disaster sites when responding under immediate response authority as outlined in AFI 10-801.

2.16.1. Under imminent, serious conditions, and when unable to make contact for approval or time does not permit approval, the military commander may approve civilian law enforcement/medical personnel to fly aboard the aircraft to save lives, prevent human suffering, or mitigate great property damage within the US. Organizations acting under immediate response authority shall not use military force to quell civil disturbances unless specifically authorized by the President in accordance with applicable law or permitted under emergency authority. **(T-0)**.

2.16.2. The primary method of deploying or recovering civilian law enforcement or medical personnel is by landing. Civilian law enforcement or medical personnel may be deployed and recovered by the hoist provided all other transport resources have been examined and determined to be inadequate and approval is obtained from the OG/CC (delegable to the flying SQ/CC). Prior to hoist deployment, brief civilian law enforcement or medical personnel on applicable procedures, safety and emergency considerations involved.

2.17. Maximum Flight Duty Period. In accordance with AFMAN 11-202V3 and MAJCOM supplements.

2.18. Crew Rest Period. In accordance with AFMAN 11-202V3 and MAJCOM supplements.

2.19. Deployment Spin-up. Prior to known/anticipated contingencies, units will complete pre-deployment spin-up training outlined in AFMAN 11-2HH-60WV1 within 90 days of required delivery date. **(T-3)** Notify the OG/CC if spin-up training begins beyond 90 days of the required delivery date. **(T-3)**

Chapter 3

MISSION PLANNING/FLIGHT PREPARATION

3.1. Responsibilities. The responsibility for mission planning/preparation is shared jointly by the individual aircrew members, and operations and intelligence functions of the organization. Units will ensure that electronic mission planning systems are updated and configured in accordance with the current mission planning environment letter on the Mission Planning Central website (Home - Mission Planning Central Home (mission-planning.org). **(T-2)**

3.2. Bird/Wildlife Aircraft Strike Hazard (BASH) Programs. Bird watch conditions are defined in AFI 91-202, *The US Air Force Mishap Prevention Program*, and AFI 91-212, *Bird/Wildlife Aircraft Strike Hazard (BASH) Management Program*. The OG/CC will determine local BASH procedures in accordance with AFMAN 11-202V3 and MAJCOM supplements. **(T-1)**

3.2.1. Takeoffs, landings, or low-level flight within one hour of either sunrise or sunset during the phase II period increase the likelihood of bird strike. Significant bird hazards are published in FLIP GP, the Instrument Flight Rules (IFR) Supplement and local airfield guidance. OCONUS units will comply with host nation requirements. **(T-2)**

3.2.2. When operating at airfields where no BASH program exists, pilots will make appropriate decisions based on observable bird conditions and make a reasonable effort to seek assistance from personnel with appropriate local knowledge. **(T-2)** Such areas may include low level areas/routes, terminal areas, and ranges.

3.2.3. Pilots will consider bird migratory patterns during enroute, low level areas/routes, terminal operations areas, and range portions of the mission to minimize the potential of an in-flight bird strike. **(T-3)** The Bird Avoidance Model on United States Avian Hazard Advisory System (**http://www.usahas.com**) provides BASH information, including regionalized continental United States (CONUS) bird migration, mission planning software overlays, and latest news. See AFI 91-212 for additional information. OCONUS units will utilize products in accordance with local and host nation guidance. **(T-2)**

3.3. Briefing/Debriefing Requirements. Use applicable briefing guides in Attachments **2 – 14.** **Note**: Guides contained in Air Force Tactics Techniques and Procedures (AFTTP) 3-3.HH-60W, *Combat Aircraft Fundamentals HH-60W (U)*, may be utilized in place of AFMAN 11-2HH-60WV3 briefing guides provided all requirements are met.

3.3.1. The AC or flight lead will:

3.3.1.1. Present a logical briefing that promotes safe, effective mission accomplishment and covers all specified areas/events. Mission elements/events may be modified and briefed airborne provided flight safety is not compromised. **(T-3)**

3.3.1.2. Ensure briefing length (start and end time) provides adequate time to discuss required items, accounts for mission complexity and affords appropriate time for aircraft preflight and preparation requirements to be complete prior to stations time. **(T-3)**

3.3.1.3. Ensure all aircrew members attend the briefing unless previously coordinated with the AC/flight lead. Anyone not attending the flight briefing must receive a briefing on mission events, duties and emergency procedures prior to flight. **(T-3)**

3.3.1.4. Ensure that briefers cover the required topics addressed in **paragraph 3.3.2** and its subparagraphs. **(T-3)**

3.3.2. Briefers will reference applicable portions of briefing guides. **(T-3)** Items listed may be briefed in any sequence. Those items published in AFIs, AFTTPs, or locally-developed standard operating procedures and understood by all participants may be briefed as "standard." Specific items not pertinent to the mission do not need to be covered.

3.3.2.1. Brief all potential hazards and obstructions along the entire route of flight and potential areas off-route, including minimum altitudes required to mitigate undetected hazards. **(T-2)** Pay special attention to areas of high density hazards, as some factor hazards may be obscured or masked by other non-factor hazards. **Warning:** Failure to brief hazards can lead to reduced shared situational awareness and may result in insufficient advanced detection time prior to the hazards. Some hazards may not be annotated correctly on maps or navigation aids. Uncharted wires may be suspended between tall towers, even those not associated with power lines.

3.3.2.2. The briefing will include BASH considerations outlined in **paragraph 3.2**. **(T-2)**

3.3.2.3. Ensure all passengers are briefed in accordance with applicable flight manuals and MAJCOM guidance. Overwater flights will include a briefing on personal and aircraft life support equipment; e.g., life preserver use and life rafts. **(T-2)**

3.3.2.4. Ensure dissimilar formation briefings include: responsibilities, formation spacing, aircraft capabilities/limitations and tactics for each phase of flight. **(T-2)**

3.3.2.5. Evaluate and mitigate risk appropriately for the flight by utilizing risk management principles. **(T-2)** Use risk management worksheets to identify risks, mitigation measures, and document risk acceptance at the appropriate levels. **(T-3)**

3.3.2.6. Ensure contracts, roles, and responsibilities of each flight member are established, briefed, and understood by all participants. **(T-2)**

3.3.2.7. Debrief all missions. **(T-3)** The Mission Data Recorder information and mission playback tools should be used to enhance capturing lessons learned.

3.4. Preflight Predictive Receiver Autonomous Integrity Monitor (RAIM) Check and Global Positioning System (GPS) NOTAMs. Pilots are required to accomplish a predictive RAIM check with an off-board system for pre-flight planning when performance based navigation (PBN) is flight planned, as well as review GPS NOTAMs.

3.4.1. If RAIM will not be available at the time(s) and location(s) when GPS updating is required, the mission must be altered to a time when RAIM will be available. **(T-3)** If the predictive RAIM check cannot be completed, the crew will not file terminal area navigation (RNAV) procedures. **(T-3)** The following websites are available to meet the requirement:

3.4.1.1. United States. Users should visit **https://sapt.faa.gov/default.php** and ensure the Without Baro Aiding Enroute, Terminal and Non-Precision Approach RAIM summary charts show no outages. If outages exist, reference the interactive chart to determine the specific time and date of the outage. Alternatively the Navlog in Foreflight will also show RAIM status for a planned flight.

3.4.1.2. Europe. Users should visit **https://augur.eurocontrol.int/status/** and select the terminal/approach tool and input International Civil Aviation Organization (ICAO) departure and arrival points. Select the starting date/time, flight director (FD) algorithm, SA off (SA Aware), No Baro Aiding, and 5.0 degree mask angle. Two reports must be generated (one for approach and one for terminal). **(T-3)** The text format result option provides an easy-to-read printout of what times RAIM will be unavailable at the selected ICAO.

3.4.1.3. Japan. Users should visit **https://msas-raim.mlit.go.jp/gpm/summary.html** and review the outage condition for individual airports, as well as the wide area charts. Reference the RNP 0.3, RNP 1.0, RNP 2.0, SA Aware (SA OFF) w/o Baro-Aiding at the 5.0 degree mask angle charts. If outages exist, login to determine the specific time and date of the outage.

3.4.1.4. Other Foreign Nations. Reference the DoD Flight Information Publication, or host nation Aeronautical Information Publication on the National Geospatial Intelligence Agency (NGA) site **https://asps.leidos.com/** for the appropriate RAIM website location.

3.4.2. GPS NOTAMS must also be reviewed for possible GPS jamming, signal loss, and space vehicle (SV) outages. Deselect SVs as required via the SV Deselect Screen in the FMS. Review worldwide GPS SV status (as well as US GPS NOTAMS) via the GPS/WAAS query on **https://www.daip.jcs.mil/daip/mobile/index**. Additionally reference the DoD FLIP, or host nation Aeronautical Information Publication on the NGA site **https://asps.leidos.com/** for host nation GPS NOTAMS.

3.5. Weather Minimums.

3.5.1. Visual flight rule (VFR) minimums. **Note**: Weather minimums below do not apply to hover and air taxi operations at the aerodrome. The OG/CC may establish weather criteria for flights which only require hover operations. OG/CC may delegate this authority to the SQ/CC.

3.5.1.1. Day training. 700 foot ceiling and 1 statute mile (SM) visibility. **(T-1)**

3.5.1.2. Night training.

3.5.1.2.1. Unaided and emergency procedures. 1,000 foot ceiling and 3 SM visibility. **(T-1)**

3.5.1.2.2. NVG: 700 foot ceiling and 2 SM visibility. **(T-1)**

3.5.1.3. Operational flights. Comply with AFMAN 11-202V3 helicopter weather minimums unless local or theater-specific weather minimums are more restrictive. **(T-1)**

3.5.2. IFR Takeoff Minimums.

3.5.2.1. Training flights. Weather equal to or higher than published approach minimums (ceiling and visibility), but no less than one-half mile (2,400 feet Runway Visibility Range (RVR)) at the departure airfield. **(T-1)**

3.5.2.2. Operational flights.

3.5.2.2.1. Without a departure alternate. Visibility at the departure point must be at or above the published visibility minimums required for the appropriate aircraft category for an available approach. **(T-1)**

3.5.2.2.2. With a departure alternate. Weather at the departure point must be equal to or above one-half the published visibility minimums required for the appropriate aircraft category, but no less than one-quarter mile (1200 RVR) for an available approach. **(T-1)** Published visibility is required if a copter-only approach is used at the departure airfield. **(T-1)**

3.5.2.2.2.1. The departure alternate prevailing weather must be equal to or better than the lowest published approach ceiling and visibility minimum (no lower than 1200 RVR), and forecast to remain so for 1 hour after the time of expected arrival. **(T-1)**

3.5.2.2.2.2. The departure alternate should be within 60 minutes flight time.

3.5.3. IFR minimums. Comply with AFMAN 11-202V3 helicopter weather minimums or local/theater-specific weather minimums, whichever is more restrictive.

3.5.4. Life or death missions. The WG/CC may approve helicopters to take off with visibility less than the requirements of **paragraph 3.5.2.2** Ensure an appropriate course of action is available (and briefed) in the event of an emergency after takeoff. **(T-1)** Weather at the recovery and landing areas must meet the minimum requirements of AFMAN 11-202V3. **(T-1)**

3.6. Fuel Planning. Aircrews will manage aviation fuel as a limited commodity and precious resource. (T-1) Design procedures for optimal fuel use and efficiency throughout all phases of mission execution, to include ground ops and flight profiles. Incorporate en route tasks to make maximum use of airborne training opportunities. Terminate the sortie when mission and training objectives are met.

3.6.1. For all flights, VFR or IFR, crews will plan to land at the destination with no less than 500 pounds usable fuel. **(T-2) Note:** HH-60W Fuel System Quantity Indications are calibrated for usable fuel. Unusable fuel will remain in the fuel tanks when Fuel System Quantity Indication display zero. Refer to Technical Order (TO) 1H-60(H)-5-2 for unusable fuel quantity.

3.6.2. For instrument flight planning purposes, when visibility-only criterion is used, or when destination weather information may be unreliable, requirements for descent, approach, and missed approach will be no less than 20 minutes of usable fuel in addition to required reserves. **(T-2)**

3.7. Airspace and Hazards Information.

3.7.1. Use of geographic situation (GEOSIT) display. Aircrew may utilize the on-board moving maps in lieu of paper maps, as long as they are current. **Warning**: The HH-60W GEOSIT auto filters out any vertical obstruction (VO) hazards that are less than 100 feet tall.

3.7.1.1. Map selection. Maps with a scale of 1:250,000 or greater details must be loaded on the aircraft for low-level operations. **(T-3)** **Table 3.1** shows which map and zoom combination can be utilized due to VO not displaying on every scale/zoom combination.

Table 3.1. Map/Zoom Low Level Combination.

Zoom	1:50K TLM	1:100K TLM100	1:250K JGA	1:250K TFC	1:500K LFC	1:500K TPC

0.5x	Authorized	Authorized	N/A	N/A	N/A	N/A
1x	Authorized	Authorized	Authorized	Authorized	N/A	N/A
2x	Authorized	Authorized	Authorized	Authorized	Authorized	Authorized
4x	Authorized	Authorized	Authorized	Authorized	Authorized	Authorized

3.7.1.2. When using GEOSIT for low-level navigation the pilots must have immediately available a minimum of course line, waypoints, hazards, minimum safe altitude (MSA) and threats. **(T-3)**

3.7.1.2.1. For training, the GEOSIT should display current aviation charts, airports/heliports, airspace boundaries, airways, military training routes, parachute jump areas, special use airspace boundaries, VO, and the location and dimensions of class B/C/D airspace.

3.7.1.2.2. For operational missions, the GEOSIT should be tailored to best meet mission requirements, but crews must display, at a minimum VO. **(T-2)**

3.7.1.2.3. MSAs for commonly used areas can be created via Joint Mission Planning System Drawing Files (.drx) and loaded to the GEOSIT. Alternatively, when determining MSAs, aircrew can add 1,000 feet (2,000 feet in mountainous areas) to the maximum elevation figure (MEF) depicted on a VFR chart displayed on the GEOSIT. The MEF represents the highest elevation within a quadrant, including terrain and other vertical obstacles (towers, trees, etc.). MEF figures are rounded up to the nearest 100 feet value and the last two digits of the number are not shown.

3.7.2. Requirements for mission planning. The mission planning system (MPS) is required to show at a minimum, current aviation charts, obstacles and hazards to local operations, military operations areas, restricted areas, alert areas, and designated airspace around local operations and frequently used areas. The MPS will be updated following each product's update cycle, which is typically every 28 days, following the Aeronautical Information Regulation and Control (AIRAC) cycle.

3.7.2.1. Compressed ARC digitized raster graphics (CADRG)/enhanced compressed ARC raster graphics (ECRG) charts are required to be installed on the MPS. CADRG/ECRG is updated on the 28 day AIRAC cycle. ECRG Charts are recommended for use in the MPS due to its better resolution. NGA CADRG/ECRG Charts and updates can be downloaded from **https://map.nga.mil/?activePlugin=moduleGDP**. The following charts are recommended for the MPS. Global Navigational Chart (GNC) (1:5 Million (M)), Joint Navigational Chart (JNC) (1:2M), Operational Navigational Chart (ONC) (1:1M), Tactical Plotting Chart (TPC) (1:500 Thousand (k)) Low Flying Chart (LFC) (1:500k), Transit Flying Chart (TFC) (1:250k), Joint Operations Graphic-Air (JGA) (1:250k), Topographical Line Map (TLM)100 (1:100k) and TLM50 (1:50k). Charts must cover the operational area for the unit, but worldwide coverage is recommended. **(T-2)** Federal Aviation Administration (FAA) Sectionals can be downloaded in LFC and TFC format from **https://aerodata.nga.mil/AeroDownload/**.

3.7.2.2. Controlled Image Base (CIB) is not required to be installed on the MPS, but is recommended. CIB has no regular update cycle. CIB can be installed as CIB 1 (1m imagery) and CIB 5 (5m imagery). CIB can be downloaded from the NGA at **https://map.nga.mil/?activePlugin=moduleGDP**. CIB 1 is recommended to be installed

for only the operational area for the unit due to the size of the CIB 1 files. CIB 5 worldwide coverage is recommended.

3.7.2.3. Digital Terrain Elevation Data (DTED) is required. DTED has no regular update cycle. DTED can be installed in different resolutions, ranging from lowest, to highest: DTED 0, DTED 1, DTED 2. DTED can be downloaded from the NGA at **https://map.nga.mil/?activePlugin=moduleGDP**. DTED 1 and DTED 2 is recommended to be installed on the MPS. DTED must cover the operational area for the unit, but worldwide coverage is recommended. **(T-2)**

3.7.2.4. High Resolution Terrain Elevation (HRTE) is not required to be installed. HRTE has no regular update cycle. HRTE can be installed in different resolutions, ranging from lowest to highest: HRTE 3, HRTE 4, HRTE 5. HRTE can be downloaded from the NGA at **https://map.nga.mil/?activePlugin=moduleGDP**. HRTE is not recommended to be installed on the MPS due to the size of the HRTE files.

3.7.2.5. Digital Aeronautical Flight Information File (DAFIF) is required to be installed on the MPS. DAFIF is updated on the 28 day AIRAC cycle. DAFIF can be downloaded from **https://www.geointel.nga.mil/products/aero/**.

3.7.2.6. Vertical obstructions are man-made point, line and area features on the earth's surface which are sufficiently tall so as to pose a potential hazard to flight. Examples of such features include antennas, buildings, pylons, smokestacks, storage tanks, towers and power lines. The MPS required the following VO types to be installed. **Caution**: NGA's VO database has been extracted from the most reliable sources available. However, there is no assurance that all are identified or that their locations or heights are exact.

3.7.2.6.1. Obstruction Change File (OCF) is a JGA, and TPC VO charting update product and does not report all obstructions. OCF reports in accordance with chart specifications, specifically 150 feet and above obstacles for JGA and 200 feet and above obstacles for TPC. OCF is required to be installed on the MPS. OCF is updated on the 28 day AIRAC cycle. OCF and updates can be downloaded from the NGA at **https://dvof.geointel.nga.mil/dvofpre-num.cfm**.

3.7.2.6.2. Vector Vertical Obstruction Data (VVOD) is NGA's entire database of VO in a vector file. VVOD is required to be installed on the MPS. VVOD is updated on the 28 day AIRAC cycle. VVOD can be downloaded from the NGA at **https://dvof.geointel.nga.mil/dvofpre-num.cfm**. The predefined worldwide coverage file should be installed.

3.7.2.6.3. Environmental Systems Research Institute, Inc. (ESRI) Shapefile is NGA's entire database of VO in a shapefile. ESRI shapefiles are not required to be installed on the MPS. ESRI shapefiles are updated on the 28 day AIRAC cycle. ESRI shapefiles can be downloaded from the NGA at **https://dvof.geointel.nga.mil/dvofpre-num.cfm**.

3.7.2.6.4. Manual Chart Updating Manual (MCHUM) is a unit-created file that includes hazards that have not been categorized in NGA's entire database of VO. MCHUM is required to be installed on the MPS. Reference **paragraph 3.9** on procedures for identifying hazards in the operational area. When uncharted obstacles

are found, update unit MCHUM file with location, approximate height in both AGL and mean sea level (MSL). Do not duplicate NGA VO hazards.

3.7.3. Requirements for aircraft Removable Memory Module (RMM). The 2 terabyte RMM should be uploaded with the following data. The RMM should be updated from an unclassified MPS in order to keep the RMM unclassified. The RMM will need to be updated with the 28 days AIRAC cycle, or if additional data is required due to a change in operational area.

3.7.3.1. CADRG/ECRG is required to be installed on the RMM. CADRG/ECRG is installed on the RMM using the MPS. CADRG/ECRG must be updated on the 28 day AIRAC cycle. The following charts are recommended for the RMM. GNC (1:5M), JNC (1:2M), ONC (1:1M), TPC (1:500k) LFC (1:500k) – Europe Only, TFC (1:250k) – Europe Only, JGA (1:250k), TLM100 (1:100k) and TLM50 (1:50k). Charts must cover the operational area for the unit, but worldwide coverage is recommended. **(T-2)**

3.7.3.2. CIB is not required to be installed on the RMM, but is recommended. CIB is installed on the RMM using the MPS. CIB has no regular update cycle. CIB 1 is recommended to be installed for only the operational area for the unit due to the size of the CIB 1 files. CIB 5 worldwide coverage is recommended.

3.7.3.3. DTED is required to be installed on the RMM. DTED is installed on the RMM using the MPS. DTED has no regular update cycle. The RMM requires both DTED 1 and DTED 2 for proper operation of the aircraft systems. DTED must cover the operational area for the unit, but worldwide coverage is recommended. **(T-2) Note:** HRTE is not recommended to be installed on the RMM due to the size of the HRTE files.

3.7.3.4. DAFIF is not required to be installed on the RMM.

3.7.3.5. Vertical obstructions.

3.7.3.5.1. OCF is required to be installed on the RMM. OCF is installed on the RMM using the MPS. OCF must be updated on the 28 day AIRAC cycle. OCF is only available to JGA (1:250k) and TPC (1:500k).

3.7.3.5.2. VVOD, ESRI shapefile, and MCHUM is not installed on the RMM.

3.7.4. Requirements for aircraft DTD. The 256-gigabyte or 128-gigabyte DTD should be uploaded with the following data. The DTD will need to be updated with the 28 days AIRAC cycle, or if additional data is required due to a change in operational area.

3.7.4.1. CADRG/ECRG is not recommended to be installed on the DTD.

3.7.4.2. DTED and HRTE are not recommended to be installed on the DTD.

3.7.4.3. DAFIF, in the form of the HH-60W Worldwide Navigational Database (WNDB), is required to be installed on the DTD in accordance with the ACC Communications, Navigation, Surveillance/Air Traffic Management Data Compliance Plan, and must be updated on the 28 day AIRAC cycle. The WNDB is automatically written to the DTD during a mission DTD transfer, when it is installed properly in the MPS.

3.7.4.3.1. System Support Representatives (SSR) will download the current HH-60W WNDB from **https://mpc4.mission-planning.org/sites/SPT/Downloads/NAVDB/SitePages/Home.aspx** and install it on each mission planning computer. **(T-3)**

3.7.4.3.2. For contingency operations where SSRs are not available, aircrew can request access to the WNDB website, or delivery of the WNDB through alternate means, by contacting the Mission Planning Support System Facility help desk at +1 (800) SSF-SSFX. ACC/A5YG approves access to the database website on a case by case basis.

3.7.4.3.3. Authorized contractors, aircrew, or maintenance that install updated DAFIF onto the HH-60W aircraft will annotate the following in the AFTO FORM 781A. "The following Aircraft Navigation Database version was uploaded into the FMS: _____ (W####) with an effective date of _____ (dd mmm) to_____ (dd mmm). The database is effective on _____ (dd mmm yyyy) at 0001L. **(T-3)**

3.7.4.3.4. SSRs and Aircrew will report airfields used for training, operations, and contingency missions to ensure that the airfield procedures are included as part of Jacobs "golden database" of airfields. **(T-3)** The list of HH-60W airfields are managed by ACC/A5YG. Send airfields that are not on the list at **https://mpc4.mission-planning.org/sites/SPT/Downloads/NAVDB/AMCNavDBs/Forms/AllItems.aspx** to the following e-mail: **ACC.A5YG.MP@us.af.mil**.

3.7.4.3.5. Local generation of a HH-60W navigational database using the MPS CRH NavDB Tool is not authorized.

3.7.4.4. CIB is not recommended to be installed on the DTD.

3.7.4.5. VOs.

3.7.4.5.1. OCF will not load if installed on the DTD.

3.7.4.5.2. VVOD cannot be loaded to the DTD.

3.7.4.5.3. ESRI shapefile is required to be installed on the DTD. ESRI shapefile is installed on the DTD using the MPS. ESRI shapefile must be updated on the 28 day AIRAC cycle. Shapefiles can be downloaded from the NGA at **https://dvof.geointel.nga.mil/dvofpre-num.cfm**. ESRI shapefile can be loaded for worldwide using multiple files (not recommended) or by downloading a spatial query set to the unit's operational area.

3.7.4.5.4. MCHUM is required to be installed on the DTD. ESRI MCHUM is installed on the DTD using the MPS.

Table 3.2. Data Loading Location.

Data Type	MPS	RMM	DTD
CADRG/ECRG	Required	Required	Not Recommended
DTED 0	Recommended	Recommended	Not Recommended
DTED 1	Required	Required	Not Recommended
DTED 2	Required	Required	Not Recommended
HRTE 3-5	Not Recommended	Not Recommended	Not Recommended
DAFIF	Required	Unable	Required
CIB	Recommended	Recommended	Not Recommended
OCF	Required	Required	Unable

VVOD	Required	Unable	Unable
ESRI (VO .SHX)	Not Recommended	Unable	Required
MCHUM	Required	Unable	Required

Notes:
1. Data in required locations are needed for flight.
2. Data in recommended locations provide additional situational awareness for flight.
3. Data in not recommended locations is accessible in the aircraft, but may be detrimental based on system performance or data updating requirements.
4. Data in unable locations will not be accessible in the aircraft.

3.8. Helicopter Landing Zones.

3.8.1. Landing zone (LZ) surveys. Conduct in accordance with DAFMAN 13-217, *Drop Zone, Landing Zone, and Helicopter Landing Zone Operations* and the following:

3.8.1.1. Single-ship training LZs must provide a minimum of 25-foot clearance from any portion of the helicopter to the nearest obstacle. **(T-2)**

3.8.1.2. Multiple-ship LZs must provide a minimum of one rotor diameter width separation between aircraft and 25 feet of clearance from all other obstacles. **(T-2)**

3.8.1.3. The AF Form 4303, *Helicopter Landing Zone Survey* will be annotated with any restrictions and limitations (hover operations only, single or multi-ship operations, etc.). **(T-2)**

3.8.1.4. When simulated alert missions preclude the crew from reviewing LZ surveys in advance, the operations supervisor or other responsible individual will ensure the AC is aware of the following prior to commencing operations in the LZ: LZ survey expiration date, obstructions/obstacles, power requirements, restrictions and approach or escape route designations. **(T-2)**

3.8.2. Exercise helicopter landing zone surveys. If an aircrew helicopter landing zone survey is not possible, squadron commanders may authorize aircraft commanders to use one of the following methods, in order of priority: Combat Control Team or ground party, satellite photography survey, or thorough map survey (1:50,000 scale map or less). Aircrews will exercise extreme caution when operating into sites that were surveyed with one of these methods.

3.8.3. Non-surveyed/unprepared landing area. Complete a site evaluation in accordance with **paragraph 4.14** when landing to a non-surveyed/unprepared or unfamiliar landing area. **(T-1)**

3.9. Low-Level Surveys. Warning: The HH-60W GEOSIT automatically filters out any VO hazards that are less than 100 feet tall. Prior to training or exercise operations below 500 feet AGL, accomplish a survey of the route/area as follows:

3.9.1. Conduct an extensive map study of the selected routes and areas. Annotate all manmade obstacles over 50 feet AGL and published low-level routes, avoid areas or other hazards within the boundaries. Use the VVOD/OCF or host nation procedures to ensure current obstacles are depicted. **(T-2)**

3.9.2. An experienced pilot selected by the SQ/CC or Squadron Director of Operations (SQ/DO) will fly the survey in day visual meteorological conditions (VMC). **(T-3)** The crew will conduct a visual search of the proposed route or area at the lowest applicable altitude down to a minimum altitude of 50 feet AGL. **(T-3)**

3.9.3. If surveying the entire area is not possible, ensure the area within 5 nautical miles (NM) of the route is surveyed. **(T-3)**

3.9.4. If a route or area has been inactive or flight operations have not been conducted in 12 months or greater, re-accomplish the survey or restrict operations to at or above the lowest level flown during the 12-month period. **(T-2)**

3.9.5. Units deployed for training, operational, and exercise missions do not have to conduct independent flight survey if a current master map and flight survey is provided to the deployed unit by a DoD or North Atlantic Treaty Organization (NATO) military agency that operates helicopters.

3.10. Aircrew Flight Equipment (AFE), Clothing and Safety Equipment. Reference TO 14-1-1 for AFE equipment qualified by AFLCMC/WNUS. This TO does not include items deemed safe-to-fly. Units may contact AFLCMC/WNUV or the MAJCOM AFE Functional Manager for safe-to-fly approved items.

3.10.1. Aircrew members will wear helmets on all sorties. **(T-2) Exception**: Approved headsets may be worn for ground operations and hover checks.

3.10.2. Aircrew members will wear a survival vest for all contingency operations and exercises. **(T-3)** Homestation minimum survival components will be stored in one pocket on the survival vest (except survival radio). **(T-2) Exception:** The FTU may use Aircrew Survival Backpacks ("go-bags") for student AFE survival components in lieu of the survival vest. Aircrew survival vests are not bound by any standard configuration. Minimum survival components are outlined in T.O. 14S1-3-51 and/or SPINS (if applicable). Additional components are authorized to be worn on the survival vest at the discretion of the aircrew member and are not required to be maintained by AFE.

3.10.3. Aircrew members will wear identification tags (dog tags) on their person. **(T-2)**

3.10.4. Overwater Flight. Overwater AFE is not required when overwater flight is limited to short distances during takeoff/landing. When the planned route of flight is beyond auto-rotational distance from land, all occupants will wear life preservers, and aircrew members will wear approved underwater breathing devices and anti-exposure suits in accordance with AFMAN 11-301, Volume 1, *Aircrew Flight Equipment (AFE) Program*, AFMAN 11-301, Volume 2, *Management and Configuration Requirements for Aircrew Flight Equipment (AFE)*, and MAJCOM instructions. **(T-2)** A life raft will be on-board for overwater flights when planned route of flight is beyond auto-rotational gliding distance of land. **(T-3)** A life raft is not required if a radio-equipped boat, hoist-capable helicopter, or aircraft capable of deploying a raft is providing mutual support coverage during overwater operations.

3.10.5. Aircrew members will wear the aircrew uniform and other approved flying clothing and equipment in accordance with AFMAN 11-301 publications and MAJCOM instructions. **(T-2)** Maintenance and logistics support personnel will wear flame resistant flight gear equivalent to the clothing/equipment used by aircrew in in accordance with **para 3.10** when

performing in-flight duties. **(T-3)** Civilian contractors will abide by local contract requirements. **(T-3)**

3.10.6. Any personnel who are required to be in close proximity to an operating helicopter require eye and ear protection. **(T-1)** Additionally, aircrew will ensure hearing protection is available and is responsible for distributing devices to passengers prior to flight. **(T-3)**

3.11. Hazardous Cargo Procedures. Should an aircraft be called upon to transport hazardous cargo, consult AFMAN 24-604, *Preparing Hazardous Materials for Military Air Shipments*.

3.12. Hazardous Medical Equipment. A safe-to-fly list of equipment is maintained by AFMRA/SG4T and can be found at **https://medlog.us.af.mil/apps/equipcat/**. Users may need to request access to enter the site. Medical equipment not approved should be regarded as potentially hazardous.

3.12.1. Electronic medical equipment produces electromagnetic interference which is commonly beyond the limits specified by military standard (MIL STD) 461A and 462, and therefore can interfere with aircraft communication and navigational equipment.

3.12.1.1. The AC must be informed when nonstandard electronic medical equipment is brought on board the aircraft and the anticipated period of use during the mission. **(T-2)**

3.12.1.2. The crew must be alert for any interference with the aircraft communications or navigation equipment during periods of use of this equipment. **(T-2)**

3.12.2. Therapeutic oxygen systems present an increased hazard of fire or explosion. A potential hazard is the inadvertent disruption of the cylinder neck, manifold, or regulator resulting in explosion and propulsion of the container or accessories.

3.12.2.1. Secure compressed oxygen equipment with exposed, unprotected cylinder neck, manifold, or regulator from all movement. **(T-2)**

3.12.2.2. Continually monitor the operation of the equipment to detect possible malfunction during exposure to altitude.

3.13. Takeoff and Landing Data. ACs are responsible for ensuring TOLD calculations are complete.

3.13.1. The use of the aircraft FMS and automated programs tested and certified by appropriate test organizations may be used for TOLD calculations.

3.13.2. TOLD will be computed and briefed prior to takeoff. **(T-2)**

3.13.2.1. As a minimum, the following items will be briefed for all sorties: aircraft tail number, engine torque factors (ETF), aircraft torque factor (ATF), zero fuel weight, total fuel load, gross weight, power available (2.5 min & 10 min), power required, single engine airspeed (SEAS), velocity never exceed (V_{NE}), and onset of blade stall (OBS). **(T-2)**

3.13.2.2. Maximum sustainable bank angles for planned weights and airspeeds using applicable flight manual and energy maneuverability (EM) charts will be computed for all sorties that include tactical maneuvering. **(T-2)**

3.14. Weight and Balance Documentation.

3.14.1. Flying units will maintain an electronic or hardcopy weight and balance book within flight planning areas. **(T-3)** As a minimum the book will contain:

3.14.1.1. DD Form 365 – *Record of Weight and Balance Personnel*, or appointment letter. **(T-3)**

3.14.1.2. DD Form 365-1 Chart A – *Basic Weight Checklist Record* current for each assigned aircraft. The Chart A is not required if maintained by maintenance in a separate weight and balance book. **(T-3)**

3.14.1.3. TO 1H-60(H)W-5-1, *Basic Weight* Checklist, including sample Chart A. **(T-3)** May be maintained in an alternate location and/or electronically, procedures will be documented in **Chapter 8**.

3.14.1.4. DD Form 365-2 Form B – *Aircraft Weighing Record* current for each assigned aircraft. **(T-3)** The Form B is not required if maintained by maintenance in a separate weight and balance book.

3.14.1.5. DD Form 365-3, Chart C – *Basic Weight and Balance Record* current for each assigned aircraft. **(T-3)** If using an approved electronic weight and balance system that references current Chart C data from a centralized database, current Chart C for each aircraft are still required to be kept in the weight and balance book. Ensure the database accurately reflects the current Chart C.

3.14.1.6. TO 1H-60(H)W-5-2, *Loading Data*, including Chart E. **(T-3)** May be maintained in an alternate location and/or electronically, procedures will be documented in **Chapter 8**.

3.14.1.7. Blank DD Forms 365-4 Form F may be maintained in an alternate location and/or electronically, procedures will be documented in **Chapter 8**.

3.14.2. Weight and balance will be computed by utilizing the Automatic Weight and Balance System (AWBS), approved electronic means, or manual computation. **(T-2)** The most current version of AWBS can be found at the following website: **https://awbs.hill.af.mil**. The use of an electronic program other than AWBS requires certification in accordance with TO 1-1B-50 prior to use.

3.14.2.1. Aircraft equipment listed in the sample Chart A in TO 1H-60(H)W-5-1, *Basic Weight* Checklist will not be accounted for on the DD Form 365-4 Form F. Instead maintenance personnel are required to update the DD Form 365-1 Chart A and DD Form 365-3 Chart C.

3.14.2.2. Aircraft equipment listed in the Chart E in TO 1H-60(H)W-5-2, *Loading Data* will only be accounted for on the DD Form 365-4 Form F.

3.14.3. Prior to flight, the AC will verify basic weight and moment on the completed DD Form 365-4 Form F matches the Chart C maintained by maintenance on the aircraft. **(T-2)** File a signed copy of the completed DD Form 365-4 with the flight authorization, or controlling ground agency when away from home station, and a copy on the aircraft for the duration of the mission.

3.14.4. A new or corrected DD Form 365-4 need not be recomputed provided the initial takeoff gross weight is not changed by more than 500 pounds. Although no written adjustments are required, the FE will review changes in gross weight, zero fuel weight, and center of gravity and the AC will ensure limits are not exceeded. **(T-2)**

3.14.5. Canned DD Form 365-4 use is authorized for all operations provided aircraft load/configurations do not change. Canned Form F's will be reviewed every 14 days. **(T-3)**

3.15. Aircraft Equipment and Configuration. Reference the Minimum Equipment List (MEL), Attachment 15, for the list of equipment required for flight and to determine if minimum systems/equipment are available.

3.15.1. For aircraft status, reference AFI 21-103, *Equipment Inventory, Status and Utilization Reporting*, and MAJCOM supplement for the minimum essential subsystem list from **https://usaf.dps.mil/sites/ACC-A4/A4M/A4PM/AFI%2021123%20ACCSUP%20MESL/Forms/AllItems.aspx**

3.15.2. Aircraft will not be modified to secure, and/or install equipment, unless authorized by aircraft technical orders or Department of Defense Instruction 5000.02T, *Operation of the Defense Acquisition System*. **(T-1)**

3.15.3. During flight if aircraft systems/equipment become degraded, and emergency procedures do not drive a specific action, the MEL, Attachment 15, will be referenced to determine aircraft status at time of landing. **(T-3)**

3.16. Degraded Systems/Equipment. The final responsibility regarding equipment required for flight rests with the AC.

3.16.1. If one AC accepts an aircraft to operate a mission, or mission segment, with a degraded or inoperative item or system, this acceptance does not commit that AC, or a different AC, to subsequent operations with the same item or system inoperative. If the AC elects to operate with degraded equipment or aircraft systems, coordinate mission requirements (e.g., revised departure times, fuel requirements, maintenance requirements), prior to flight with the mission control agency to ensure the decision does not adversely impact follow-on missions.

3.16.2. Reference the MEL, **Attachment 15**, for the list of equipment required for flight, and allowed system degradation.

3.17. Tool Kits. A tool kit will be on board for all flights departing the local training area (or traffic pattern during contingency operations). **(T-3)** As a minimum, the kit will include enough tools to remove and install chip detectors. **(T-3)** Tool kits will have an inventory list for accountability and will be sealed. **(T-3)** If the seal is broken, a crew member will inventory the kit and sign the accountability list prior to the next flight. SQ/CCs will designate the OPR responsible for resealing tool kits. **(T-3)** Units will provide and track locally developed training for aircrew to remove and install chip detectors. **(T-3)**

3.18. Publications Required for Flight. Publications must be onboard the aircraft prior to departure either on an aircrew electronic flight bag (EFB) or in a publication kit. **(T-2)** Units will tailor required publications to meet local requirements. **(T-3)** At a minimum the publications will contain items identified in **Table 3.3**. **(T-2)** Aircrew EFBs are restricted to those approved by MAJCOM and will be operated in accordance with MAJCOM guidance. **(T-2)**

Table 3.3. Publications.

PUBLICATION	FORMAT
T.O. 1H-60(H)W-1	Electronic or Hardcopy
T.O. 1H-60(H)W-1CL-1	
T.O. 1H-60(H)W-1CL-2	
T.O. 1H-60(H)W-5-1	
T.O. 1H-60(H)W-5-2	
NATO Standard ATP-3.3.4.1 Prelims, Chapters 1 & 3, Standards Related Document Prelims, Chapters 1, 3, & 7	
AFMAN 11-202V3	
AFMAN 11-2HH-60WV3	
DoDM 4140.25, Vol 3 (Fuel Cards)	
IFR and VFR Supplements	
Flight Information Handbook	
Enroute Low Altitude Charts for areas of operation	
Low Altitude Instrument Approach Procedures for areas of operation	
Maps/Charts (Sectionals) for areas of operation	

Chapter 4

NORMAL OPERATING PROCEDURES

4.1. Checklists. When communicating over ICS, accomplish all flight crew checklists in T.O. 1H-60(H)W-1 Section II, IV, and VIII using the "Challenge-Response" method. **(T-1)** Accomplish all Section III emergency procedures using the "Challenge-Response/Response" method. **(T-1)**

4.2. Crew Duties and Responsibilities.

4.2.1. Change of aircraft control. Pilots will use a statement that includes the crew position such as "Pilot/Copilot has controls" to transfer control. **(T-1)** The other aircrew member will acknowledge using the crew position, "Pilot/Copilot has controls." **(T-1)** Any crew member who is in doubt as to which pilot is controlling the aircraft should immediately query. The pilot relinquishing control should press Remote Standby on their cyclic grip immediately after the transfer of controls is complete. The pilot flying will have the primary flight display selected on their inboard or outboard multi-function display (MFD). **(T-3)**

4.2.2. Engagement of the flight director. Pilots will use a statement that notifies the crew when the FD is coupled such as "Pilot's flight director is coupled". **(T-3)** When transferring the controls while the FD is engaged, the pilots will use a statement that includes the crew position such as "Pilot/Copilot has controls and flight director" to transfer control. **(T-3)** The other aircrew member will acknowledge using the crew position, "Pilot/Copilot has controls and flight director." **(T-3)** Pilots will ensure that the pilot flying's flight director is being used/coupled. **(T-3)**

4.2.3. The FE is the primary member responsible for flight manual checklist execution.

4.2.4. When training or re-currency is being conducted in the cabin, the instructor or flying supervisor will not be used as a primary scanner on the opposite side of the aircraft. **(T-2)**

4.2.5. Boldface. The pilot not flying is the primary crew member responsible for executing BOLDFACE (except those items which require manipulation of flight controls) and emergency checklist procedures while the pilot flying maintains aircraft control and reacts appropriately. All power control levers (PCL), T-handles, switches and fuel selectors will be confirmed prior to being actuated and appropriate checklists will be referenced for guidance during the emergency. **(T-1)**

4.3. AFTO FORM 781 Series, Aerospace Vehicle Forms.

4.3.1. Review the AFTO Form 781 series (aircraft forms) before applying power to the aircraft or operating aircraft systems. **(T-1)**

4.3.2. Ensure that the USAF fuel card and/or other authorized method of payment are aboard the aircraft.

4.3.3. Ensure that the aircraft engine ignition key, door lock key, DTD(s), and CIK are inserted in the aircraft or with the aircraft forms, and are removed in accordance with **paragraph 2.14**.

4.3.4. The exceptional/conditional release will be signed before flight. **(T-1)** When designated maintenance personnel are not available the AC is authorized to sign the exceptional release.

4.3.5. Authority to clear a Red X. The AC or FE normally are not authorized to clear a Red X. If a situation is encountered where the aircraft is on a Red X and qualified maintenance personnel are not available, home station maintenance supervision may authorize the AC or FE to clear the Red X condition.

4.4. Seat Belt Use.

4.4.1. Seat belts and shoulder harnesses will be worn by both pilots when engines are operating. **(T-1) Exception**: During rotor turning ground crew changes, alert scramble run-up, and extended ground operations, a minimum of one pilot will be strapped in and will monitor the controls at all times.

4.4.2. Seat belts and shoulder harnesses will be worn by all crewmembers performing duties in primary crew positions during all phases of flight. **(T-1) Exception**: During periods when performing essential duties that preclude safe wear.

4.4.3. Seat belts will not be stowed or tucked into the seat in a manner that inhibits quick donning. **(T-3)**

4.4.4. Aircrew members will notify the AC when performing duties that preclude the use of a seat belt and upon completion of duties. **(T-3)**

4.4.5. Seat belts and shoulder harnesses will be worn by cabin occupants during practice autorotations. **(T-2) Exception:** Instructors and evaluators who do not have access to a Primary Aircrew Cabin Seat (PACS) or Recovery Team Seat (RTS) and are performing duties in the cabin do not require seat belts or shoulder harnesses during practice autorotations, but will use an authorized restraint device as outlined in **paragraph 4.5**. **(T-2)**

4.5. Restraint Devices. The term ‘authorized restraint device’ pertains to devices approved for use in accordance with technical orders, safe-to-fly approvals, or operational safety, suitability, and effectiveness compliance. A restraint device will be worn by all personnel. **(T-1)**

4.5.1. Restraint device attachment points will be the cabin cargo tie-down fittings. **(T-3)** A maximum of two restraint devices may be attached per cargo tie-down ring. The use of a locking/auto-locking carabineer is authorized and will have a minimum force rating of 5,000 pounds or 23 kilonewtons (kN). **(T-2)**

4.5.2. When use of standard seating is not possible due to mission requirements, personnel will be secured using an authorized restraint device. **(T-1)** Passengers will be secured regardless of door position, except when tactically not feasible. **(T-1) Warning**: Not using a seat belt or restraint device for cabin occupants increases personal injury in the event of an emergency where ground impact and/or aircraft rollover occurs.

4.5.3. Alternate loading allows equipment not required for the mission to be removed and the cabin floor itself becomes a seat. Use the following order of preference to restrain alternate loaded personnel: **(T-3)**

4.5.3.1. Authorized restraint device.

4.5.3.2. Seat belts attached to tie-down rings on cabin floor.

4.5.3.3. Five thousand (5,000) pound tie-down straps attached to tie down rings on cabin floor.

4.5.3.4. Close cabin doors. This method is used as a last resort. Cabin doors will remain closed any time unrestrained personnel are in the cabin.

4.5.4. Restraint devices will be properly adjusted to prevent personnel from inadvertently exiting the aircraft. **(T-1)** Restraint devices may be adjusted to the minimum length required for completing mission essential tasks. **Warning**: An improperly adjusted restraint device may result in injury or loss of life. Accidental exit from the helicopter is possible when adjusted for mission essential tasks.

4.5.5. Restraint devices will not be removed until after landing. **(T-1) Exception**: AIE operations. Exit only when cleared by the AC.

4.5.6. Cargo/Equipment. The AC is the final authority for cargo/equipment that is brought onto the aircraft. Items requiring frequent access weighing less than 200 pounds may be secured with seat belts, lanyards, or carabineers that are designed and rated for the restraint of personnel or cargo. Ensure cargo equipment does not exceed the aft cabin floor loading capacity of 300 pounds per square foot.

4.6. Aircraft Lighting.

4.6.1. Aircraft may operate in restricted areas and warning areas with reduced lighting in accordance with AFMAN 11-202V3 and FAA or host nation exemptions. ACC units reference the ACC/A3TV SharePoint® site: **https://usaf.dps.mil/sites/ACC-A3/A3T/A3TV/SitePages/Home.aspx** for aircraft lighting waivers.

4.6.2. HH-60Ws not operating in a warning/restricted area or under a waiver will operate with the following lighting configurations:

4.6.2.1. Single Ship Operations. Overt position lights and at least one strobe light. **(T-2)**

4.6.2.2. Formation Operations. The lead aircraft will operate with overt or IR position lights, strobe light usage is optional. The wingman or last aircraft in the formation will operate with overt position lights and at least one strobe light. **(T-2)**

4.6.2.3. For combat operations, aircraft lighting will be commensurate with mission requirements, SPINS and local requirements. **(T-2)**

4.7. Aircraft Taxi Restrictions. Aircrew will abide by taxi distances and restrictions per AFMAN 11-218, *Aircraft Operations and Movement on the Ground*, and will not taxi an aircraft within 25 feet of obstructions without wing walkers and no closer than 10 feet with wing walkers unless exempted or waived. **(T-2)**

4.7.1. When taxi clearance is doubtful, use a wing walker. If wing walkers are unavailable or if provided and doubt still exists as to proper clearance, deplane a crew member to maintain obstruction clearance.

4.7.2. Maximum ground taxi speed: 15 knots ground speed (KGS). **(T-2)**

4.8. Rotor Turning Ground Operations.

4.8.1. An aircrew member will escort passengers and/or MEP not familiar with helicopter operations through the safe approach zone (3 or 9 o'clock position) when obstacle clearance permits. **(T-3)**

4.8.2. Rotor turning crew changes are authorized. The new crew will review aircraft forms, weight and balance, TOLD, and complete required flight manual checklists. **(T-2)** If the crew change is accompanied with a maintenance line change, the departing crew should accomplish an IVHMS "End of Operations".

4.9. Altitude Restrictions. Conduct all operations at or above 500 feet AGL except when lower altitudes are required for takeoff, departure, arrival, landing, operational missions, and training flights in approved areas or approved exercise missions. **(T-2)**

4.9.1. Minimum Safe Altitude. Compute a minimum safe altitude for each leg of a low level route. **(T-2)**

4.9.1.1. Alternatively, when determining MSAs, aircrew can add 1,000 feet (2,000 feet in mountainous areas) to the MEF depicted on a VFR Chart displayed on the GEOSIT. The MEF represents the highest elevation within a quadrant, including terrain and other vertical obstacles (towers, trees, etc.). MEF figures are rounded up to the nearest 100' value and the last two digits of the number are not shown. **Exception:** For flights conducted in a designated low-level area, one minimum safe altitude may be computed for the planned area of operation. The heading and altitude must provide a minimum of 1,000 feet (2,000 feet in mountainous areas) above the highest obstacle within 5 NM of either side of the planned route centerline. **(T-2)**

4.9.1.2. When a single MSA is used for designated low-level area, it must be briefed to the crew, and the boundaries can be created via Joint Mission Planning System Drawing Files (.drx) and loaded to the GEOSIT. **(T-2)**

4.9.2. Obstacle Clearance. If known obstacles cannot be visually identified prior to 0.5 NM, climb to a sufficient altitude to ensure obstacle clearance, and do not descend to planned enroute altitude until obstacle clearance is assured. **(T-1) Warning**: Unanticipated wires may be suspended between tall towers, even those not associated with power lines. Crews should prioritize altitude separation when approaching multiple towers in close proximity, as there may be undetectable wires between various types of towers.

4.9.3. Night Unaided. Minimum enroute altitude is 500 feet above highest obstacle (AHO) within 5 NM of the planned route centerline. **(T-2)**

4.9.4. Low-Level. Day and NVG low-level flight below 100 feet AGL is restricted to operational necessity or to meet specific training objectives and is conducted no lower than 50 feet AGL. **(T-2)**

4.9.5. NVG Overwater Flight. With the exception of terminal operations, the minimum altitude for night over water flight is 100 feet above water level (AWL). **(T-2)**

4.9.6. HAAR. Minimum altitude for training is 1,000 feet AGL/AWL. **(T-2)** Minimum altitude for operational missions is in accordance with AFTTP 3-3.HH-60W and Allied Tactical Publication (ATP) 3.3.4.2, *Air-to-Air Refueling*. HAAR will not be conducted with the cockpit doors removed. **(T-2)**

4.9.7. Fuel Dumping. Do not initiate fuel dumping except for operational missions, MAJCOM exercises, or emergencies. **(T-2)** Except during emergencies or when operational needs dictate, fuel will not be dumped below 3,000 feet AGL or over agricultural or populated areas. **(T-0)**

4.10. Helicopter Maneuvering. Any time the aircraft exceeds the maximum sustainable angle of bank for the current conditions, the pilot flying (or any crew member noticing the condition) will announce "overbank." **(T-2)** The pilot flying will ensure bank angle is adjusted to prevent descent below minimum altitudes. **(T-2)**

4.11. Aircraft Refueling. When not directly involved in the refueling operation, personnel will remain clear of the fuel servicing safety zone. **(T-3) Exception**: Approved hot refueling/forward area refueling point (FARP)/contingency operations. Do not taxi another aircraft within 50 feet of a refueling operation. **(T-3)**

4.11.1. Aircrew members certified in hot refueling may perform cold refueling duties. At locations with refueling support, aircrews will not refuel except in isolated cases when maintenance support is not readily available and the mission would be delayed.

4.11.2. The *"AIR Card"* is used to pay for services at commercial fixed base operators. These include aviation fuel, aircraft oil and fluids or other minor maintenance items. The AC is responsible for ensuring the receipt is correct and all appropriate signatures are obtained before departing the fixed base operators. Receipts will be turned in to maintenance debrief upon mission completion.

4.11.3. Conduct hot refueling in accordance with AFI 11-235, *Specialized Fueling Operations*, TO 00-25-172, *Ground Servicing of Aircraft and Static Grounding/Bonding*, and TO 1H-60(H)W-1, *Flight Manual USAF Series HH-60W* and associated checklists. **(T-2)** The left cabin door, left gunner window, and left cockpit door/window will be closed while refueling unless prohibited by mission essential equipment. **(T-3)**

4.12. Forced or Precautionary Landings. If the AC becomes doubtful of the helicopter's airworthiness or encounters hazardous weather conditions, a precautionary landing should be accomplished. When applicable, reference **paragraph 4.3.5** regarding authorities to clear a Red X condition. In the event a forced or precautionary landing occurs the following procedures apply:

4.12.1. If the AC determines the aircraft is not safe for flight, remain at the landing site and await assistance. **Exception**: Contingency operations will be directed by SPINS.

4.12.2. If the aircraft is deemed safe for flight, the AC may authorize a one-time flight to a suitable location for corrective maintenance accessibility or to a location where communications can be established.

4.12.3. If the precautionary landing was made for weather and the aircraft is safe for flight, the flight may be continued once the hazardous weather condition has passed.

4.13. Power Computations. For unknown or predicted site conditions, power computations should not consider wind effects.

4.13.1. Power available and power required will be calculated using the FMS (or approved automated programs). **(T-3)** It will be briefed prior to final approach at sites where terrain, environmental, or aircraft configuration/conditions are less favorable than the previous site. **(T-2)**

4.13.2. When conducting multiple approaches to the same area, power available and power required will be briefed for the maneuver that provides the smallest power margin. **(T-2)**

4.13.3. When the anticipated power margin is 10% or less, a second aircrew member will reconfirm power computations. **(T-2)** Confirmation will be done by having an additional crew member verify accurate numbers were input into the FMS power calculation page or by utilization of other approved TOLD calculation methods. **(T-2)**

4.13.4. Landing Zone Power Requirements. **Note**: Aircrew should use operational power requirements when training in a simulator.

4.13.4.1. Pinnacle or Ridgeline. Power for an out of ground effect (OGE) hover must be available when landing to a surface area smaller than the rotor diameter, such as a pinnacle or ridgeline. **(T-2)**

4.13.4.2. Clear Escape Route. A clear escape route is one wherein no obstacles would impede a go-around or a departure from an LZ using no more power than that required to hover.

4.13.4.2.1. Training. Power available must be equal to or greater than power required for the intended hover height (no less than 10 feet) + 5%. **(T-2)**

4.13.4.2.2. Operational. Power available must be equal to or greater than the power required for the intended hover height. **(T-2)**

4.13.4.3. Restricted Escape Route. A restricted escape route is one with obstacles that require using more power than that required to hover while executing a "go-around" or departure from an LZ.

4.13.4.3.1. Training. Power available must be equal to or greater than OGE hover power + 5%. **(T-2)**

4.13.4.3.2. Operational. Power available must be equal to or greater than OGE hover power. **(T-2)**

4.13.4.4. Water Operations.

4.13.4.4.1. Training. Power available must be equal to or greater than OGE hover power + 5%. **(T-2)**

4.13.4.4.2. Operational. Power available must be equal to or greater than OGE hover power. **(T-2)**

4.13.4.5. Restricted Visibility Operations. A restricted visibility approach is an approach where the crew anticipates losing ground references due to sand, dust, snow, or any other obscuration during any portion of the approach and landing.

4.13.4.5.1. Training. Power available must be equal to or greater than OGE hover power + 5%. **(T-2)**

4.13.4.5.2. Operational. Power available will not be less than 10 foot hover power + 5%. **(T-2)** If the LZ has a restricted escape route, OGE power must be available. **(T-2)**

4.14. Non-Surveyed/Unprepared Landing Zone Procedures. Perform a high and low reconnaissance when landing to non-surveyed or unprepared landing zones. **(T-2)** Exception: Operational/Exercise CSAR missions. For exercises, ensure compliance with **paragraph 3.9.2** of

this publication and, if conditions permit, terminate the approach to a hover and clear the area beneath the helicopter prior to touchdown.

4.14.1. High Reconnaissance. Accomplish the high reconnaissance at an altitude that allows adequate survey of the intended area. In no case will the aircraft descend below 150 feet above site elevation (ASE) and 50 knots indicated airspeed (KIAS) during the high reconnaissance maneuver. **(T-2)**

4.14.2. Low Reconnaissance. Accomplish a low reconnaissance at a minimum of 50 feet AHO along the flight path at a minimum of 50 KIAS or SEAS, whichever is greater. **(T-2)** At the pilot's discretion, the low reconnaissance may be performed on final approach if OGE power is available.

4.15. Unaided Night Approaches.

4.15.1. For approaches to unlit surfaces, brief and conduct an area and site evaluation in accordance with **paragraph 4.14** prior to beginning the approach.

4.15.2. The low reconnaissance will not be conducted. **(T-2)**

4.16. Sling Load Operations. Avoid over flight of personnel, buildings, and equipment to the maximum extent possible.

4.17. Prohibited/Restricted Procedures/Maneuvers. The following procedures/maneuvers are prohibited during training in the aircraft:

4.17.1. Actual engine shutdown in-flight. **(T-1)**

4.17.2. Deliberately entering vortex ring state or power settling. **(T-1)**

4.17.3. Dual Enhanced Digital Electronic Control Unit (EDECU) malfunctions. **(T-1)**

4.17.4. Intentional removal of primary alternating current (A/C) power inflight. **(T-1)**

4.17.5. EDECU lockout actuation will not be performed outside of FCF (or FCF training), operational check flights, emergency procedure training, or actual emergencies. **(T-1)**

4.18. Contact Operations.

4.18.1. A minimum 10-foot AGL main wheel clearance will be used for all contact hovering maneuvers. **(T-2)**

4.18.2. Takeoffs.

4.18.2.1. Marginal Power Takeoff. Initiate from the ground or hover using a target torque value of 10 foot hover power and a simulated 50 foot vertical obstacle. Terminate the maneuver when clear of the simulated obstacle and above SEAS (or 80 KIAS if SEAS is not available).

4.18.2.2. Maximum Performance Takeoff. Initiate from the ground or 10-foot hover using a target torque value of OGE + 5% or as specified by the instructor pilot (IP)/evaluator pilot (EP) and a simulated 100-foot obstacle. Terminate the maneuver when clear of the simulated obstacle and above safe single engine airspeed (or 80 KIAS if safe single engine airspeed is not available).

4.18.2.3. Rolling Takeoff. Initiate from the ground using a target torque value of 10% below 10 foot hover power. Terminate the maneuver when above safe single engine airspeed (or 80 KIAS if safe single engine airspeed is not available).

4.18.3. Traffic Pattern. The following will be used to the maximum extent practical during contact proficiency training. Downwind legs will normally be flown at 500 feet AGL and 100 KIAS. During the turn to base, descend to 300 feet AGL and slow the aircraft to 80 KIAS.

4.18.4. Approaches.

4.18.4.1. Normal Approach. Initiate from 300 feet AGL and 80 KGS using a 30 degree apparent angle. Terminate on the ground or in a hover.

4.18.4.2. Shallow Approach. Initiate from 300 feet AGL and 80 KGS using a 10 degree apparent angle. Terminate on the ground or in a hover.

4.18.4.3. Steep Approach. Initiate from 300 feet AGL and 50 KGS using a 45 degree apparent angle. Terminate on the ground or in a hover.

4.19. Simulated Emergency Procedure Training. Emergency procedures are normally practiced in the simulator. Substitution of a simulated emergency procedures training in the aircraft may be conducted at the discretion of the squadron commander or if the simulator is not co-located or operable. Emergency procedures training will be conducted with an IP in command and at a set of controls. **(T-2) Exception:** Squadron commanders may designate MPs to conduct emergency procedures training without an IP at a set of controls, but MPs must fly with a pilot current in the event. **(T-2) Note**: Emergency procedure training conducted in the aircraft should emphasize degraded aircraft handling over simulated emergency procedure initiation. The following guidance only applies to emergency procedure training conducted in the aircraft:

4.19.1. Accomplish emergency procedures to runways, taxiways, helipads, or other areas approved by the squadron commander and identified in the local **Chapter 8**.

4.19.2. Single-Engine Training. Use an entry airspeed no less than safe single engine airspeed or 70 KIAS if safe single engine airspeed is not available, and artificially limit torque available on both engines. Maximum touchdown speed is 60 KGS. **Note:** When torque available is limited by actual PCL manipulation, the landing area should be a prepared area and provide ample room for a roll-on landing. Initiate no lower than 300 feet AGL, 80 KIAS.

4.19.3. The following maneuvers are practiced by artificially limiting torque available on both engines versus reducing torque available through PCL manipulation:

4.19.3.1. Single-Engine Helicopter Air-to-Air Refueling.

4.19.3.2. Single-Engine approaches to a spot (min-roll).

4.19.4. Stabilator Malfunctions. Do not initiate a stabilator malfunction when the aircraft attitude is greater than 10 degrees nose low. Do not exceed the flight manual variable V_{NE} arc when manually slewing the stabilator.

4.19.5. Boost/SAS-OFF. Initiate on the ground or in straight and level flight at a minimum of 300 feet AGL and 80 KIAS.

4.19.6. EDECU Lockout. Initiate on the ground or in flight at a minimum of 300 feet AGL and 80 KIAS.

4.19.7. Practice Autorotations. Accomplish in VMC.

4.19.7.1. PCLs will remain in fly. **(T-1)**

4.19.7.2. Aircraft heading will be no greater than 45 degrees from the wind direction when winds exceed 15 knots and no greater than 90 degrees from the wind direction when winds are 15 knots or below. **(T-2)**

4.19.7.3. Minimum entry altitudes:

4.19.7.3.1. Straight ahead to 90 degrees: 500 feet AGL.

4.19.7.3.2. Greater than 90 degrees: 800 feet AGL.

4.19.7.3.3. Low altitude autorotation: 100 feet AGL.

4.19.7.3.3.1. Cruise checklist is not required.

4.19.7.3.3.2. Descend from normal pattern to low altitude autorotation pattern no earlier than abeam the intended termination point.

4.19.7.3.3.3. Maximum offset angle from intended termination point is 30 degrees.

4.19.7.4. Minimum entry airspeed is 80 KIAS and N_R within limits.

4.19.7.5. The aircraft must be wings level, have a minimum of 80 KIAS, N_R within limits, and be aligned for landing/recovery heading no lower than 150 feet AGL. **(T-2)** If any of these conditions are not met, initiate a power recovery immediately. The wings level requirement does not prohibit minor heading corrections on final.

4.19.7.6. Initiate a power recovery if any of the following are experienced: Excessive sink rate, rotor revolutions per minute is outside of briefed parameters, ineffective flare maneuver, or a touchdown might occur.

4.19.7.7. Terminate no lower than 15 feet AGL and a maximum speed of 30 knots ground speed.

4.19.7.8. Night autorotations require an IP in command and at a set of controls.

4.19.7.8.1. All crew members must be aided by NVGs. **(T-2)**

4.19.7.8.2. Illumination must be at or above 40% to conduct night autorotations to an unlit surface. **(T-2)**

4.20. Unusual Attitude Training. The following guidance only applies to unusual attitude training conducted in the aircraft:

4.20.1. Accomplish after morning civil twilight and prior to evening civil twilight in VFR conditions and only when an IP/EP is in command and at a set of controls.

4.20.2. Initiate at or above 1,000 feet AGL. Do not exceed 30 degrees of bank, a 20 degrees nose high attitude, or 10 degrees nose low attitude.

4.21. Aircraft Handling Characteristics. Use applicable AFTTP 3-3.HH-60W energy maneuvering charts to compute requirements for each maneuver. Onset of blade stall must be computed using the blade stall chart in the flight manual. **(T-2)** AHC maneuver parameters are found in AFTTP 3-3.HH-60W.

4.21.1. AHC sorties will only be accomplished after morning civil twilight and prior to evening civil twilight, in VFR conditions, and will only be conducted when an IP/EP is in command and at a set of controls. **(T-2)**

4.21.2. Except as noted below, maneuvers will be entered from a minimum of 1,000 feet AGL and recovery completed no lower than 500 feet AGL. **(T-1)** AHO is measured along the flight path.

4.21.2.1. Pitch Up. Enter with a fixed cruise power setting at a minimum of 500 feet AGL.

4.21.2.2. Pitch Down. Enter from straight and level flight at 60-80 KIAS and at a minimum of 1,500 feet AGL.

4.21.2.3. Overbank. Enter at a minimum 1,500 feet AGL.

4.21.2.4. Right Hand Roll Characteristics Demonstration. Enter at a minimum 1,500 feet AGL.

4.21.2.5. Two-Step Climbing Turn. Enter at a minimum of 500 feet AGL.

4.21.2.6. Course Reversal. Enter at a minimum of 500 feet AGL.

4.21.2.7. Low-Level AHC Maneuvers. Bunt, transient torque, acceleration to maximum rate turn, enroute maximum rate turn, enroute maximum displacement turn, and simulated counter to the pitch-back attack will all be initiated at a minimum of 100 feet AHO, and recovered no lower than 100 feet AHO. **(T-1) Exception**: Hovering transient torque-pedal application and acceleration to maximum rate turn may be initiated below 100 feet AHO. Maneuvering during acceleration to max rate will be delayed until above 100 feet AGL.

4.21.3. Low Altitude Deceleration training will be accomplished to open prepared surfaces (runway or taxiway), or surveyed LZs. **(T-2)**

4.21.3.1. OGE hover power + 5% is required.

4.21.3.2. Do not perform this maneuver with a tail wind condition.

4.21.3.3. Initiate at a minimum of 80 KIAS and 50 feet AHO. Terminate no lower than 50 feet AHO. **(T-1)** At no time will any part of the helicopter be below 50 feet AHO.

4.22. Transponder Requirements. The AN/DPX-7 transponder should be flown with the following restrictions.

4.22.1. Mode 1. The HH-60W uses the extended Mode 1 twelve bit reply. Ensure that the extended Mode 1 code maps to the legacy valid 5-bit octal Mode 1 code. Load and operate Mode 1 in accordance with SPINS or host nation requirements.

4.22.2. Mode 2. No restrictions. Load and operate Mode 2 in accordance with SPINS or host nation requirements.

4.22.3. Mode 3A. No restrictions. Load and operate Mode 3A as assigned per air traffic control (ATC), or in accordance with or host nation requirements.

4.22.4. Mode C. No restrictions. Operate Mode C as assigned per ATC, SPINS, or host nation requirements.

4.22.5. Mode S. Mode S and (Automatic Dependent Surveillance-Broadcast) ADS-B OUT should only be turned on when transiting civil airspace that mandates the use of Mode S or

ADS-B. Mode S and ADS-B OUT should be turned off while accomplishing training and operations. Operations should be conducted using Mode 3A/C to the maximum extent possible. Mode 3A/C only operations are authorized at all times anywhere is US controlled airspace.

4.22.5.1. ACFT ID. For CONUS set the aircraft ID to 00000000, never enter actual aircraft tail number or callsign. If required to populate ACFT ID, enter the DD Form 1801, *International Flight Plan*, callsign, which is limited to seven characters (i.e. JOLLY11). Load and operate the ACFT ID in accordance with SPINS or host nation requirements.

4.22.5.2. OP MS ADDR. Only the default assigned Mode S address, or an operational Headquarters Air Force (HAF)/MAJCOM authorized Mode S address from the DoD Air Traffic Control Radar Beacon System, Identification Friend or Foe, Mark XII/Mark XIIA, Systems (AIMS) assigned Mode S address block may be used. DoD AIMS Program Office (PO) assigns Mode S addresses for all US military aircraft after Mode S certification. Platform or Service Program Offices request the 24-bit address from the DoD AIMS PO at **dod.aimspo.wkflo@us.af.mil**. If used, Mode S address must be checked prior to flight to ensure correct Mode S code is properly loaded. **(T-2)** Load operational Mode S address and operate in accordance with SPINS or host nation requirements.

4.22.5.3. MS EHS DATA. No restrictions. Operate Mode S Enhanced Data in accordance with SPINS or host nation requirements.

4.22.5.4. ADS-B. ADS-B OUT should only be turned on when transiting civil airspace that mandates ADS-B. ADS-B is not required at any time in US controlled airspace. ADS-B OUT should be turned off while accomplishing training and operations. Operate ADS-B OUT in accordance with SPINS or host nation requirements. **Caution**: With Mode S/ADS-B set to OFF on the transponder, ADS-B IN will continue to receive transmissions from ADS-B 1090 Megahertz (MHz) equipped aircraft. Automatic Dependent Surveillance-Rebroadcast (ADS-R) and Traffic Information Service-Broadcast (TIS-B) will not be requested from ADS-B ground stations, and received by the transponder. The GEOSIT may display ADS-R data (retransmission of ADS-B Universal Access Transceiver (UAT) equipped aircraft) and TIS-B data (transmission of ATC radar contacts without ADS-B transponders, including the aircraft being flown) if a separate aircraft requests the data from an ADS-B ground station, and is within the same altitude and range requirements. Ground stations transmit ADS-R for traffic within 15NM and 5,000 feet above/below a request, and TIS-B for traffic within 15NM and 3,500 feet above/below a request. **Note:** Devices connected to EFBs may be capable of receiving transmission from both ADS-B 1090 MHz and ADS-B UAT transponders. EFBs may show additional traffic not being displayed on the GEOSIT when the aircraft is not receiving ADS-R and TIS-B.

4.22.5.5. DFLT MS ADDR. This Mode S address should be programmed by maintenance personnel, and should be stored on the aircraft, either a placard in the cockpit, or in the aircraft logbook. Contact maintenance if the default Mode S address is incorrect or is required to be changed. DoD AIMS PO assigns Mode S addresses for all U.S. military aircraft after Mode S certification. Platform or Service Program Offices request the 24-bit address from the DoD AIMS PO at **dod.aimspo.wkflo@us.af.mil**. If used, Mode S address must be checked prior to flight to ensure correct Mode S code is properly loaded. **(T-2)** Load operational Mode S address and operate in accordance with SPINS or host nation requirements.

4.22.6. Mode 4. Not authorized.

4.22.7. Mode 5. For CONUS Mode 5 should be turned ON. Operate Mode 5 in accordance with SPINS or host nation requirements. **Warning**: Operating with the transponder in standby (STBY) and Mode 5 in OFF will not allow for acknowledgment of Mode 5 lethal interrogations. During emission control (EMCON) operations, ensure Mode 5 is set to ON if transponder is set to STBY.

4.22.7.1. LEVEL 2: For CONUS, Level 2 should be set to ON. Operate Level 2 in accordance with SPINS or host nation requirements.

4.22.7.2. SQUITTER: For CONUS, Squitter should be set to ON. Operate Squitter in accordance with SPINS or host nation requirements.

4.22.7.3. NATL ORIGIN and PIN: This Mode 5 National Origin and PIN should be programmed by maintenance personnel, and should be stored on the aircraft, either a placard in the cockpit, or in the aircraft logbook. Contact maintenance if the default National Origin or PIN is incorrect or is required to be changed. DoD AIMS PO assigns the Mode 5 National Origin and PIN for all US military aircraft after Mode 5 certification. Platform or Service Program Offices can download the most recent list at **https://go.intelink.sgov.gov/xHRBSYF**. The Mode 5 National Origin and PIN must be checked prior to flight to ensure Mode 5 is properly loaded. **(T-2)** Load operational Mode 5 National Origin and PIN in accordance with SPINS or host nation requirements.

4.23. Maintenance Debriefing. The AC (or designated aircrew member) will debrief maintenance personnel on the condition of the aircraft and equipment. **(T-3)** Make the following entries in the AFTO Form 781A when appropriate:

4.23.1. "Engines subjected to salt spray at ____feet."

4.23.2. "Aircraft exposed to salt air at ___miles/___feet" (required when flown within 10 miles of saltwater or flight below 3,000 feet AWL).

4.23.3. "Hoist used in salt water/for live operations/for non-live operations"

4.23.4. "Aircraft conducted ____ brown out landings"

Chapter 5

INSTRUMENT PROCEDURES

5.1. Simulated Instrument Flight. Vision restricting device use prohibited in the HH-60W.

5.2. Advisory Calls. The pilot not-flying will make the following advisory calls to the pilot flying at a minimum: **(T-2)**

5.2.1. During Descent:

5.2.1.1. 300 feet and 100 feet above assigned altitude.

5.2.1.2. 300 feet and 100 feet above initial approach fix or holding altitude.

5.2.2. During Non-precision Approaches:

5.2.2.1. 100 feet above minimum descent altitude.

5.2.2.2. *"*Minimums*"* Called at the minimum descent altitude.

5.2.2.3. "Runway in sight" Called when sufficient visual reference (per AFMAN 11-202V3) with the runway environment is established and the aircraft is in a safe position to land.

5.2.2.4. "Go-Around" Called at the missed approach point when visual reference with the runway environment is insufficient to continue the approach or any time the approach becomes unsafe.

5.2.3. During Precision Approaches:

5.2.3.1. 100 feet above decision altitude (DA).

5.2.3.2. "Land" Called at the DA or following a "Continue" call if visual reference with the runway environment (to include red side row/red termination bars) has been established and the aircraft is in a position to execute a safe landing.

5.2.3.3. "Continue" Called at the DA when sufficient visual reference with the approach lighting system has been established. Do not descend below 100 feet above the touchdown zone elevation using the approach lights as the sole reference unless the red termination bars or the red side row bars are also visible and identifiable and the aircraft is in a safe position to land. Aircrew must be aware of the approach lighting system type prior to executing the approach. **(T-2)**

5.2.3.4. "Go-Around" Called at the DA or following a "Continue" call if visual reference with the runway environment has not been established (to include the red side row/red termination bars) or the aircraft is not in a position to execute a safe landing.

5.2.4. During Climbs: 300 feet and 100 feet below assigned altitude.

5.2.5. All Phases of Instrument Procedures.

5.2.5.1. Any aircrew member observing unannounced heading deviations of 10 degrees, airspeed deviations of 10 knots, altitude deviations of 100 feet, and potential terrain or obstruction conflicts will immediately advise the pilot flying. **(T-2)** Announce deviations from prescribed procedures for the approach being flown.

5.2.5.2. During PBN operation, any aircrew member observing an FMS PRAIM alert, primary flight display (PFD) RAIM or RNP alert or RNP that does not coincide with phase of flight (RNP 2.0 for enroute, RNP 1.0 for Terminal, and RNP 0.3 for approach) will immediately advise the pilot flying. **(T-2)**

5.3. Performance Based Navigation.

5.3.1. The FMS meets the requirements of RNAV Technical Standard Order-C115c and the embedded GPS/inertial navigation system (EGI)s meet the requirements of GPS Military Standard Order-C129b. The HH-60W has shown to meet the requirements of Advisory Circular (AC) 20-138D, *Airworthiness Approval of Positioning and Navigation Systems* with some restrictions. Reference the flight manual for authorized and prohibited use.

5.3.2. For flight plan purposes, the HH-60W has the below equipment. Ensure the appropriate blocks of the DD Form 1801, is annotated in accordance with General Planning (GP).

5.3.2.1. Navigational equipment: D-DME, G-Global Navigation Satellite System (GNSS), I-Inertial Navigation, R-PBN Approved, S-(VOR, Very High Frequency (VHF) RTF, ILS), T-Tactical Area Navigation (TACAN), U-Ultra High Frequency (UHF) RTF, and Y-VHF 8.33 Kilohertz spacing. **Note:** When all equipment is operational, the equipment listed in Item 10 of the DD Form 1801 will be: SDGIRTUY.

5.3.2.2. For flight plan purposes, the HH-60W has the following surveillance categories: B2-ADS-B with dedicated 1090MHz ADS-B "out" and "in", and L-Transponder – Mode S including aircraft identification, pressure-altitude, extended squitter (ADS-B) and enhanced surveillance. If ADS-B and Mode S will be restricted for training or operations to Mode 3A/C only due to operations security (OPSEC) concerns, modify the surveillance equipment listed in Item 10 of the DD Form 1801 to /C. **Note:** When all equipment is operational, the surveillance equipment listed in Item 10 of the DD Form 1801 will be: /B2L.

5.3.2.3. For flight plan purposes, the HH-60W has the following PBN categories: B2-RNAV 5 GNSS, C2-RNAV 2 GNSS, D2-RNAV 1 GNSS, O2-RNP 1 GNSS, S1 RNP APCH.

5.3.2.4. **Note:** When all equipment is operational, the equipment listed in Item 18 of the DD Form 1801 will be: PBN/B2C2D2O2S1.

5.4. Use of Approach to Point (ATPT) Mode and Tactical Approach (T-GS) Mode.

5.4.1. ATPT will only be used in VMC. **(T-2)**

5.4.2. The T-GS mode will only be flown in VMC, unless approved as a Self-Contained Approach in accordance with AFMAN 11-202V3 and AFMAN 11-230 and applicable supplements. **(T-2)**

Chapter 6

MISSION EMPLOYMENT

6.1. Low-Level Operations.

6.1.1. Accomplish the TO 1H-60(H)W-1 CRUISE checklist prior to conducting low-level operations, and BEFORE LANDING checklist prior to landing. Subsequent landings to the same area do not require a BEFORE LANDING and CRUISE checklist if the configuration in the checklist does not change, even if the aircraft ascends out of the low-level environment.

6.1.2. Pilots will ensure the entire crew and deploying personnel are updated on the status of the flight, and advised of events that impact the mission and their duties. **(T-2)** As a minimum, alert the crew and deploying personnel at 20 minutes, 10 minutes, 5 minutes, and 1 minute prior to the objective. **(T-2)**

6.1.2.1. Aircrew will make crew advisory calls prior to all turns, and will continuously clear the flight path throughout the turn. **(T-1)**

6.1.2.2. Prior to making a break call, ensure the aircraft is cleared in the direction of turn. **(T-1)** If a break is required to the opposite side of the scanner calling the break, the opposite scanner is responsible for immediately clearing the aircraft and calling "Clear Right/Left" or "Stop Turn Right/Left" and subsequent corrective action such as "Climb" or "Descend".

6.1.3. Flight lead/ACs are responsible for ensuring that planned evasive maneuver training takes into account aircraft performance, environmental conditions, formation spacing, and crew/flight experience. Do not conduct enroute evasive maneuver training below 100 feet AGL/AWL. **(T-2)**

6.1.4. Tactical low-level approaches will only be flown during tactical training missions and operational missions. **(T-2)** Conduct combat rescue terminal operations in accordance with AFTTP 3-3.HH-60W and AFTTP 3-1.HH-60G *Combat Aircraft Fundamentals HH-60G (S)*. **(T-2)**

6.1.5. Unknown Position. During training, if unable to establish aircraft position, climb to a safe altitude and reorient the crew's position before resuming low-level navigation.

6.2. Formation.

6.2.1. Formation Responsibilities. Unless briefed otherwise, formation lead will direct and chalk two will set the formation. **(T-2)** Lead changes should only be directed by flight lead.

6.2.2. The minimum separation between the closest portions of any two helicopters in a formation is one rotor diameter. Rotor disk separation will be based on the largest rotor disk diameter. **(T-2)** Maximum formation separation is based on environmental conditions, visibility, illumination, crew experience, threat situation, and mission requirements.

6.2.3. Taxi aircraft with a minimum of 100 feet spacing from main rotor to tail rotor. **(T-2)**

6.2.4. Radio communication between formation aircraft is required. **(T-1)**

6.3. Tactical Formation Maneuvering.

6.3.1. When flying in formation with less than 3-rotor disks separation, the only authorized tactical formation maneuvers are: shackle, split, cover, and dig.

6.3.2. Center and cross turns will not be accomplished at night. **(T-1)**

6.3.3. When conducting tactical formation maneuvering at night, roll out headings will be called during break, split, hook, and tac turns. **(T-2)**

6.4. NVG Procedures. Illumination restrictions below apply when relying solely on visual means to ensure aircraft deconfliction and determining formation aspect and closure rates relative to the other aircraft. Air-to-Air TACAN separation, datalinks, geographic, timing, or altitude separation are all acceptable means of deconfliction.

6.4.1. Flight leads will brief a deconfliction plan. **(T-2)** Enroute formation spacing and aspect angle may be increased beyond the restrictions listed below provided:

6.4.1.1. Non-visual means are used to augment formation visual station keeping; or

6.4.1.2. Procedural deconfliction is used.

6.4.1.3. Deconfliction plans utilizing non-visual augmentation tools must account for system limitations (e.g., datalink update rates, TACAN terrain bounce errors) through redundant system/technique usage. **(T-2)**

6.4.2. While over featureless terrain or water, limit formation maneuvers to those necessary for mission accomplishment.

6.4.3. Night turning rejoins will be limited to a maximum of 20 degrees angle of bank and 80 KIAS. **(T-2)**

6.4.4. Low Illumination Restrictions. Defined as less than 10% equivalent moon illumination. Formation geometry should not exceed 1-3 rotor disks and 30 degree aspect unless additional non-visual station keeping methods are used.

6.4.5. Medium Illumination Restrictions. Defined as the range between 10-40% equivalent moon illumination. Formation geometry should not exceed 1-10 rotor disks and 45 degree aspect unless additional non-visual station keeping methods are used.

6.4.6. High Illumination Restrictions. Defined as greater than 40% equivalent moon illumination. Minimum aircraft separation is 1 rotor disk. The maximum separation is based on environmental conditions, crew experience, threat situation, and mission requirements. Maneuvers are in accordance with AFTTP 3-3.HH-60W.

6.4.7. Night operations into unprepared-unlighted areas will only be conducted using NVGs. **(T-3)**

6.4.8. The SQ/CC may authorize operations into prepared-unlighted areas unaided, provided the crew is aware of all obstacles, and aircraft lighting provides sufficient illumination to clearly see the approach path, landing surface, and obstacles.

6.4.9. The AC will factor terrain, crew experience, and mission complexity into the risk assessment and determine whether there is sufficient available illumination to safely conduct NVG low-level operations. **(T-3)** When available ambient illumination is insufficient to safely conduct NVG flight, the minimum altitude is 500 feet AGL in non-mountainous areas and 500 feet AHO within 2 NM of course centerline in mountainous areas. **(T-2) Note:** Mountainous areas are defined as an area of changing terrain where the changes of terrain elevation exceed 3000 feet within 10 NM.

6.4.10. NVG flights require a visible landing/searchlight and one of the following: an operational electro-optical/infra-red (EO/IR) sensor, an infrared (IR) landing/search light, or a variable intensity landing/search light.

6.4.11. Landing/search lights will be on for all unaided night takeoffs and after turning final for night unaided approaches unless safety, weather, excessive glare, or operational mission requirements dictate otherwise. **(T-2)**

6.4.12. NVGs must be preflight tested and adjusted by the individual prior to NVG operations. **(T-2)**

6.4.13. Aircrew members will announce to the crew when donning or doffing NVGs during taxi or flight operations. **(T-2)**

6.5. Dissimilar Formation. Formation flights with dissimilar aircraft are authorized when all participating aircrew members are briefed and thoroughly familiar with the other aircraft's performance and tactics. Rotor disk separation is based on the largest rotor disk diameter. MAJCOM/A3 or COMAFFOR approval is required to fly formation with non-NATO, civilian and heritage/historic aircraft.

6.6. Water Operations. The primary method of accomplishing water operations is using the FD. These restrictions also apply when FD is not being used.

6.6.1. Conduct water training a minimum of 100 meters offshore

6.6.2. During NVG water operations, do not exceed 30 degree bank angle when below 100 feet AWL.

6.6.3. Except during terminal operations, maintain a minimum of 50 KIAS.

6.6.4. The observation pass will be performed above effective translational lift and a minimum of 25 feet AWL. **(T-2)** Do not perform during NVG water operations.

6.6.5. Do not descend below 100 feet AWL until established on final.

6.6.6. Initiate climbing turns at a minimum of effective translational lift and 50 feet AWL.

6.6.7. No malfunctions in the radar altimeter system or Embedded Terrain Awareness Warning System (ETAWS) can exist during NVG water operations. **(T-3)**

6.6.8. No malfunctions in the Advanced Helicopter Emergency Egress Lighting System (ADHEELS) can exist during NVG water operations or extended night overwater flight. **(T-3)**

6.6.9. Single ship day water operations require that a controlling agency know the specific location for water operations, number of personnel on board and expected completion time prior to commencing. Line of sight communications is not required during actual water operations. Notify the controlling agency upon completion.

6.6.10. Helocast altitude is 10 feet AWL and speed is 10 knots ground speed. Minor deviations in altitude and airspeed are acceptable only with concurrence of the AC and deploying personnel. **Warning**: Wave height/action can make it difficult for aircrew to maintain helocast parameters, and momentary deviations should be expected. Altitude and ground speeds exceeding 10 feet and 10 knots increase the potential for injuring a swimmer, and altitudes below 10 feet increase the potential of the aircraft contacting the water. When conditions make

it difficult to maintain safe parameters, the AC will evaluate mission urgency and consider the potential for other methods of swimmer deployment. **(T-2)**

6.6.11. Hoist extraction devices will be readily accessible prior to helocast deployments. **(T-2)** Complete required rescue hoist checklists prior to final approach for hoist infiltration or exfiltration.

6.6.12. When conducting NVG Water operations, ensure all aircrew members have adequate visual references to assess aircraft position, altitude, ground speed, and drift. Any aircrew member that loses visual references will immediately bring it to the attention of the rest of the crew. **(T-2)**

6.6.13. NVG water operations and live water operations (actual deployment of personnel) require coverage by a boat, hoist-equipped helicopter, helicopter capable of deploying Guardian Angel (GA) personnel (or joint service equivalent) and/or a life raft or H/K/MC-130 rigged for deployment of the MA-1 or MA-2 (or equivalent) survival kit or Rigging Alternate Method Zodiac (RAMZ). **(T-3)**

6.7. General AIE Operations. USAF personnel deploying from the aircraft via AIEs must be qualified or certified or be under direct supervision of a qualified instructor or equivalent. **(T-2)** SQ/CCs (delegable to SQ/DO) will ensure joint/coalition forces personnel deploying from the aircraft are appropriately qualified or certified or are under direct supervision of a qualified instructor or equivalent. **(T-0) Warning:** The AC will ensure aircrew and deploying personnel are aware of the length of the devices. **(T-1)** Failure to do so may result in serious injury to deploying personnel and/or damage to the aircraft. **Warning:** Devices used for non-live AIE training will be marked with yellow tape/paint and clearly distinguishable from operational equipment. **(T-3)** Only operational equipment will be used for live AIE operations. **(T-1)**

6.7.1. Units will develop a program to ensure unit-owned equipment is tracked, maintained, inspected, and serviceable. **(T-2)** At a minimum, units will ensure compliance with current manufacturer procedures and requirements outlined in TO 00-25-245, *Testing and Inspection Procedures for Personnel Safety and Rescue Equipment.* **(T-2)**

6.7.2. Mission Briefing. Prior to deployment, the AC will ensure the Alternate Insertion/Extraction Briefing is complete. **(T-2)**

6.7.3. Safetyman. During live AIE operations an aircrew member or team member will be designated as the safetyman. **(T-1)** The safetyman will monitor intercom and will be in a position to evaluate the safety of the operation(s) and take action to avert a hazardous situation. **(T-1)** During NVG operations the safetyman must ensure the AIE Master can see the appropriate hand signals. **(T-1) Warning:** Altitude deviations while personnel are on the ropes will have an adverse effect on their braking ability and can cause serious injury. During the hover, the safetyman must relay sufficient information to the pilots to ensure the ropes do not leave the ground during altitude deviations. **(T-1)**

6.7.4. AIE/Rope Master. The AIE/rope master is a deploying team member responsible for making the final determination on the safety of the operation and will be identified prior to AIE operations. During operations when the AIE master cannot safely determine operational parameters (aircraft altitude, drift, obstacles, and rope position), the AIE master will coordinate with the safetyman for assistance. **(T-1)**

6.7.5. Position non-essential equipment, and/or personnel, to prevent interference with AIE operations.

6.7.6. During live training deployments at night, chemlights will be used to identify all ropes. **(T-3)** Chemlights should be used to identify all ropes during non-live training. During operational missions, chemlight use will be at the discretion of the deploying team leader.

6.7.7. Ropes will be released or retrieved prior to commencing forward flight. **(T-2)**

6.7.8. A cutting device (e.g., V-blade knife) will be readily available to cut ropes or AIE devices in case of emergencies or rope entanglement. **(T-2)**

6.7.9. Rappelling Operations. Deploying personnel are responsible for aircraft rigging and personnel hookup. The deploying team is responsible for providing rappel ropes, harnesses, and rappel devices. A SMA will inspect aircraft rigging prior to deployment to ensure configuration complies with **paragraph 6.10** of this volume. **(T-2)**

6.7.10. Rope Ladder Operations. The flight crew is responsible for providing, inspecting, and installing rope ladders in accordance with TO 00-25-245. Ladders will be rolled or stacked and secured prior to flight. **(T-2) Warning:** The rope ladder will not be used for fly away extractions during training. **(T-2)** During contingencies, do not use unless threat to personnel remaining on the ground is higher than risk associated with in-flight rope ladder failure. If used in forward flight, altitude will be the absolute minimum; airspeed will not exceed 40 KIAS. **(T-2)**

6.7.11. Fast Rope Insertion/Extraction System (FRIES) Operations. The deploying team is responsible for providing the ropes and assisting crewmembers in inspection and aircraft rigging). A SMA will inspect aircraft rigging prior to deployment. **(T-2)**

6.8. AIE Deployment Procedures.

6.8.1. During fast rope, rappel, and rope ladder operations, the pilot flying gives the command "ROPES, ROPES, ROPES" when the aircraft is in a position to safely deploy the device and the team. This is the pilot's clearance for the team to deploy. The device may be deployed on the first command "ROPES."

6.8.2. Following the pilot's clearance for the team to deploy and during operations where the AIE/rope master can safely determine operational parameters, the team deploys at the discretion of the AIE/rope master.

6.9. Fast Rope.

6.9.1. The FRIES bar will be extended and locked prior to final approach. **(T-3)**

6.9.2. If requested by the deploying rope master, the aircraft may have a maximum forward ground speed of 5 knots.

6.10. Rappelling.

6.10.1. The primary rappelling rope attachment point is the FRIES release mechanism. A secondary safety attachment point is required for all rappelling operations and will be either an upper cargo net restraint ring, cargo tie-down ring or the opposite side FRIES release mechanism. **(T-2)** When an upper cargo net restraint ring or cargo tie-down ring is used, rappel

ropes will be attached using locking/auto-locking carabineers with minimum force criteria of 5,000 pounds or 23 kN. **(T-2)**

6.10.2. Once connected to the rappelling equipment, deploying personnel may release other restraints in preparation for the exit.

6.11. Rope Ladder Operations. Warning: Use only certified rope ladders for live employment.

6.11.1. Rope ladders will be attached to the cabin floor tiedown fittings in accordance with TO 00-25-245. **(T-1)**

6.11.2. The maximum number of personnel on a ladder is three.

6.11.3. If mission conditions permit, close the cabin door not being used for recoveries prior to personnel entering the aircraft.

6.12. Hoist Operations. The following devices are approved: rescue basket, SKEDCO®, Stokes litter, rescue strop, quick strop and forest penetrator. **Warning:** Failure to properly inspect, monitor, and report hoist and/or cable deficiencies may result in undetected cable damage that could result in cable failure.

6.12.1. Use of a tag line and weak link with the SKEDCO® litter is mandatory. **(T-2)** A tag line and weak link should be used with the stokes litter when a ground party is available. The deploying team is responsible for providing the tag line and assisting the crewmembers in inspection and aircraft rigging. **Warning:** The SKEDCO® litter's non-porous surface causes it to spin rapidly when exposed to rotor downwash. The SKEDCO® litter should be actively controlled with a taut tag line to prevent spinning.

6.12.2. A hoist cable quick splice device will be readily available. **(T-2)**

6.12.3. The hoist will not be used as an anchor point for fast rope or rappel operations. **(T-2)**

6.12.4. All aircrew members must be vigilant for shock loads to the cable. If shock loading is observed, cease live hoist operations and replace the cable prior to the next mission. **Note:** During water operations, the dynamic action of waves increases the potential for shock loading. Additionally, the increased drag of the stokes litter or personnel in the water increases the total force applied to the cable.

6.12.5. During live hoist operations, crews will evaluate potential hazards and consider all recovery options during operational missions and exercises. **(T-2)** If the cable contacts the aircraft, operations will cease until a visual check of the cable is complete and no defects are noted. **(T-2)** Live hoist operations (training or operational) will be accomplished at the lowest altitude required to complete objectives. **(T-3)**

6.12.6. Personnel may ride the hoist with SQ/CC approval and the following:

6.12.6.1. Aircrew members and personnel current in a course that provides hoist training such as combat or water survival training: No safety observer is required. Hoist riders will receive refresher/familiarization of devices and procedures from a qualified SMA, GA, or Survival, Evasion, Resistance, and Escape (SERE) Specialist prior to the event. **(T-3)**

6.12.6.2. Personnel that do not receive formal hoist training: Hoist riders will receive familiarization of devices and procedures from a qualified SERE Specialist, GA, or SMA prior to the event. **(T-3)** Hands-on familiarization will include rigging procedures, proper

wear/use, and cabin entry/exit and associated safety items as a minimum. **(T-3)** A safety observer trained in hoist operations will provide assistance and verify proper use/connection of devices. **(T-3)**

6.12.6.3. Hoist riders will wear eye protection, ear protection, and protective head gear/helmet. **(T-3)**

6.12.6.4. SQ/CCs or equivalent must approve lifting hoist riders above 50 feet AGL for training. **(T-3)**

6.12.6.5. Do not conduct live hoist training with the hoist operator's intercom inoperative. **(T-1)**

6.12.6.6. Do not conduct simulated hoist emergency procedure training in conjunction with live hoist training. **(T-1)**

6.12.7. When the hoist is used for infiltration operations, before placing the cable under any load, the hoist operator will physically verify that deploying personnel are properly configured, the hoist hook is properly connected, and the connection point is designed to support the weight of the load. **(T-1)**

6.12.8. Except during water recoveries, lower the stokes litter to the survivor after the helicopter is established in a hover. **(T-2)** For water recoveries, the stokes litter may be deployed using helocast deployment procedures.

6.12.9. A maximum airspeed of 40 KIAS may be used with the stokes deployed to stop a swinging or rotating litter, to maintain position in high winds, or over a moving vessel. During actual rescue missions, accomplish a thorough risk assessment if speeds in excess of 40 KIAS are required during stokes use, particularly when the stokes litter is empty.

6.12.10. The rescue basket may be lowered on final approach at airspeeds below 30 KIAS. While in slow forward flight for a water recovery, the 10-foot line may be allowed to contact the water prior to reaching the survivor.

6.12.11. If mission conditions permit, close the left cabin door prior to conducting live hoists.

6.13. Parachute Operations. Warning: Remove rear chaff and flare dispensers when static line operations will be performed.

6.13.1. Mission Briefing. A thorough briefing will be conducted and aircrew members and the jumpmaster will attend. **(T-3)** Ensure the briefing covers the use of restraining devices, exits, and movement in cargo compartment. When conducting operations with jumpers from other services, the procedures outlined in this publication and TC 3-21.220/AFMAN 11-420, *Static Line Parachuting Techniques and Training* and AFMAN 11-411, *Special Forces Military Free-Fall Operations* will be used unless different procedures are authorized by the MAJCOM. **(T-0)**

6.13.2. Wind Limitations for Personnel Parachute Delivery. Wind limits will be in accordance with DAFMAN 13-217 and pre-briefed by the jumpmaster. **(T-1)**

6.13.3. Personnel exit the aircraft on command of a qualified jumpmaster, after clearance is received from the AC.

6.13.4. Abort Procedures. When conditions are not safe for the drop, or if the drop is aborted for any reason, the following procedures will apply: The term "Abort" will be used to alert the crew of an aborted deployment. **(T-3)** An aircrew member will display a closed fist to personnel not on intercom. **(T-3)**

6.13.5. The minimum pattern altitude is 1,500 feet AGL/AWL. Specific airspeed must be briefed prior to takeoff. **(T-1)**

6.13.6. Do not attach Static lines until the aircraft is 1,000 feet AGL/AWL or higher. **(T-1)**

6.13.7. Personnel will not release personal restraint devices until static lines are attached in accordance with operating guidance. **(T-1)**

6.13.8. When delivering parachutists from only one side, ensure the door on the opposite side of the cabin is closed.

6.13.9. The pilot will give 10-minute, 5-minute, and 1-minute warnings prior to reaching the drop zone. **(T-2)** The pilot will call 1 minute prior to drop and will announce "clear to drop" after the "safetyman check completed" response is received. **(T-2)** The final decision on whether or not to jump rests with the AC. The jumpmaster will acknowledge all calls from the pilot. **(T-2)**

6.14. Air Combat Maneuvering (ACM) Training. Helicopter ACM training against fixed wing and rotary wing aircraft is authorized. ACM training will be accomplished in accordance with guidance found within this AFMAN, AFTTP 3-3.HH60W, and AFI 11-214, *Air Operations Rules and Procedures*. **(T-1)**

6.14.1. All aircrew members must be certified in BHM and current in AHC. **(T-2)**

6.14.2. Unlimited. Each crewmember must be ACM certified or receiving instruction in their respective crew position to execute in the "Unlimited Maneuvering Category" described in AFI 11-214. **(T-2)**

6.14.3. Limited. All mission qualified HH-60 crews may execute in the "Limited Maneuvering Category" restrictions described in AFI 11-214.

6.14.4. NVG Aided. All visual NVG air-to-air training requires a discernable horizon. **(T-1)**

6.15. Weapons Employment. Units will ensure that weapon systems employment procedures and training standards are included in the unit weapons and tactics training program. Refer to AFI 11-214, AFTTP 3-1.HH-60G, AFTTP 3-3.HH-60W, and local range procedures/restrictions for guidance. **(T-2)** Units will ensure that detailed local weapons employment procedures are included in their local **Chapter 8**. **(T-2)**

6.16. Laser Employment. Units will ensure that laser employment procedures and training standards are included in the unit weapons and tactics training program. Refer to AFI 11-214, AFTTP 3-1.HH-60G, AFTTP 3-3.HH-60W, and local range procedures/restrictions for guidance. **(T-2)** Units will ensure that detailed local laser employment procedures are included in their local **Chapter 8**. **(T-2)**

6.17. Aircraft Wireless Intercom System (AWIS). Ensure AWIS is set to CIPHER prior to discussing classified information over the ICS. Alternatively, AWIS can be turned off in the EMCON menu in the FMS.

Chapter 7

ABNORMAL OPERATING PROCEDURES

7.1. Blind Conditions. Two conditions may result in formation aircraft losing visual contact with one another:

7.1.1. Anticipated Blind. Terrain/environmental factors cause a loss of visual cues for a short duration or when visual cues are lost when using pre-coordinated non-visual station keeping that provides sufficient situational awareness to ensure deconfliction. Examples: Holding one aircraft in terrain while the other unmasks for line of sight to the survivor, an aircrew member sees terrain that will come between the formation and the use of non-visual means to maintain aircraft separation.

7.1.2. Unanticipated Blind. Visual cues required for formation separation no longer provide sufficient distance, aspect or closure rate cues to ensure deconfliction, or when non-visual methods do not provide sufficient situational awareness to ensure positive deconfliction. Examples: The wingman loses sight of the lead aircraft in ground lights or while maneuvering independently such as during evasive maneuvering.

7.2. Blind Procedures. In the event one or more aircraft loses visual contact within the formation during VMC, flight lead will direct a deconfliction plan using the following procedures:

7.2.1. If any flight member/element calls "Blind", the other flight member/element will acknowledge with "Visual" and an informative position call or acknowledge with "Blind." **(T-1)** If any flight member/element calls "Blind with SA" the Flight Lead directs "Continue" with heading.

7.2.2. If the other flight member/element acknowledges with "Blind", flight lead will immediately take action to ensure separation between flight members/elements. **(T-1)** When unable to ensure separation using non-visual means, flight lead will direct an altitude separation of at least 200 feet and specify AGL or MSL. **(T-1)**

7.2.3. If there is no timely acknowledgment of the original "Blind" call, then the flight member/element initiating the call will maneuver away from the last known position of the other flight member/element and alter altitude if unable to ensure aircraft separation by non-visual means. **(T-1)**

7.2.4. If visual contact is not regained, flight lead will take additional positive action to ensure flight path deconfliction within the flight to include a Terminate/Knock-It-Off if necessary. **(T-1)** Scenario restrictions such as sanctuary altitudes and/or adversary blocks must be considered. **(T-1)**

7.2.5. When using visual cues as the sole means of ensuring aircraft separation, the formation will maintain altitude separation until a visual is regained or non-visual separation methods are coordinated. **(T-1)**

7.3. Lost Wingman Procedures. In the event one or more aircraft loses visual contact within the formation during instrument meteorological conditions (IMC), all members of the formation must react quickly and precisely to prevent a midair collision. Formation lead will initiate a breakup in accordance with the following procedures:

7.3.1. The aircraft losing contact will call, “Call Sign, Lost Wingman.” (For non-standard formations, include formation position). **(T-1)** Formation lead will immediately initiate a breakup by announcing “Call sign, execute” “mountainous” or “non- mountainous”” (unless pre-briefed). **(T-1)** Formation lead will announce base “heading” (magnetic), base “airspeed”, base “MSA” and will maintain base parameters. **(T-1)** Wingmen will acknowledge lead’s call and take action according to formation position, the type of breakup and base information provided. **(T-1)** Once the formation executes the IMC breakup, lead will announce or brief any changes to magnetic headings, airspeed, and MSA. **(T-1)**

7.3.2. If a lost wingman call is made within the formation and visual is maintained on the preceding aircraft, maintain visual and formation position. VMC aircraft will remain VMC. **(T-1)** If visual contact is lost or aircraft enter IMC, execute lost wingman procedures from the original position in the formation.

7.3.3. If a wingman calls lost wingman and formation lead is VMC and able to ensure terrain/obstacle clearance, lead should stay VMC. Formation lead will still make base heading, base airspeed, and MSA calls for wingmen executing lost wingman procedures. Do not go IMC if VMC can be maintained.

7.3.4. Non-Mountainous Procedures (**Figure 7.1**). Execute non-mountainous lost wingman procedures in accordance with the following. **Note:** During operational situations, where the risk of actual enemy detection/engagement is greater than low altitude marginal weather operations, alternate breakup procedures may be briefed/executed.

7.3.4.1. Upon the “Execute non-mountainous” call, formation lead maintain base heading, maintain base airspeed, and climb to base MSA.

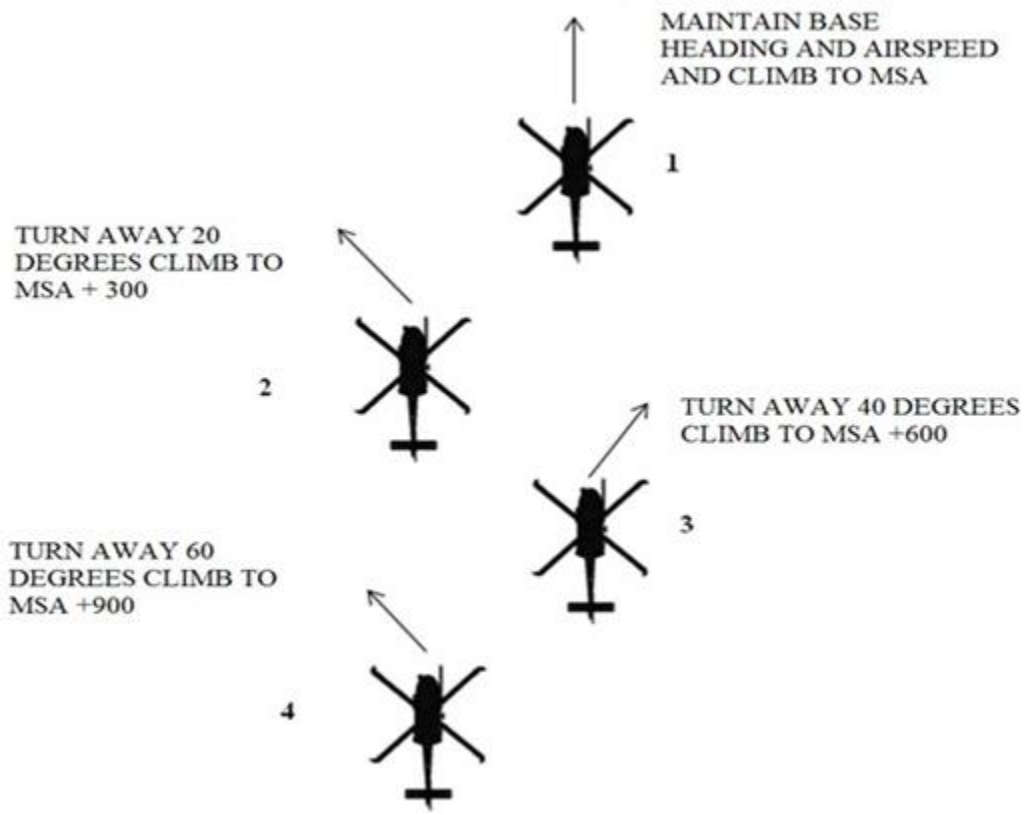
7.3.4.2. Upon the “Execute non-mountainous” call, Chalk 2 will initiate a left turn away from the preceding aircraft to a heading 20 degrees offset from the base heading and initiate a climb to MSA plus 300 feet. **(T-1)**

7.3.4.3. Upon the “Execute non-mountainous” call, Chalk 3 will initiate a right turn away from the preceding aircraft to a heading 40 degrees offset from the base heading and initiate a climb to MSA plus 600 feet. **(T-1)**

7.3.4.4. Upon the “Execute non-mountainous” call, Chalk 4 will initiate a left turn away from the preceding aircraft to a heading 60 degrees offset from the base heading and initiate a climb to MSA plus 900 feet. **(T-1)**

7.3.4.5. Once altitude is reached, maintain offset heading for 30 seconds and then return to the base heading called by formation lead during the “Execute non-mountainous” call.

Figure 7.1. Non-Mountainous Procedures.



7.3.5. Mountainous Procedures (**Figure 7.2**). Execute mountainous lost wingman procedures in accordance with the following. **Note:** During operational situations, where the risk of actual enemy detection/engagement is greater than low altitude marginal weather operations, alternate breakup procedures may be briefed/executed.

7.3.5.1. Upon the "Execute mountainous" call, formation lead will maintain announced base airspeed or higher and climb to MSA. **(T-1) Note:** Formation lead should accelerate to provide maneuvering room for the formation and to avoid slow airspeeds for wingmen.

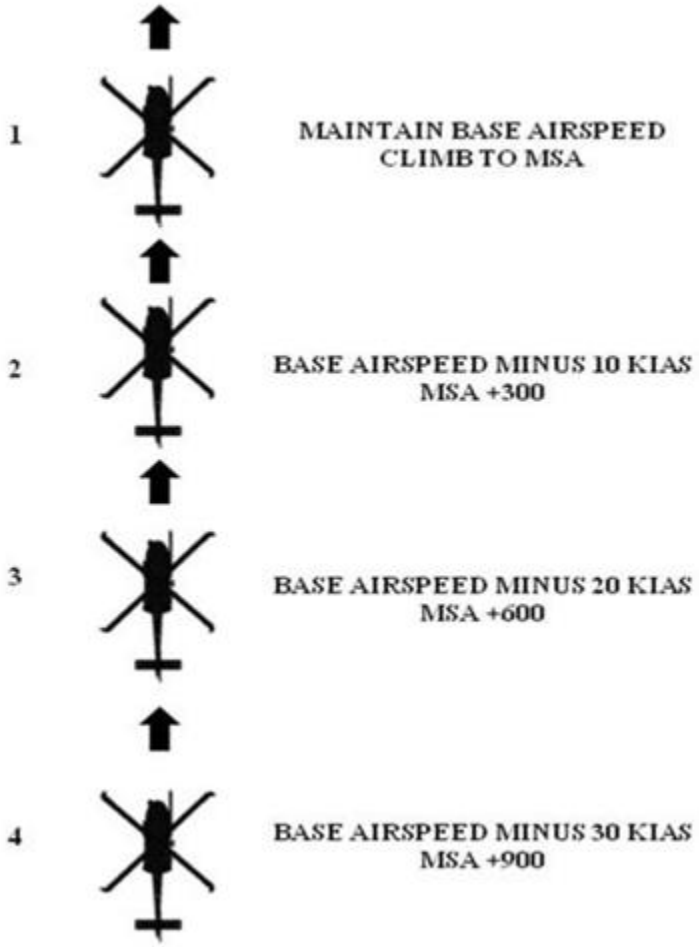
7.3.5.2. Upon the "Execute mountainous" call, Chalk 2 will adjust to maintain announced base airspeed minus 10 KIAS and initiate a climb to MSA plus 300 feet. **(T-1)**

7.3.5.3. Upon the "Execute mountainous" call, Chalk 3 will adjust to maintain announced base airspeed minus 20 KIAS and initiate a climb to MSA plus 600 feet. **(T-1)**

7.3.5.4. Upon the "Execute mountainous" call, Chalk 4 will adjust to maintain announced base airspeed minus 30 KIAS and initiate a climb to MSA plus 900 feet. **(T-1)**

7.3.5.5. Once assigned altitude is reached, maintain base heading and airspeed for 3 minutes and then return to the base airspeed called by formation lead during the "Execute mountainous" call.

Figure 7.2. Mountainous Procedures.



Chapter 8

LOCAL OPERATING PROCEDURES

8.1. Requirements. This chapter is reserved for unit local operating procedures. Procedures herein will not be less restrictive than those contained elsewhere in this publication, nor is this chapter intended to be a single source document for procedures contained in other directives or instructions. Individual squadron local operating procedures are required for all HH-60W units. If more than one HH-60W squadron is co-located at the same installation, only one **Chapter 8** is required but all squadron commanders must approve and gain approval through their appropriate chains of command. **(T-2) Note:** Before publishing, units will forward copies to appropriate MAJCOM and subordinate agencies who will review the **Chapter 8** and return comments or required changes back to the unit(s), if appropriate. **(T-2)**

8.2. Organization. Organize the local chapter in the following format and, as a minimum, include the following:

8.2.1. Section A. Introduction.

8.2.2. Section B. General Policy.

8.2.3. Section C. Ground Operations.

8.2.4. Section D. Flying Operations.

8.2.5. Section E. Weapons Employment.

8.2.6. Section F. Laser Employment.

8.2.7. Section G. Abnormal Operations.

8.2.8. Attachments. (Figures/Illustrations).

8.2.9. Include procedures for the following in the appropriate Section if applicable:

8.2.9.1. Command and Control

8.2.9.2. Aircraft Toolkit Accountability Procedures

8.2.9.3. Mission Planning/Preparation Procedures

8.2.9.4. Local Weather Procedures

8.2.9.5. Flight Plan Procedures

8.2.9.6. Cross-Country Procedures

8.2.9.7. Aircraft Publication Kit Management

8.2.9.8. TOLD Book Management.

8.2.9.9. Instrument Procedures.

8.2.9.10. Hot/Jammed Gun Procedures

8.2.9.11. Hung Ordnance (Flare) Procedures

8.2.9.12. BASH program guidance to include host nation procedures.

8.2.9.13. Environmental Restrictions to Flight Operations (winds, sea state, temperature, etc.) (applicable to unit operating locations).

8.2.9.14. Taxi/Parking Restrictions/Procedures.

8.2.9.15. Alert Procedures.

8.2.9.16. Traffic Pattern, Landing Area, and Emergency Procedure Training Locations.

8.2.9.17. OPSEC & COMSEC Procedures.

8.2.9.18. Overwater Flight Covership/Boat Procedures.

8.2.9.19. AIE Device Management

8.2.9.20. Hot Gas Procedures

8.2.9.21. Squadron Briefing Standards (may be published as a separate document)

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Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

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AF Form 4326, *Tactic Improvement Proposal*

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

AFTO Form 781A, *Maintenance Discrepancy and Work Document*

DD Form 365, *Record of Weight and Balance Personnel*

DD Form 365-1 Chart A, *Basic Weight Checklist Record*

DD Form 365-2 Form B, *Aircraft Weighing Record*

DD Form 365-3 Chart C, *Basic Weight and Balance Record*

DD Form 365-4, *Transport/Tactical Weight and Balance Clearance Form F*

DD Form 1801, *DoD International Flight Plan*

Abbreviations and Acronyms

AAR—Air to Air Refueling

A/C—Alternating Current

AC—Advisory Circular, or Aircraft Commander

ACC—Air Combat Command

ACM—Air Combat Maneuvering

ADHEELS—Advanced Helicopter Emergency Egress Lighting System

ADS-B—Automatic Dependent Surveillance-Broadcast

ADS-R—Automatic Dependent Surveillance-Rebroadcast

AETC—Air Education and Training Command

AF—Air Force

AFE—Aircrew Flight Equipment

AFI—Air Force Instruction

AFMAN—Air Force Manual

AFMC—Air Force Material Command

AFPD—Air Force Policy Directive

AFR—Air Force Reserve

AFRC—Air Force Reserve Command

AFTO—Air Force Technical Order

AFTTP—Air Force Tactics, Techniques, and Procedures

AG—Aerial Gunner

AGL—Above Ground Level

AHC—Aircraft Handling Characteristics

AHO—Above Highest Obstacle

AIE—Alternate Insertion or Extraction

AIMS—Air Traffic Control Radar Beacon System, Identification Friend or Foe, Mark XII/Mark XIIA, Systems

AIRAC—Aeronautical Information Regulation and Control

ANG—Air National Guard

APU—Auxiliary Power Unit

ARC—Air Reserve Component

ASE—Above Site Elevation

ATC—Air Traffic Control

ATF—Aircraft Torque Factor

ATPT—Approach to Point

AWBS—Automatic Weight and Balance System

AWIS—Aircraft Wireless Intercom System

AWL—Above Water Level

BASH—Bird Air Strike Hazard

BATT—Battery

BHM—Basic Helicopter Maneuvering

BSL—Basic System List

CADRG—Compressed ARC Digitized Raster Graphics

CC—Commander

CDS—Cross Domain Solution

CIB—Common Interactive Broadcast, or Controlled Image Base

CIK—Crypto Ignition Key

COMAFFOR—Commander, Air Force Forces

COMSEC—Communications Security

CONUS—Continental United States

CPLT MWC—Copilot Master Warning Switch

CRH—Combat Rescue Helicopter

CSAR—Combat Search and Rescue

CSMU—Crash Survivable Memory Unit

DA—Decision Altitude

DAFI—Department of the Air Force Instruction

DAFIF—Digital Aeronautical Flight information File

DO—Director of Operations

DoD—Department of Defense

DoDD—Department of Defense Directive

DTD—Data Transfer Device

DTED—Digital Terrain Elevation Data

ECRG—Enhanced Compressed ARC Raster Graphics

EDECU—Enhanced Digital Electronic Control Unit

EFB—Electronic Flight Bag

EGI—Embedded GPS Inertial Navigation System

EM—Energy Maneuverability

EMCON—Emission Control

EO/IR—Electro-Optical/Infra-Red

EP—Evaluator Pilot

ESRI—Environmental Systems Research Institute, Inc.

ETAWS—Embedded Terrain Awareness Warning System

ETF—Engine Torque Factor

FAA—Federal Aviation Administration

FARP—Forward Area Refueling Point

FCF—Functional Check Flight

FCIF—Flight Crew Information File

FD—Flight Director

FE—Flight Engineer

FLIP—Flight Information Publication

FM—Frequency Modulation

FMS—Flight Management System

FP—First Pilot

FRIES—Fast Rope Insertion/Extraction System

GA—Guardian Angel

GEOSIT—Geographic Situation Display

GNC—Global Navigational Chart

GNSS—Global Navigation Satellite System

GP—General Planning

GPS—Global Positioning System

HAAR—Helicopter Air to Air Refueling

HAF—Headquarters Air Force

HIT—Health Indicator Test

HRTE—High Resolution Terrain Elevation

HQ—Headquarters

ICAO—International Civil Aviation Organization

ID—Identification, or Integrated Defense

IFF—Identification Friend Foe

IFR—Instrument Flight Rules

IHCU—Integrated Hand Controlled Unit

IMC—Instrument Meteorological Conditions

INST PNL—Instrument Panel

IP—Instructor Pilot

IR—Infrared

IVHMS—Integrated Vehicle Health Management System

JGA—Joint Operations Graphic-Air Chart

JNC—Joint Navigational Chart

k—Thousand

KGS—Knots Ground Speed

KIAS—Knots Indicated Airspeed

kN—KiloNewtons

LFC—Low Flying Chart

LTD SW—Lighted Switch

LZ—Landing Zone

M—Million

MAJCOM—Major Command

MCHUM—Manual Chart Updating Manual

MEF—Maximum Elevation Figure

MEL—Minimum Equipment List

MEP—Mission Essential Personnel

MFD—Multi-Function Display

MHz—Megahertz

MP—Mission Pilot

MPS—Mission Planning System

MSA—Minimum Safe Altitude

MSL—Mean Sea Level

NATL—National

NATO—North Atlantic Treaty Organization

NGA—National Geospatial-Intelligence Agency

NGB—National Guard Bureau

NM—Nautical Mile

NOTAM—Notice to Airmen

NR—Rotor Speed

NVG—Night Vision Goggle

OBS—Onset of Blade Stall

OCF—Obstruction Change File

OCONUS—Outside the Continental United States

OG/CC—Operations Group Commander

OGE—Out of Ground Effect

ONC—Operational Navigational Chart

OPR—Office of Primary Responsibility

OPSEC—Operations Security

OSC—On Scene Commander

P—Pilot

PACAF—Pacific Air Forces

PACS—Primary Aircrew Cabin Seats

PBN—Performance Based Navigation

PCL—Power Control Levers

PFD—Primary Flight Display

PLS—Personnel Locater System

PO—Program Office

PR—Personnel Recovery

RAIM—Receiver Autonomous Integrity Monitoring

RAMZ—Rigging Alternate Method Zodiac

RegAF—Regular Air Force

RM—Risk Management

RMM—Removable Memory Module

RNAV—Area Navigation

RQS—Rescue Squadron

RTS—Recovery Team Seat

RVR—Runway Visibility Range

SAR—Search and Rescue

SARDOT—Search and Rescue Point

SEAS—Single Engine Airspeed

SERE—Survival, Evasion, Resistance, and Escape

SM—Statute Mile

SMA—Special Mission Aviators

SPINS—Special Instructions

SSR—System Support Representatives

STBY—Standby

SQ/CC—Squadron Commander

SQ/DO—Squadron Director of Operations

T-GS—Tactical Approach

TACAN—Tactical Air Navigation

TFC—Transit Flying Chart

TIS-B—Traffic Information Service-Broadcast

TLM—Topographical Line Map

TO—Technical Order

TOLD—Takeoff and Landing Data

TPC—Tactical Pilotage Chart

TT—Tactical Training

UAT—Universal Access Transceiver

UHF—Ultra High Frequency

USAF—United States Air Force

USAFE-AFAFRICA—United States Air Forces in Europe-Air Forces Africa

USG—United States Government

VFR—Visual Flight Rules

VHF—Very High Frequency

VMC—Visual Meteorological Conditions

VNE—Velocity Never Exceed

VO—Vertical Obstruction

VVOD—Vector Vertical Obstruction Data

WNDB—Worldwide Navigational Database

WPS—Weapons Squadron

Terms

Aircraft Commander—The aircrew member designated by competent authority as being in command of an aircraft and responsible for its safe operation and accomplishment of the assigned mission.

Aircraft Handling Characteristics—A series of maneuvers meant to familiarize a crewmember with the aerodynamic characteristics of the aircraft (especially those considered outside the normal flight regime).

Aircrew Member—An individual, designated on the flight authorization who is an aircrew member as explained in AFPD 11-4, Aviation Service, AFMAN 11-402, *Aviation and Parachutist Service*, and is assigned to a position listed in AFI 65-503, *US Air Force Cost and Planning Factors*, and is designated on orders to fulfill specific aeronautical tasks.

Aircrew or Crew—The full complement of military, civilian and contract personnel required to operate a USAF aircraft and complete an assigned mission.

Alert Aircraft—An operationally ready aircraft specifically designated to be launched in accordance with timing factors established for the assigned missions with a ready crew available.

Alternate Loading—A method of restraining passengers without using standard troop seats.

Formation Flight—More than one aircraft which, by prior arrangement between crews, operates as a single aircraft with regard to air traffic control, navigation and position reports.

Forward Area Refueling Point (FARP)—Location where refueling and rearming are conducted, normally conducted in an austere environment with engines running. Refueling can be accomplished from a variety of fuel sources (e.g., HC-130, MC-130, pre-positioned fuel stores, another helicopter, fuel truck).

Functional Check Flight—A flight or flights performed to determine whether an aircraft, and/or its various components, are functioning according to predetermined specifications while subjected to the flight environment. FCFs are conducted when it is not feasible to determine safe or required operation (aerodynamic reaction, air loading, signal propagation, etc.) by means of ground or shop tests. Conditions requiring FCFs are specified in the –6 TO for each type of aircraft. FCF checks or maneuvers can only be accomplished by current and qualified aircrew members.

Hazardous Cargo or Materials—Explosive, toxic, caustic, nuclear, combustible or flammable, biologically infectious, or poisonous materials that may directly or indirectly endanger human life or property, particularly if misused, mishandled, or involved in accidents.

Hot Gun—A situation when a live round or rounds cannot be cleared from a weapon in flight, the gun cannot be mechanically and electrically rendered safe, and a probability of inadvertent firing exists.

Hot Refueling—Fuel on-load from any fuel source with one or more aircraft engines operating. FARP operations are considered hot refueling when gas is on-loaded.

Hung Ordnance—Any ordnance or stores that fail to release, jettison, or fire and cannot be removed from the weapon prior to landing (chaff or flare squibs that fail to fire are not considered hung ordnance).

Jammed Gun—A gun containing ammunition that cannot be cleared from the gun in flight, but can be rendered mechanically safe, no probability of inadvertent firing exists.

Low-Level Operations—Flight conducted below 500 feet AGL or AWL.

Operational Mission—Any mission not designated as a unilateral training mission.

Tactical Mission—A mission designed to penetrate and operate within a combat or threat environment. These operations are normally practiced only on training or exercise missions, in a form of special use airspace or on designated training ranges or routes.

Attachment 2

GENERAL AIRCREW BRIEFING

A2.1. General. This briefing is designed for single ship, non-tactical flight operations. Briefing format is a guide and there is no requirement for items to be briefed in sequence. Additional topics not covered in this guide may also be briefed. Use Specialized Briefings or Checklists when applicable.

A2.2. Time Hack

A2.3. Roll Call

A2.4. Classification

A2.5. Mission

A2.5.1. Primary and Alternate

A2.5.2. Training Objectives

A2.5.3. Desired Learning Objectives

A2.5.4. Mission Objective

A2.5.5. Sequence of Events

A2.5.6. Route of Flight/Hazards to Flight

A2.5.6.1. Visual Search Responsibilities

A2.5.6.1.1. Departure/En Route/Recovery

A2.5.6.1.2. High Density Traffic Areas

A2.5.6.2. Mid-Air Collision Avoidance

A2.5.6.2.1. From Other Military Aircraft

A2.5.6.2.2. From Civilian Aircraft

A2.5.6.3. BASH/Bird Hazard

A2.5.6.3.1. Bird Hazards along Route (en route and low-level)

A2.5.6.3.2. Bird Hazards in Terminal Area

A2.5.6.3.3. Bird Hazards at Training Range

A2.6. Weather

A2.6.1. Takeoff, en route, destination

A2.6.2. Sunrise, sunset, begin morning civil twilight, end evening civil twilight

A2.6.3. Moon rise, moon set, angle, illumination, anticipated electromagnetic interference

A2.6.4. Sea state/Water temperature

A2.7. Flight Planning

A2.7.1. Aircraft Tail Number(s), Spare, Call Sign(s)

A2.7.2. Parking

A2.7.3. Fuel Load, Mission Capable Fuel, Bingo Fuel, and Aircraft Configuration

A2.7.4. Weight and Balance

A2.7.5. TOLD/Energy Management (EM) Data

A2.7.6. Seat Time, Start Time, Takeoff, Duration

A2.7.7. NOTAM, Flight Crew Information File (FCIF), Go-No-Go, Special Interest items

A2.7.8. Passengers/MEP

A2.7.9. Anti-Hijacking

A2.7.10. RM/Increased Mission Risk Factors (BASH, unfamiliar area, weather, crew complement, etc.)/Risk Mitigation

A2.8. Crew Duties and Responsibilities

A2.8.1. Changing control of aircraft/Flight Director operations

A2.8.2. Emergency Actions/Intentions

A2.8.3. FE/AG Duties

A2.8.4. Scanning

A2.8.5. Inadvertent IMC

A2.9. Equipment

A2.9.1. Flight Publications, Maps

A2.9.2. Aircrew Flight Equipment

A2.9.3. Personal Equipment, ID Tags, Jewelry

A2.9.4. Classified Material/COMSEC

A2.10. Specialized Mission Briefings

A2.11. Questions

A2.12. RM/Risk Mitigation

A2.12.1. Recap risks

A2.12.2. Recap mitigation measures associated with the briefed operation(s).

Attachment 3

ALERT CREW BRIEFING

A3.1. Alert Period

A3.2. Response Time

A3.3. Notification Procedures

A3.4. Scramble Procedures

Attachment 4

MISSION BRIEFING

A4.1. General . This briefing guide is intended for tactical, formation, and NVG missions. It incorporates the essential elements of the General Aircrew and AIE briefings.

A4.2. Time Hack (give source)

A4.3. Roll Call

A4.4. Classification

A4.5. Situation/Orders of Battle

A4.6. Mission

A4.6.1. Primary/Alternate

A4.6.2. Mission Objectives/Weapons Conditions/Rules of Engagement

A4.6.3. Desired Learning Objectives

A4.6.4. Sequence of Events

A4.6.5. Route of Flight/Hazards to Flight

A4.6.5.1. Visual Search Responsibilities

A4.6.5.1.1. Departure/En Route/Recovery

A4.6.5.1.2. High Density Traffic Areas

A4.6.5.2. Mid-air Collision Avoidance

A4.6.5.2.1. From Other Military Aircraft

A4.6.5.2.2. From Civilian Aircraft

A4.6.5.3. BASH/Bird Hazard

A4.6.5.3.1. Bird Hazards along Route (en route and low-level)

A4.6.5.3.2. Bird Hazards in Terminal Area

A4.6.5.3.3. Bird Hazards at Training Range

A4.6.6. Mission Precedence (Mandatory, Emergency, Priority, Routine)

A4.6.7. Smart Packs/Kneeboard Cards/Comm Cards

A4.7. Flight Planning

A4.7.1. Aircraft Numbers, Call Signs, Positions, Support Assets

A4.7.2. Weather

A4.7.2.1. Takeoff/En Route/Destination

A4.7.2.2. Sunset/Sunrise

A4.7.2.3. Moonrise/Moon set/% Illum/Azimuth/Elevation/Isothermal Crossover Times

A4.7.3. Fuel Load, Mission Capable Fuel, and Bingo

A4.7.4. Aircraft and Load Configurations

A4.7.5. Personnel (MEP), Ordnance, Chaff/Flare load and settings, Infrared Countermeasures, AIE Devices

A4.7.6. Aircraft Lighting

A4.7.7. Seats time, Communication Check-In, Start, Taxi, Takeoff, Duration

A4.7.8. NOTAMS, FCIF, Special Interest Items

A4.7.9. Anti-Hijacking

A4.7.10. RM/Increased Mission Risk Factors (BASH, unfamiliar area, weather, crew complement, etc.)/Risk Mitigation

A4.8. Weight and Balance

A4.9. Performance Computations/TOLD

A4.9.1. Takeoff and Worst Case

A4.9.2. EM Data and Dash One Blade Stall numbers

A4.10. Departure Taxi, Takeoff, and Join Up

A4.10.1. Lineup/Positions

A4.10.2. Communications Procedures

A4.10.3. Type of Formation

A4.10.4. Aborts/Bumps

A4.10.5. Goggle Up Procedures

A4.10.6. System Checks/Test Fire

A4.11. En Route

A4.11.1. Navigation Responsibilities

A4.11.2. Altitudes/Airspeeds

A4.11.3. Type Formation(s)/De-confliction plan

A4.11.4. Lead Changes

A4.11.5. HIT Check

A4.11.6. Communications (Ops Normal, ATC, MSN CC, etc.)

A4.11.7. Evasive Tactics/Scatter Plans/Rejoin Procedures

A4.11.8. Egress Takeoff/Route of Flight

A4.12. Terminal Operations-Primary/Alternate

A4.12.1. Objective/Time Over Target

A4.12.2. Communications Procedures/Authentication methods

A4.12.3. LZ Options (in accordance with AFTTPs, or as briefed)

A4.12.4. Approaches and Landings

A4.12.4.1. Type Formation and Spacing

A4.12.4.2. Landing Areas/Site Evaluations

A4.12.4.3. Go-Around/Wave off Procedures

A4.12.5. AIE Considerations

A4.12.5.1. Devices

A4.12.5.2. Intended Hover Heights

A4.12.5.3. Emergency Procedures

A4.12.5.3.1. Loss of Power to the Aircraft

A4.12.5.3.2. Hoist Malfunctions

A4.12.5.3.3. Communications Failures

A4.12.6. Egress Takeoff/Route of Flight

A4.13. Recovery Taxi, Parking Plan, Removing Goggles

A4.14. Contingencies

A4.14.1. IMC Loss Wingman

A4.14.2. VMC Blind

A4.14.3. Abort Criteria

A4.14.3.1. Weather

A4.14.3.2. Min Force Package/Min Mission Equipment

A4.14.4. Lost Communications/Degraded Communications

A4.14.5. Bump Plan

A4.15. Equipment

A4.15.1. Flight Publications

A4.15.2. Aircrew Flight Equipment

A4.15.3. NVG’s

A4.15.4. Maps/Charts

A4.15.5. Chemlights

A4.15.6. ID Tags

A4.15.7. Personal Weapons

A4.15.8. Classified Material/COMSEC

A4.16. Crew Duties and Responsibilities

A4.16.1. Changing Control of the Aircraft

A4.16.2. FE/AG Duties

A4.16.3. Emergency Actions/Intentions

A4.16.3.1. Takeoff

A4.16.3.2. En Route

A4.16.3.3. Objective

A4.16.3.4. NVG Malfunction

A4.16.3.5. Crash Landing

A4.16.3.6. Ditching

A4.16.4. Crash/Forced Landing Procedures

A4.16.4.1. Water

A4.16.4.2. Medical Kits

A4.16.4.3. Nuclear, Biological, and Chemical Gear

A4.16.5. Sanitization

A4.16.5.1. Destruction of Classified/Aircraft Destruction

A4.16.5.2. Weapons/Ammunition

A4.17. Questions

A4.18. RM/Risk Mitigation

A4.18.1. Recap risks

A4.18.2. Recap mitigation measures associated with the briefed operation(s).

Attachment 5

ALTERNATE INSERTION/EXTRACTION (AIE) BRIEFING

A5.1. Load

A5.2. Communication

A5.2.1. Frequencies

A5.2.2. Call Signs

A5.3. Site Description/Hazards

A5.4. Power Available/Required

A5.5. Sequence

A5.5.1. Device(s) To Be Used and Entry/Exit Side

A5.5.2. Device Length(s)

A5.5.3. Intended Hover Height(s)

A5.6. Protective Equipment (Head/Eyes/Hands/Ears)

A5.7. Emergency Procedures

A5.7.1. Aircraft Malfunction

A5.7.2. AIE Malfunctions

A5.7.3. Hoist Malfunctions (Power Loss/Oscillation/Shear Procedures)

A5.7.4. Damaged Cable (Shock-loaded/Overloaded/Abrasion)

A5.7.5. Communication Failure

A5.8. Alternate Recovery Options

Attachment 6

ORDNANCE DELIVERY BRIEFING

A6.1. Range/Mission Number/Range Time

A6.2. Range Clearing Operations

A6.3. Range Restrictions/Laser Procedures

A6.4. Arming Procedures

A6.5. Patterns

A6.5.1. Altitude/Airspeed

A6.5.2. Fields of Fire

A6.6. Communications

A6.6.1. Air-To-Air/Air-To-Ground

A6.6.2. Interplane

A6.7. Weapons Malfunction

A6.7.1. Hot Gun Route

A6.7.2. Dearming Location

A6.8. Chaff/Flare Operations

A6.9. Smoke Deployment

A6.10. Range Exiting Procedures

A6.11. Safety Considerations

Attachment 7

HELICOPTER AIR TO AIR REFUELING BRIEFING

A7.1. Weather (Air to Air Refueling (AAR) track and Emergency Bases)

A7.2. Tanker and Receiver Call Signs

A7.3. Number of Receivers and Sequencing

A7.4. AR Option (Option 1, 2, Simultaneous)

A7.5. Communications

A7.5.1. Primary and Secondary Radio Frequencies

A7.5.2. EMCON Option

A7.6. AAR Track

A7.6.1. Air Refueling Initiation Point, Air Refueling Control Point

A7.6.2. Air Traffic Control Clearance Limits

A7.6.3. Abort Point/Air Refueling Egress Point

A7.6.4. Emergency Recovery Bases

A7.7. Air Refueling Control Time

A7.8. Rendezvous Type

A7.9. Join-Up Type and Altitude

A7.10. AAR Speed

A7.11. AAR Altitude

A7.12. Identification Friend or Foe (IFF)/TACAN/Altimeter Settings

A7.13. Tanker/Receiver Light Configuration

A7.14. Lost Visual Contact Procedures/MSA

A7.15. Fuel Transfer Requirements and Pressure Limitations

A7.16. Helicopter Power Limitations/Max Bank Angle (High DA/Gross Weight)

A7.17. Mission Abort Criteria

A7.18. Standby Tanker Requirements

A7.19. Light Signals:

A7.19.1. Tanker to Receiver

A7.19.1.1. One Green – Cleared to Contact and/or Cleared to Crossover

A7.19.1.2. One White – Go to Observation Position

A7.19.1.3. Two White – Crossover to other Hose

A7.19.1.4. One Amber – Prepare for Turn

A7.19.1.5. Two Amber – Unable to Refuel, proceed/wait for Spare Tanker

A7.19.1.6. Flashing Red – Breakaway

A7.19.2. Receiver to Tanker

A7.19.2.1. One Flash – Reset Reel Response

A7.19.2.2. Multiple Flashes – Require more Fuel

Attachment 8

FORWARD AREA REFUELING POINT BRIEFING

A8.1. Location

A8.2. Time Over Target

A8.3. Communications

A8.3.1. Call Signs

A8.3.2. Air-To-Ground Frequencies

A8.4. Marshalling Procedures

A8.5. Onload

A8.6. Equipment

A8.7. Emergency Procedures

A8.8. Departure Instructions

Attachment 9

AIRDROP BRIEFING – PERSONNEL

A9.1. Type of Drop

A9.2. Drop Zone

A9.2.1. Markings

A9.2.2. Visual Signals

A9.3. Communications

A9.3.1. Air-To-Ground

A9.3.2. Intercom

A9.3.3. Hand Signals

A9.4. Drop Procedures

A9.4.1. Altitude/Airspeed

A9.4.2. Drop Order

A9.4.3. Track

A9.4.4. Door Procedures

A9.5. Emergency Procedures

A9.5.1. Hung Jumper

A9.5.2. Inadvertent Chute Deployment

A9.6. Post Deployment Procedures

Attachment 10

SEARCH BRIEFING

A10.1. Objective

A10.1.1. Number of Survivors/Description/Medical Condition

A10.1.2. Signaling Devices/Equipment

A10.1.3. Specialized Aircraft Equipment Required

A10.2. Search Area

A10.3. On Scene Search and Rescue (SAR) Forces/On Scene Commander (OSC)

A10.3.1. Establish Contact with OSC; if none, accomplish OSC Duties below:

A10.3.2. Inventory Status: Fuel/Wingman/Assets Available

A10.3.3. Establish Comm Plan Initial Contact with Survivor: Reassurance/Turn Locator Beacon Off/Etc.

A10.3.4. Authenticate As Required

A10.3.5. Relay Info: Pass Location to Appropriate Agency

A10.3.6. Condition: Injuries/Ability to Move/Any Previous Instructions

A10.3.7. Signaling Devices (Prep Survivor: Find and Have Ready Devices in Kit/Vest, Radio, and Batteries)

A10.3.8. Verify Survivor's Position: Confirm Location/SARDOT/GPS/Overflight/What Can Survivor See?

A10.3.9. Survivor Actions: Radio Check-In Schedule as Required, Prepare for Pickup (Hoist, air land)

A10.4. Weather (En Route/On Scene/Recovery)

A10.5. Method of Search (Visual/Electronic)

A10.5.1. Type of Pattern

A10.5.2. Altitude/Airspeed

A10.5.3. PLS Frequency/Code

A10.6. Bingo Fuel and Refueling Options

A10.7. Actions upon Sighting Objective

A10.8. Medical Facilities

Attachment 11

CARGO SLING/EXTERNAL LOAD OPERATIONS BRIEFING

A11.1. Load Description

A11.1.1. Anticipated Weight

A11.1.2. Rigging

A11.1.3. Location

A11.2. Power Available/Required

A11.3. Sling Arming/Dearming

A11.4. Hand Signals

A11.5. Hookup

A11.5.1. Grounding

A11.5.2. Eye Protection

A11.5.3. External Lighting

A11.6. En Route Airspeed/Altitude

A11.7. Destination

A11.8. Release

A11.9. Emergency Actions

A11.10. Safety Considerations

Attachment 12

MISSION DEBRIEFING

A12.1. Roll Call

A12.2. Classification

A12.3. Mission Objectives

A12.4. Training Objectives

A12.5. Desired Learning Objectives

A12.6. Mission Accomplishments

A12.6.1. Flight Discipline

A12.6.2. Mission Effectiveness

A12.7. Mission Reconstruction

A12.7.1. Safety of flight issues, unscheduled terminates, or knock it-offs

A12.7.2. Reconstruct major events

A12.7.3. Specify Debrief Focus Points or Learning Points

A12.7.4. Identify Contributing Factors

Attachment 13

SIGNALS AND DISTRESS FREQUENCIES

A13.1. Signals/Communications/Equipment

Table A13.1. Visual Detection Chart.

VISUAL DETECTION CHART (Ranges Shown in Miles)					
Equipment Type	**Down Sun**	**Cross Sun**	**Up Sun**	**Overcast**	**Night**
Yellow Life Raft (1 or 7 man)	1.9	1.4	1.1	1.0	—
Signaling Mirror	6.3	7.0	4.8	—	—
Dye Marker	3.8	2.5	2.2	—	—
Smoke	8.3	7.4	7.1	6.7	—
Life Jacket	0.2	.18	.16	.15	—
Life Jacket Light	—	—	—	—	0.5
2-Cell Flashlight	—	—	—	—	2.4
Hand-held star signal	—	—	—	—	32.0
Ferry Cartridge	—	—	—	—	17.5

A13.2. SWIMMER/HELICOPTER SIGNALS. **NOTE:** During NVG operations Team Leader/AC specify light signals to be used.

Table A13.2. Swimmer Hand Signals.

SIGNAL	MEANING
Crossed Wrists	Need Medical Kit
Breast Stroke Motion	Deploy Backup Swimmer
Paddling Motion	Deploy Raft
Hands Cupped, then arms out- stretched	Deploy Stokes Litter
Climbing Rope Motion	Lower hoist cable without Device
One arm extended overhead, fist clinched	Lower hoist cable with Device
Wave In/Out	Helicopter Move In/Out
MK-13 Flare and/or inflated life preserver	Emergency
Thumbs Up	Affirmative
Hand Clapping Motion	Sharks
Slashing Motion Across Throat	Cease Operations
Flashing Landing Light	Unable to recover, must Depart
Circling arm overhead w/finger pointing skyward	Team Recall

A13.3. FORMATION LIGHT SIGNALS

Table A13.3. Formation Light Signals.

SIGNAL	MEANING
Single Flash (tail position light)	Go to Trail
Two Flashes (tail position light)	Stagger Left
Three Flashes (tail position light)	Stagger Right
Dot – Dot	Return to Base
Dash – Dash	Lead Change *
Dash – Dot	Slow Down
Dot – Dash	Speed Up
Dash – Dash – Dash	Lights (increase)
Dot – Dot – Dot	Lights (decrease)
Dot – Dash – Dot	Lights (check)
Dot – Dot – Dot – Dot	Lost Comm **
Circular motion with light source	Attention Signal
Infinity Symbol (horizontal figure 8 motion)	Execute
AMPLIFYING NOTES	
Move light in a Vertical motion	YES
Move light in a Horizontal motion	NO
Momentary Flash from Light	“DOT”
Two second Flash from Light	“DASH”
* Infinity Symbol. Follows the lead changes light signal for execution.	
** Assume Radio Responsibilities	
All signals will be echoed by the receiver back to the sender.	

A13.4. DISTRESS/EMERGENCY FREQUENCIES

Table A13.4. Distress/Emergency Frequencies.

FREQUENCY	USE/AGENCY
40.50 MHz	VHF-FM Emergency
121.5 MHz	International Aeronautical Emergency
123.1 MHz	NATO/ICAO Scene of Action (SAR)
156.8 MHz	International Maritime Mobile Safety and Distress (Channel 16 Maritime)
243.0 MHz	International Aeronautical Emergency
282.8 MHz	International Scene of Action (SAR)
406.025 MHz	International Distress Beacon

Attachment 14

AIE PREFLIGHT GUIDE

A14.1. General . The following information is extracted from TO 00-25-245. Reference the TO for expanded information. TO 00-25-245 inspection procedures take precedence over this guide. Inspections and discrepancies will be documented on each equipment piece's AFTO Form 244, *Industrial Support Equipment Record*. **(T-2)** Discrepancies will be reported to the unit AIE Monitor. **(T-3) Warning -** Reject any device for live use if it fails any part of the preflight inspection.

A14.2. FOREST PENETRATOR

A14.2.1. Inspection/Weight-Check Label – Checked for current date.

A14.2.2. Condition – Checked

A14.2.2.1. Damaged parts (broken, bent, deformed, or fractured). Bent seat broken springs, bent bolts, etc., can be replaced with new parts. If main body of assembly is damaged, condemn complete assembly without replacement of parts.

A14.2.2.2. Missing parts – Bolts, nuts, cotter pins, springs and straps.

A14.2.2.3. Flotation Collar – Secure as required.

A14.2.2.4. Seats and hooks for freedom of movement to all positions, and proper latching and unlatching.

A14.2.2.5. Corrosion.

A14.3. RESCUE STROP

A14.3.1. Inspection/Weight-Check Label – Checked for current date.

A14.3.2. Condition – Checked.

A14.3.2.1. Inspect fabric for cuts, deterioration, and abrasion.

A14.3.2.2. Inspect Seams for proper adhesion and stitching.

A14.3.2.3. Inspect retainer straps for security of attachment and wear.

A14.3.2.4. Inspect all hardware for security of attachment, corrosion, damage, wear, and if applicable, ease of operation.

A14.4. RESCUE BASKET (Life Saving Systems 490 Series) – Follow manufacture recommendations for maintenance, inspection, and testing.

A14.5. RESCUE LITTER ASSEMBLY (STOKES LITTER)

A14.5.1. The following Stokes Litters are approved for use:

A14.5.1.1. # 402 Medevac one piece, confined area.

A14.5.1.2. # 404 Medevac II one piece.

A14.5.1.3. # 406 Medevac IIA break down model.

A14.5.1.4. # 406TI Medevac IIA TI Titanium break down.

A14.5.1.5. **Note:** A 5000 pound (23 kN) locking carabineer will be used to attach the stokes sling assembly to the hoist hook. **(T-2)**

A14.5.2. Inspection/Weight-Check Label - Checked for current date.

A14.5.3. Condition – Checked.

A14.5.3.1. Inspect all metal for cracks, indents, corrosion and security of attachment.

A14.5.3.2. Inspect all welds for cracks and security of attachment.

A14.5.3.3. Inspect snow skids for general condition (if applicable).

A14.5.3.4. Inspect suspension bed webbing for cuts, tears, stains, fraying and security of attachment.

A14.5.3.5. Inspect quick release fittings for ease of operation, sharp edges and corrosion.

A14.5.3.6. Inspect all straps for cuts, tears, stains, fraying and security of attachment.

A14.5.3.7. Inspect Lift Rings for deformity or cracks.

A14.5.3.8. Inspect all stitching for fraying and security of attachment.

A14.5.3.9. Inspect all webbing for cuts, tears, fraying, and grease contamination.

A14.5.3.10. Inspect carabineers for proper gate alignment, ease of operation, cracks and corrosion.

A14.5.3.11. Inspect carabineer gate pin hinge for deformity and security of attachment.

A14.5.3.12. Inspect for reflective tape on rescue litter and carabineers.

A14.5.3.12.1. Red reflective tape (2 places, 1-1/2 x 1/2-inch) at upper attachment points (As required).

A14.5.3.12.2. White reflective tape (2 places, 1-1/2 x 1/2-inch NIIN 01-078- 8660) at lower attachment points (As required).

A14.5.3.13. Inspect entire flotation assembly for general condition, cleanliness, cuts, tears, fraying and for presence of oil, fuel, grease or chemical contamination.

A14.5.3.14. Inspect lift cable sets for one crimp, identified by 1/2-inch wide compression on swaging sleeves and defects such as kinks, broken wire strands, corrosion.

A14.6. RANDON TECH ROPE LADDER (HH-60 ELD800PD SERIES AND TCL600) Warning. - If any nicks or excessive fraying to the point of broken strands are found, do not use the rope ladder for live operations, serious injury or death may result. **Warning -** The following indicate obsolete equipment and should not be used for live operations; serious injury or death may result: corrosion on the rivet-washer connection points (should be stainless- stainless), rope ladder fabric with shiny appearance (similar to a vehicle seat belt), detacher housings without beveled or rounded edges. **Caution** - When preparing the rope ladder for night operations do not use duct tape on the nylon fabric. Duct tape residue hinders the post flight fabric cleansing, and hides potential problem areas (e.g., use rubber bands, plastic zip ties). During inspection, dragging the rope ladder on concrete should be kept to a minimum to reduce abrasion and maintain normal service life. **Note -** Ensure both sides of the rope ladder are visually inspected, detachers are

"powder-coated", there is no need to oil parts, small amounts of hydraulic fluid are allowed on the fabric, ensure the ladder is cleaned after use.

A14.6.1. Ensure detacher serial numbers match rope ladder.

A14.6.2. Inspect detacher device fasteners for loosening and failure.

A14.6.3. Inspect detacher pip pin for proper spring/operation.

A14.6.4. Inspect carabineers for corrosion and proper operation.

A14.6.5. Inspect wheeled rungs and fasteners for loosening and failure.

A14.6.6. Inspect main ladder straps for dry-rot, holes, nicks and excessive fraying.

A14.6.7. Inspect ladder rungs for damaged tubes or grip tape.

A14.6.8. Inspect rung rivet-washer points for corrosion, cracks or stretched fabric.

A14.6.9. Ensure no twists exist with main ladder straps.

A14.6.10. Fold or roll the ladder into the stowed position on the cabin floor.

A14.6.11. Refer to TO 00-25-245 for post flight requirements.

A14.7. FRIES/FAST ROPES.

A14.7.1. Check the woven loop on the mount end for excessive wear or chemical contamination.

A14.7.2. Check the rope along its entire length for fraying, cuts, and chemical contamination. Inspect for any cut, chafe, or nicks that affect integrity of the rope.

A14.7.3. Do not use a rope that is severely frayed. (Light fraying on the rope from normal use does not weaken the rope.)

A14.7.4. Do not use a rope when any single strand is cut halfway through or has two or more cuts that penetrate one-third or more through any strand's thickness within 1 foot of the running length of the FRIES.

A14.7.5. Inspect the rope for contamination of acid, alkaline compounds, saltwater, fire extinguisher solutions, or petroleum based solvents. Changes in color caused by chemicals are usually blotchy and have an unusual odor. Although used ropes gradually change color, such changes do not indicate a decrease in strength unless the change is due to contact with strong chemicals. Changes occurring because of use are usually uniform throughout the length of the rope.

A14.7.6. Inspect the extraction loops to the same standard as the main rope. Ensures the woven attachment loops are secure.

A14.7.7. Make necessary inspection entries on appropriate form.

Attachment 15

MINIMUM EQUIPMENT LISTING

A15.1. MEL. The MEL is read by comparing system/sub system with applicable Basic System Lists (BSL) across the page. Each unit's Designed Operational Capability statement will determine applicability of BSL columns. Refer to **Table A15.1**.

A15.2. Definitions:

A15.2.1. Combat Search and Recovery (CSAR): Procedures to effect and manage recovery of distressed or isolated personnel.

A15.2.2. Personnel Recovery (PR): Collateral missions and joint integration in support of combatant command needs.

A15.2.3. Civil Search and Rescue (SAR): Search operations, rescue operations, and associated civilian services provided to assist persons and property in potential or actual distress in a non-hostile environment.

A15.2.4. Tactical Training (TT): Mission/Events that require a full crew compliment of 2 pilots and 2 SMAs. Reference **Table 2.1** Crew Compliment.

A15.2.5. Non-Tactical Training (Non-TT): Mission/Events that require a crew compliment of 2 pilots and 1 SMAs. Reference **Table 2.1** Crew Compliment

Table A15.1. Minimum Equipment Listing.

	BSL					Notes:
SYSTEM/SUBSYSTEM	CSAR	PR	CIVIL SAR[1]	TT[1]	Non TT[1]	1. TF (Training) and CB (Test) coded aircraft only follow noted BSLs.
AIRFRAME						
DOOR ASSEMBLIES	X[2]	X[2]	X[2]	X[2]	X[2]	2. Cockpit door removal is not approved.
CARGO DOOR ASSEMBLIES	X[3]	X[3]	X[3]	X[3]	X[3]	3. Cargo doors will secure closed and will not be removed.
WINDOW ASSEMBLY	X[4]	X[4]	X[4]	X[4]	X[4]	4. Cabin windows will secure open and will not be removed.
COCKPIT AND CABIN						
ARMORED WINGS	X[5]	X[5]				5. Required based on mission requirements.
PRIMARY AIRCREW CABIN SEATS	X[6]	X[6]	X[6]	X[6]	X[6]	6. MAJCOM/A3 or COMAFFOR

						approval is required to remove the PACS.
SOUNDPROOFING	X[7]	X[7]	X[7]	X[7]		7. Soundproofing must be installed during employment of .50 cal weapons systems.
FAST ROPE ASSEMBLY	X[5]	X[5]	X[5]	X[5]		5. Required based on mission requirements.
RECOVERY TEAM SEAT	X[8]	X[8]	X[8]	X[8]	X[8]	8. RTS are not required for any mission, and may be installed/removed to support mission requirements.
FLIGHT CONTROLS						
COLLECTIVE STICK ASSEMBLIES	X[9]	X[9]	X[9]	X[9]	X[9]	9. Either Pilot or Copilot collective slew or IHCU slew function required. All other functions on the collective is required.
CYCLIC STICK ASSEMBLIES	X[10]	X[10]	X[10]	X[10]	X[10]	10. All functions required, except windshield wiper.
ROTOR DRIVE						
ROTOR BRAKE	X[11]	X[11]	X[11]	X[11]	X[11]	11. Required for shipboard operations.
ICE AND RAIN PROTECTION						
ENGINE INLET ANTI-ICE SYSTEM	X[12]	X[12]	X[12]	X[12]	X[12]	12. Required for all flights below 5°C, including enroute altitudes.
WINDSHIELD ANTI-ICE SYSTEM	X[12]	X[12]	X[12]	X[12]	X[12]	
BLADE DE-ICING SYSTEM	X[12]	X[12]	X[12]	X[12]	X[12]	
WINDSHIELD WIPER SYSTEM	X[13]	X[13]	X[13]	X[13]	X[13]	13. Windshield wiper only is required for water operations.
WINDSHIELD WASHER SYSTEM	X[13]	X[13]	X[13]	X[13]	X[13]	
ENVIRONMENTAL						
HEATING SYSTEM	X[14]	X[14]	X[14]	X[14]	X[14]	14. Either the cockpit or cabin heating system is required.

						Exception: If both are inoperative, flights should remain at or above 5°C for the duration, including enroute altitudes.
AVIONICS COOLING SYSTEM	X[15]	X[15]	X[15]	X[15]	X[15]	15. Loss of any avionics cooling is acceptable.
ELECTRICAL POWER						
NO. 1 SEALED LEAD ACID BATTERY	X[16]	X[16]	X[16]	X[16]	X[16]	16. BATT GOOD indication on the No. 1 battery is required.
NO. 2 SEALED LEAD ACID BATTERY	X[17]	X[17]	X[17]	X[17]	X[17]	17. BATT LOW indication on the No. 2 battery is acceptable. Typical battery recharge time if showing low is 30 mins, and can be accomplished during startup.
LIGHTING						
COCKPIT	X[18]	X[18]	X[18]	X[18]	X[18]	18. All lighting on LTD SW, INST PNL, CPLT MWC, PLT MWC, engine T handle and APU T handle are required.
CABIN	X[19]	X[19]	X[19]	X[19]	X[19]	19. One cabin light required.
FORMATION LIGHTS	X[20]	X[20]	X[20]	X[20]		20. Partial overt or covert formation lights required.
POSITION LIGHT	X[21]	X[21]	X[21]	X[21]	X[21]	21. Upper or lower position light required. Exception, flights may be restricted to remain day VMC.
IR POSITION LIGHT	X[21]	X[21]		X[21]		
ANTI-COLLISION LIGHT ASSEMBLY	X[22]	X[22]	X[22]	X[22]	X[22]	22. One anti-collision light is required.

RETRACTABLE LANDING LIGHT	X[23]	X[23]	X[23]	X[23]	X[23]	23. NVG flights require a visible landing/searchlight and one of the following: an operational EO/IR Sensor, an infrared (IR) landing/search light, or a variable intensity landing/search light.
CONTROLLABLE SEARCH LIGHT	X[23]	X[23]	X[23]	X[23]		
REFUELING PROBE LIGHT	X[24]	X[24]	X[24]	X[24]	X[24]	24. Probe light required. NVG filter configuration should be coordinated with RQS/DO.
HOIST SEARCH LIGHT						25. Hoist Search and Cargo Hook Lights are not required unless needed for mission requirements.
CARGO HOOK LIGHT						
ADHEELS	X[26]	X[26]	X[26]	X[26]	X[26]	26. Required for flights outside of autorotational distance from land.
FUEL						
DUMP SYSTEM	X[27]	X[27]	X[27]	X[27]	X[27]	27. Required for flight.
AIR REFUEL SYSTEM	X[28]	X[28]	X[28]	X[28]	X[28]	28. Required based on mission.
INDICATING/RECORDING						
CRASH SURVIVABLE MEMORY UNIT	X[29]	X[29]	X[29]	X[29]	X[29]	29. Required for flight. **Exception:** If loss of CSMU is due to IVHMS being inoperative, see IVHMS Note 42.
CAUTION ADVISORY WARNING SYSTEM	X[30]	X[30]	X[30]	X[30]	X[30]	30. All segments of either the pilot or co-pilot caution advisory warning system required.
MISCELLANEOUS UTILITIES						

FIRE EXTINGUISHER SYSTEM	X[31]	X[31]	X[31]	X[31]	X[31]	31. Both aircraft fire extinguishers are required.
FIRE DETECTOR SYSTEM	X[32]	X[32]	X[32]	X[32]	X[32]	32. No degradation of the Fire Detection system is allowed.
COCKPIT ARMOR PANEL	X[5]	X[5]				5. Required based on mission requirements.
CARGO ARMOR PANEL	X[5]	X[5]				
EXTERNAL HOIST RESCUE SYSTEM	X[5]	X[5]	X[5]	X[5]	X[5]	
ACTIVE VIBRATION CONTROL SYSTEM	X[33]	X[33]	X[33]	X[33]	X[33]	33. AVCS required.
INSTRUMENTS						
PITOT-STATIC SYSTEM	X[34]	X[34]	X[34]	X[34]	X[34]	34. Both ADCs, both pitot static systems and pitot heat is required. **Exception:** If pitot heat is inoperative, flights may be restricted to remain at or above 5°C for the duration, including enroute altitudes.
ATTITUDE AND DIRECTION SYSTEM	X[35]	X[35]	X[35]	X[35]	X[35]	35. Reversionary mode cannot be used to correct a malfunction. **Exception:** Flights may be restricted to remain day VMC.
ELECTRONIC STANDBY INSTRUMENTATION SYSTEM	X[36]	X[36]	X[36]	X[36]	X[36]	36. ESIS is required. **Exception:** Flights may be restricted to remain day VMC if the standby compass is functional. BATT GOOD indication of the ESIS battery is required.
STANDBY COMPASS	X[36]	X[36]	X[36]	X[36]	X[36]	
FREE AIR GAUGE	X[37]	X[37]	X[37]	X[37]	X[37]	37. One Free Air Temperature gauge is required.

FLIGHT DIRECTOR SYSTEM	X[38]	X[38]	X[38]	X[38]	X[38]	38. Required for overwater, night, and IMC flight. Minimum FD modes required are airspeed and altitude hold.
FLIGHT DIRECTOR DISPLAY CONTROL PANEL	X[39]	X[39]	X[39]	X[39]	X[39]	39. Both FD/DCP required. **Exception:** Flights may be restricted to remain day VMC with one FD/DCP inoperative.
AUTOFLIGHT						
AUTOMATIC FLIGHT CONTROL SYSTEM	X[40]	X[40]	X[40]	X[40]	X[40]	40. STAB and both FCC required for flight. FPS or TRIM required for flight, except in VMC. If loss of FPS or TRIM also results in loss of Flight Director airspeed and altitude hold per note 38, then the VMC flight exception is removed.
STABILITY AUGMENTATION SYSTEM	X[41]	X[41]	X[41]	X[41]	X[41]	41. Both SAS required. SAS DEGRADED indicates the pitch, roll, and/or yaw SAS channels from SAS 1 and/or SAS 2 has disengaged, and the aircraft should be returned to maintenance.
MALFUNCTION ANALYSIS AND RECORDING EQUIPMENT						
INTEGRATED VEHICLE HEALTH MANAGEMENT SYSTEM	X[42]	X[42]	X[42]	X[42]	X[42]	42. IVHMS HIT checks required. Other loss of the IVHMS or CDS functionality is acceptable until 40 hours have been flown, 30 days has

						passed, or per maintenance direction. Do not fly past 40 hrs/30 days.
DATA CONCENTRATOR UNIT	X[43]	X[43]	X[43]	X[43]	X[43]	43. Both DCUs are required.
RADIO COMMUNICATION						
COM-1 AN/ARC-210 MULTIBAND RADIO SYSTEM	X[44]	X[44]	X[44]	X[44]	X[44]	44. COM-1, COM-2, or COM-5 required.
COM-2 AN/ARC-210 MULTIBAND RADIO SYSTEM	X[44]	X[44]	X[44]	X[44]	X[44]	
COM-5 AN/ARC-210 MULTIBAND RADIO SYSTEM	X[44]	X[44]	X[44]	X[44]	X[44]	
COMM-2/COMM-3 AN/ARC-210 BACKUP REMOTE RADIO CONTROL UNIT	X[45]	X[45]	X[45]	X[45]	X[45]	45. Backup radio control unit required, except flights in day VMC.
COM-3 AN/ARC-210 MULTIBAND RADIO SYSTEM	X[46]	X[46]	X[46]			46. Either COM-3 or COM-4 required.
COM-4 AN/ARC-210 MULTIBAND RADIO SYSTEM	X[46]	X[46]	X[46]			
INTERCOMMUNICATION SYSTEM						
LEFT RECOVERY TEAM INTERCOM CONTROL UNIT	X[47]	X[47]	X[47]	X[47]	X[47]	47. All primary crew station ICUs required. One recovery team ICU required.
RIGHT RECOVERY TEAM INTERCOM CONTROL UNIT	X[47]	X[47]	X[47]	X[47]	X[47]	
IDENTIFICATION FRIEND OR FOE						
AN/DPX-7 IFF SYSTEM	X[48]	X[48]	X[48]	X[48]	X[48]	48. IFF modes required are based upon airspace and theater instructions. For CONUS, only mode 3A and 3C are required. See KIV-77 for Mode 5 requirements.

KIV-77	X[49]	X[49]				49. Mode 5 Required.
MISCELLANEOUS COMMUNICATIONS						
PERSONNEL LOCATOR SYSTEM	X[50]	X[50]	X[50]	X[50]		50. PLS required based on mission requirements.
BLUE FORCE TRACKER	X[51]	X[51]	X[51]	X[51]		51. BFT required based on mission requirements.
COMMON INTERACTIVE BROADCAST SYSTEM	X[52]	X[52]	X[52]	X[52]		52. CIB required based on mission requirements.
SITUATIONAL AWARENESS DATA LINK	X[53]	X[53]	X[53]	X[53]		53. Either SADL or LINK-16 required based on mission requirements.
LINK-16 TACTICAL DATA LINK SYSTEM	X[53]	X[53]	X[53]	X[53]		
RADIO NAVIGATION						
EMBEDDED GLOBAL POSITIONING SYSTEM INERTIAL NAVIGATION SET	X[54]	X[54]	X[54]	X[54]	X[54]	54. Both EGIs are required. **Exception:** Partial loss of one EGI (INS/GPS) is acceptable, as long as the SAS and STAB are not degraded.
AN/ARN-153 TACAN SYSTEM ST	X[55]	X[55]	X[55]	X[55]	X[55]	55. Either TACAN or VOR is required.
AN/ARN-147 VOR CIVIL NAVIGATION	X[55]	X[55]	X[55]	X[55]	X[55]	
RADAR NAVIGATION						
AN/APN-209 RADAR ALTIMETER SYSTEM	X[56]	X[56]	X[56]	X[56]	X[56]	56. RADALT is required.
AN/APN-WR701 COLOR WEATHER RADAR SYSTEM	X[5]	X[5]				5. Required based on mission requirements.
WEAPONS DELIVERY						
GAU-2C, 7.62MM MINIGUN WEAPON SYSTEM	X[57]	X[57]		X[57]		57. If configured on the aircraft, both sides are required, or based on mission or training requirements.
GAU-18/A, .50 CAL MACHINE GUN SYSTEM	X[57]	X[57]		X[57]		
GAU-21/A, .50 CAL MACHINE GUN SYSTEM	X[57]	X[57]		X[57]		

GUN MOUNT/AMMUNITION HANDLING SYSTEM	X[57]	X[57]		X[57]		
ELECTRONIC COUNTERMEASURES (ECM)						
AN/AAR-57 COMMON MISSILE WARNING SYSTEM	X[58]	X[58]		X[58]		58. Required based on threat assessment or training requirements.
AN/ALE-47 COUNTERMEASURES DISPENSING SYSTEM	X[58]	X[58]		X[58]		
AN/APR-52 RADAR WARNING RECEIVER SYSTEM	X[58]	X[58]		X[58]		
AN/AVR-2B LASER WARNING SYSTEM	X[58]	X[58]		X[58]		
RECONNAISSANCE/SURVEILLANCE						
MX-10 INFRARED DETECTION SYSTEM (IDS)	X[23]	X[23]	X[23]	X[23]	X[23]	23. NVG flights require a visible landing/searchlight and one of the following: an operational EO/IR Sensor, an infrared (IR) landing/search light, or a variable intensity landing/search light.
COMPUTER AND DATA DISPLAY						
Pilot Inboard MFD	X[59]	X[59]	X[59]	X[59]	X[59]	59. An MFD is operational if the PFD and EICAS pages can be displayed with accurate data, and Bezel soft keys or slew controller on the IHCU or Collective functions to select displays. An inoperative outboard MFD will result in loss of the barometric altimeter information on the inboard MFD, this is required for flight. #3 MFD is
Pilot Outboard MFD	X[59]	X[59]	X[59]	X[59]	X[59]	
Copilot Inboard MFD	X[59]	X[59]	X[59]	X[59]	X[59]	
Copilot Outboard MFD	X[59]	X[59]	X[59]	X[59]	X[59]	

						required, as it is powered by the DC Utility Bus and must be operational should an electrical failure occur.
Right Hand Cabin Display	X[60]	X[60]	X[61]	X[61]	X[61]	60. A cabin display is operational if the PFD and EICAS pages can be displayed with accurate data, and soft keys function to select displays. Both cabin displays required. 61. A cabin display is operational if the PFD and EICAS pages can be displayed with accurate data, and soft keys function to select displays. One cabin display required.
Left Hand Cabin Display	X[60]	X[60]	X[61]	X[61]	X[61]	
Mission Commander Cabin Display	X[62]	X[62]	X[62]	X[62]		62. Mission Commander Cabin Display is only required based on mission requirements.
REVERSIONARY SWITCH PANEL	X[63]	X[63]	X[63]	X[63]	X[63]	63. Both reversionary panels are required.
INTEGRATED HAND CONTROL UNIT	X[64]	X[64]	X[64]	X[64]	X[64]	64. Collective slew or the IHCU slew function required. One IHCU is required.
FLIGHT MANAGEMENT SYSTEM	X[65]	X[65]	X[65]	X[65]	X[65]	65. Both FMSs are required.
ADVANCED MISSION COMPUTER	X[66]	X[66]	X[66]	X[66]	X[66]	66. Both AMCs are required.
EMBEDDED TERRAIN AWARENESS SYSTEM	X[67]	X[67]	X[67]	X[67]		67. Required for flights operating in

						the low-level environment.
MARK ON TOP	X[68]	X[68]	X[68]	X[68]	X[68]	68. Required for flights over water, or based on mission requirements
1553 DATA BUS	X[69]	X[69]	X[69]	X[69]	X[69]	69. 1553 data bus is required.
DATA TRANSFER SYSTEM	X[70]	X[70]	X[70]	X[70]	X[70]	70. Ability to load the MSN DTD is required.
MASS MEMORY UNIT	X[71]	X[71]	X[71]	X[71]		71. The MMU is required for flight, since ETAWS only references DTED stored on the MMU.
CROSS DOMAIN SOLUTION	X[42]	X[42]	X[42]	X[42]	X[42]	42. IVHMS HIT checks required. Other loss of the IVHMS or CDS functionality is acceptable until 40 hours have been flown, 30 days has passed, or per maintenance direction. Do not fly past 40 hrs/30 days.
ETHERNET	X[72]	X[72]	X[72]	X[72]	X[72]	72. All ethernet switching hubs are required.
EMERGENCY EQUIPMENT						
EMERGENCY LOCATOR TRANSMITTER	X[73]	X[73]	X[73]	X[73]	X[73]	73. ELT is required and should be in the ARMED position. **Exception:** Aircrew may elect to turn the ELT off for certain mission requirements.
FIRE EXTINGUISHER	X[74]	X[74]	X[74]	X[74]	X[74]	74. Expiration dates of first aid kits and fire extinguishers may be extended with MAJCOM/A3
FIRST AID KIT	X[74]	X[74]	X[74]	X[74]	X[74]	

						or COMAFFOR approval.
PERSONNEL AND MISCELLANEOUS EQUIPMENT						
ISOLATED PERSONNEL STACKING LITTERS						75. The Isolated Personnel Stacking Litters are not required for any mission, and may be installed or removed to support mission requirements.
AIRCRAFT EXPLOSIVE DEVICES AND COMPONENTS						
CARGO HOOK EXPLOSIVE CARTRIDGE	X[76]	X[76]	X[76]	X[76]	X[76]	76. Required when cargo hook/hoist is installed.
CUTTER PRESSURE CARTRIDGE	X[76]	X[76]	X[76]	X[76]	X[76]	