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Subj: CH-46E TRAINING AND READINESS MANUAL

Ref: (a) NAVMC 3500.14C

Encl: (1) CH-46E Training and Readiness Manual Chapter 1 - 3

1. Purpose. In accordance with the reference, publish revised standards and regulations regarding the CH-46E Training and Readiness (T&R) Manual.

2. Cancellation. NAVMC 3500.46A Ch 1

3. Scope. Highlights of major T&R planning considerations included in this CH-46E T&R Manual are as follows:

a. Marine Corps Task (MCT) 4.3.4, Conduct Air Delivery, moves from Core to Core Plus.

b. MCT 1.3.4.1.1, Conduct Airborne Rapid Insertion/Extraction, moves from Core Plus to Core. Output standards change from 10 sorties to 15 sorties.

c. The Core Model Minimum Requirement changes from 4 to 6 for the number of Mission Essential Task capable crews trained.

d. Added a training metric, Core Model Training Standard, an objective optimum training standard used to reflect aircrew trained to Core Skill Proficiency/Mission Skill Proficiency per crew position.

4. Information. Recommended changes to this Manual should be submitted via the syllabus sponsor and the appropriate chain of command to: Commanding General (CG), Training and Education

Command (TECOM), Marine Air Ground Task Force Training and Education Standards Division (MTESD), Aviation Standards Branch using standard Naval correspondence or the Automated Message Handling System plain language address: CG TECOM MTESD.

5. Command. This Manual is applicable to the Marine Corps Total Force.

6. Certification. Reviewed and approved this date.

T. M. MURRAY
By direction

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# CHAPTER 1

## CH-46E TRAINING AND READINESS UNIT REQUIREMENTS

# CHAPTER 1

## CH-46E TRAINING AND READINESS UNIT REQUIREMENTS

1.0 TRAINING AND READINESS REQUIREMENTS. The Marine Aviation Training and Readiness (T&R) Program provides the Marine Air-Ground Task Force (MAGTF) commander with an Aviation Combat Element (ACE) capable of executing the six functions of Marine Aviation. The T&R Program is the fundamental tool used by commanders to construct, attain, and maintain effective training programs. The standards established in this program are validated by subject matter experts to maximize combat capabilities for assigned METs while conserving resources. These standards describe and define unit capabilities and requirements necessary to maintain proficiency in mission skills and combat leadership. Training events are based on specific requirements and performance standards to ensure a common base of training and depth of combat capability.

1.1 MISSION. Support the MAGTF Commander by providing assault support transport of combat troops, supplies, and equipment, day or night under all weather conditions during expeditionary, joint, or combined operations.

1.2 TABLE OF ORGANIZATION (T/O). Refer to Table of Organization (T/O) 8940 managed by Total Force Structure, MCCDC, for current authorized organizational structure and personnel strength for CH-46E squadrons. As of this publication date, HMM/HMMT squadrons are authorized:

1.2.1 Table of Organization. Tactical and Reserve squadron.

| HMM Tactical and Reserve Squadron | |
|---|---|
| T/O 8940 | |
| 12 Aircraft | |
| Crew Composition | Total(s) |
| Pilots | 28 |
| Crew Chiefs | 19 |
| Aerial Gunners/Observers | 19 |
| Tail Gunners | 12 |

1.2.2 Table of Organization. Fleet Replacement Squadron.

| HMMT-164 | |
|---|---|
| T/O 8940 | |
| 18 Aircraft | |
| Crew Composition | Total(s) |
| Instructor Pilots | 23 |
| Crew Chiefs | 21 |
| Crew Chief Instructors | 12 |
| Aerial Gunners/Observers | 20 |

## 1.3 SIX FUNCTIONS OF MARINE AVIATION

| SIX FUNCTIONS OF MARINE AVIATION | | |
|---|---|---|
| FUNCTION | ABBREVIATION | DESCRIPTION |
| Offensive Air Support | OAS | OAS involves air operations that are conducted against enemy installations, facilities, and personnel in order to directly assist in the attainment of MAGTF objectives by destroying enemy resources or isolating enemy military forces. Its primary support of the warfighting functions is to provide fires and force protection through CAS and DAS. |
| Assault Support | ASPT | ASPT contributes to the warfighting functions of maneuver and logistics. Maneuver warfare demands rapid, flexible maneuverability to achieve a decision. Assault support uses aircraft to provide tactical mobility and logistic support to the MAGTF for the movement of high priority personnel and cargo within the immediate area of operations (or the evacuation of personnel and cargo). |
| Anti-Air Warfare | AAW | AAW is the actions used to destroy or reduce the enemy air and missile threat to an acceptable level The primary purpose of AAW is to gain and maintain whatever degree of air superiority is required; this permits the conduct of operations without prohibitive interference by opposing air and missile forces. AAW's other purpose is force protection. |
| Electronic Warfare | EW | EW is any military action involving the use of electromagnetic and directed energy to control the electromagnetic spectrum or to attack the enemy. EW supports the warfighting functions of fires, command and control, and intelligence through the three major subdivisions: electronic attack, electronic protection, and electronic warfare support. |
| Control of Aircraft & Missiles | CoA&M | The control of aircraft and missiles supports the warfighting function of Command and Control. The ACE commander maintains centralized command, while control is decentralized and executed through the Marine Air Command and Control System (MACCS). CoA&M integrates the other five functions of Marine Aviation by providing the commander with the ability to exercise Command and Control authority over Marine Aviation assets. |
| Air Reconnaissance | AerRec | AerRec employs visual observation and/or sensors in aerial vehicles to acquire intelligence information. It supports the intelligence warfighting function and is employed tactically, operationally, and strategically. The three types of air reconnaissance are visual, multi-sensor imagery, and electronic. |

## 1.4 ABBREVIATIONS

| CORE SKILLS | |
|---|---|
| FAM/INST | Familiarization/Instrument |
| CAL | Confined Area Landing |
| FORM | Formation |
| TERF | Low Level Terrain Flight |
| AG/TG | Aerial Gunnery/Tail Gunnery |
| TAC | Tactics |
| NS HLL | Night Systems High Light Level |
| NS LLL | Night Systems Low Light Level |
| EXT | External Load Operations |
| AIE | Alternate Insertion Extraction |
| GTR | Ground Threat Reaction |
| CQ | Carrier Qualification |
| **MISSION SKILLS** | |
| SEA | Expeditionary Sea-Based |
| EXP | Expeditionary Shore-Based |
| AT | Combat Assault Transport |
| RIE | Rapid Insertion/Extraction |
| TRAP | Tactical Recovery of Aircraft and Personnel |
| AE | Air Evacuation |

| CORE PLUS SKILLS | |
|---|---|
| MAT | Mountain Area Training |
| CAL | Confined Area Landing |
| CBRN | Chemical, Biological, Radiological and Nuclear. |
| EXT | External Load Operations |
| GTR | Ground Threat Reaction |
| TAC | Tactics |
| AIE | Alternate Insertion Extraction |
| DM | Defensive Measures |
| CQ | Carrier Qualification |
| CORE PLUS MISSION SKILLS | |
| AD | Aerial Delivery |

## 1.5 DEFINITIONS

| TERM | DEFINITION |
|---|---|
| Core Model | The Core Model is the basic foundation or standardized format by which all T&Rs are constructed. The Core model provides the capability of quantifying both unit and individual training requirements and measuring readiness. This is accomplished by linking community Mission Statements, Mission Essential Task Lists, Output Standards, Core Skill Proficiency Requirements and Combat Leadership Matrices |
| Core Skill | Fundamental, environmental, or conditional capabilities required to perform basic functions. These basic functions serve as tactical enablers that allow crews to progress to the more complex Mission Skills. Primarily 2000 Phase events but may be introduced in the 1000 Phase. |
| Mission Skill | Mission Skills enable a unit to execute a specific MET. They are comprised of advanced event(s) that are focused on MET performance and draw upon the knowledge, aeronautical abilities, and situational awareness developed during Core Skill training. 3000 Phase events. |
| Core Plus Skill | Training events that can be theater specific or that have a low likelihood of occurrence. They may be Fundamental, environmental, or conditional capabilities required to perform basic functions. 4000 Phase events. |
| Core Plus Mission | Training events that can be theater specific or that have a low likelihood of occurrence. They are comprised of advanced event(s) that are focused on Core Plus MET performance and draw upon the knowledge, aeronautical abilities, and situational awareness. 4000 Phase events. |
| Core Skill Proficiency (CSP) | CSP is a measure of training completion for 2000 Phase events. CSP is attained by executing all events listed in the Attain Table for each Core Skill. The individual must be simultaneously proficient in all events within that Core Skill to attain CSP. |
| Mission Skill Proficiency (MSP) | MSP is a measure of training completion for 3000 Phase events. MSP.is attained by executing all events listed in the Attain Table for each Mission Skill. The individual must be simultaneously proficient in all events within that Mission Skill to attain MSP. MSP is directly related to Training Readiness. |
| Core Plus Skill Proficiency (CPSP) | CPSP is a measure of training completion for 4000 Phase "Skill" events. CPSP is attained by executing all events listed in the Attain Table for each Core Plus Skill. The individual must be simultaneously proficient in all events within that Core Plus Skill to attain CPSP |
| Core Plus Mission Proficiency (CPMP) | CPMP is a measure of training completion for 4000 Phase "Mission" events. CPMP is attained by executing all events listed in the Attain Table for each Core Plus Mission. The individual must be simultaneously proficient in all events within that Core Plus Mission to attain CPMP |
| Core Model Training Standard (CMTS) | The CMTS is an objective optimum training standard used by squadrons that reflects the number of individuals trained to CSP/MSP, per crew position. The CMTS is for internal squadron planning only and is not utilized for readiness reporting. The numbers are determined by individual communities. |
| Core Model Minimum Requirement Readiness Reporting (CMMR RR) | The CMMR RR is the minimum level of proficiency, aircrew qualifications, and designations required to execute the MET output standards. |

1.6 MISSION ESSENTIAL TASK LIST (METL). The METL is a list of specified tasks a squadron is expected to execute. Core METs are derived from the Marine Corps Task List (MCTL), are standardized by type unit, and are used for squadron readiness. Core Plus METs are additional METs that are theater specific and/or have a low likelihood of occurrence. Core Plus METs may be included in readiness reporting when contained within an Assigned Mission METL. An Assigned Mission METL consists of only selected METs (drawn from the MCTL, Core, or Core Plus METs) necessary for that Assigned Mission. Chapter 7 of the Aviation T&R Program Manual provides additional information on Aviation Training Readiness policy.

| HMM CH-46E | | |
|---|---|---|
| MISSION ESSENTIAL TASK LIST (METL) | | |
| CORE | | |
| MET | ABBREVIATION | DESCRIPTION |
| MCT 1.3.3.3.1 | SEA | Conduct Aviation Operations From Expeditionary Sea-Based Sites |
| MCT 1.3.3.3.2 | EXP | Conduct Aviation Operations From Expeditionary Shore-Based Sites |
| MCT 1.3.4.1 | AT | Conduct Combat Assault Transport |
| MCT 1.3.4.1.1 | RIE | Conduct Airborne Rapid Insertion/Extraction |
| MCT 6.2.1.1 | TRAP | Conduct Aviation Support of Tactical Recovery of Aircraft and Personnel (TRAP) |
| MCT 6.2.2 | AE | Conduct Air Evacuation |
| CORE PLUS | | |
| MET | ABBREVIATION | DESCRIPTION |
| MCT 4.3.4 | AD | Conduct Air Delivery |

1.7 MISSION ESSENTIAL TASK (MET) TO SIX FUNCTIONS OF MARINE AVIATION

| HMM CH-46E | | | | | | | |
|---|---|---|---|---|---|---|---|
| MISSION ESSENTIAL TASK (MET) TO SIX FUNCTIONS OF MARINE AVIATION | | | | | | | |
| CORE | | | | | | | |
| MET | ABBREVIATION | SIX FUNCTIONS OF MARINE AVIATION | | | | | |
| | | OAS | ASPT | AAW | EW | CoA&M | AerRec |
| MCT 1.3.3.3.1 | SEA | | X | | | | |
| MCT 1.3.3.3.2 | EXP | | X | | | | |
| MCT 1.3.4.1 | AT | | X | | | | |
| MCT 1.3.4.1.1 | RIE | | X | | | | |
| MCT 6.2.1.1 | TRAP | | X | | | | |
| MCT 6.2.2 | AE | | X | | | | |
| CORE PLUS | | | | | | | |
| MCT 4.3.4 | AD | | X | | | | |

1.8 MET TO CORE/MISSION/CORE PLUS SKILL MATRIX. Depicts the relationship between a MET and each Core/Mission/Core Plus skill associated with the MET for readiness reporting and resource allocation purposes. There shall be a one-to-one relationship between the MET and a corresponding Mission Skill. For example: the MET for EXP shows a one-to-one relationship with the EXP Mission Skill; the TRAP MET shows a one-to-one relationship with the TRAP Mission Skill, and so on. Shading indicates Core Plus.

| HMM CH-46E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MET TO CORE/MISSION/CORE PLUS/MISSION PLUS SKILL MATRIX | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MET | CORE | | | | | | | | | | | | | | | | | | | CORE PLUS (4000 PHASE) | | | | | | | | | |
| | SKILLS (2000 PHASE) | | | | | | | | | | | | | MISSION SKILLS (3000 PHASE) | | | | | | SKILLS | | | | | | | | MISSION SKILLS | |
| | FAM/INST | CAL | FORM | TERF | AG | TG | TAC | NS HLL | NS LLL | EXT | AIE | GTR | CQ | SEA | EXP | AT | RIE | TRAP | AE | MAT | CAL | CBRN | EXT | GTR | TAC | AIE | DM | CQ | AD |
| MCT 1.3.3.3.1 SEA | X | X | X | X | X | X | X | X | X | | | | X | X | | | | | | | | | | | | | | X | |
| MCT 1.3.3.3.2 EXP | X | X | X | X | X | X | X | X | X | | | | | | X | | | | | X | X | | X | | | | X | | |
| MCT 1.3.4.1 AT | X | X | X | X | X | X | X | X | X | X | X | X | | | | X | | | | X | | X | X | X | X | | | | |
| MCT 1.3.4.1.1 RIE | X | X | X | X | X | X | X | X | X | | X | X | | | | | X | | | | | | | | X | | | | |
| MCT 6.2.1.1 TRAP | X | X | X | X | X | X | X | X | X | | X | X | | | | | | X | | | | | | | X | | | | |
| MCT 6.2.2 AE | X | X | X | X | X | X | X | X | X | | X | X | | | | | | | X | | | | | | X | | | | |
| CORE PLUS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MCT 4.3.4 AD | X | X | X | X | X | X | X | X | X | X | X | | | | | | X | | | | | | | | X | X | | | X |

1.9 MISSION ESSENTIAL TASKS (MET) OUTPUT STANDARDS. The following MET output standards are the required level of performance a HMM squadron must be capable of sustaining during contingency/combat operations by MET to be considered MET-ready. Output standards will be demonstrated through the incorporation of unit training events. A core capable HMM squadron is able to sustain the number of sorties listed below on a daily basis during contingency/combat operations. The sortie rates are based on 1.5 hour average sortie duration. It assumes >70% FMC aircraft and >90% T/O aircrew on hand. If unit FMC aircraft is <70% or T/O aircrew <90%, core capability will be degraded by a like percentage.

| HMM CH-46E | | | |
|---|---|---|---|
| MET OUTPUT STANDARDS MATRIX | | | |
| CORE | | | |
| MET | ABBREVIATION | MAXIMUM DAILY SORTIES | MAXIMUM SORTIES PER MET |
| MCT 1.3.3.3.1 | SEA | 20 | 20 |
| MCT 1.3.3.3.2 | EXP | | 20 |
| MCT 1.3.4.1 | AT | | 20 |
| MCT 1.3.4.1.1 | RIE | | 15 |
| MCT 6.2.1.1 | TRAP | | 20 |
| MCT 6.2.2 | AE | | 20 |
| CORE PLUS | | | |
| MET | ABBREVIATION | MAXIMUM DAILY SORTIES | MAXIMUM SORTIES PER MET |
| MCT 4.3.4 | AD | 20 | 10 |

1.10 CORE MODEL MINIMUM REQUIREMENTS (CMMR) FOR READINESS REPORTING. The paragraphs and tables below delineate the minimum aircrew qualifications and designations required to execute the MET output standards of para 1.9. Chapter 7 of the Aviation T&R Program Manual provides additional guidance and a detailed description of readiness reporting using the Defense Readiness Reporting System - Marine Corps (DRRS-MC).

1.10.1 The CMMR Readiness Reporting Matrix depicts the minimum crew composition (defined as a combination of qualifications and designations) reflecting the number of crews required per MET and minimum Combat Leadership requirements for readiness reporting purposes. The number of crews formed using the below minimum standards per crew capture the readiness capability of a squadron to perform the MET sortie under all light levels.

1.10.2 A standard CH-46E crew consists of two pilots, one crew chief, and one AG/O. At the squadron commanding officer's discretion and mission dependent, a standard CH-46E crew may consist of two pilots, one crew chief, one AG/O, and one tail gunner. For clarification, a squadron shall train 8 tail gunners to satisfy the Core Skill requirements identified; however, those 8 tail gunners are not additional crewmen manning the tail gun. Rather, those 8 tail gunners may be a combination of crew chiefs and AG/Os who are Tail Gunnery Qualified (TGQ). The additional crewman required for the manning of the tail gun for missions is at the discretion of the commanding officer.

| HMM CH-46E | | | | | |
|---|---|---|---|---|---|
| CMMR READINESS REPORTING MATRIX | | | | | |
| HMM MINIMUM CREW QUALIFICATIONS / DESIGNATIONS REQUIRED FOR MET CAPABILITY | | | | | |
| CORE | | | | | |
| CORE | CREW POSITION | | | | CREWS REQUIRED PER MET (CREW CMMR) |
| MCT | PILOT | COPILOT | CC | CC/AO* | SQD |
| 1.3.3.3.1 (SEA) | MSP, HAC | NSQ(LLL), CQ | MSP | NSQ(LLL), CQ | 8 |
| 1.3.3.3.2 (EXP) | MSP, HAC | NSQ(LLL) | MSP | NSQ(LLL) | 8 |
| 1.3.4.1 (AT) | MSP, HAC | NSQ(LLL) | MSP | NSQ(LLL) | 8 |
| 1.3.4.1.1 (RIE) | MSP, HAC | NSQ (LLL) | MSP | NSQ(LLL) | 6 |
| 6.2.1.1 (TRAP) | MSP, HAC | NSQ(LLL) | MSP | NSQ(LLL) | 8 |
| 6.2.2 (AE) | MSP, HAC | NSQ(LLL) | MSP | NSQ(LLL) | 8 |
| CORE PLUS | | | | | |
| CORE PLUS | CREW POSITION | | | | CREWS REQUIRED PER MET (CREW CMMR) |
| MCT | PILOT | COPILOT | CC | CC/AO* | SQD |
| 4.3.4 (AD) | MSP, HAC | NSQ (LLL) | MSP | NSQ (LLL) | 4 |
| COMBAT/FLIGHT LEADERSHIP CMMR | | | | | |
| DESIGNATION | | | | | NUMBER OF PILOTS |
| HAC | | | | | 12 |
| SEC LDR | | | | | 6 |
| DIV LDR | | | | | 4 |
| FLT LDR | | | | | 2 |
| MSN CMDR | | | | | 2 |

* A non-MSP CC may serve in the capacity of an AO as long as the CC is NSQ(LLL).

1.11 CORE MODEL TRAINING STANDARD (CMTS). The CMTS is the optimum training standard reflecting the number of aircrews trained to CSP/MSP, per crew position to execute each stage of flight as detailed below. The CMTS Matrix depicts the training goal and optimum depth of training desired for each squadron as they develop their squadron training plan. It is not utilized for readiness reporting (DRRS-MC) purposes. At a minimum, the CMTS shall enable a squadron to form Core Model Minimum Requirement (CMMR) crews for Mission Skills (and Mission Plus Skills when required). For single-seat

aircraft, the number of aircrews trained to MSP standards in the CMTS Matrix and CMMR may be the same.

1.11.1 Tactical Squadron

| HMM 12 CH-46E | | | |
|---|---|---|---|
| CORE MODEL TRAINING STANDARD (CMTS) | | | |
| CORE/MISSION/CORE PLUS SKILLS CREW POSITION PROFICIENCY REQUIREMENTS | | | |
| CORE | | | |
| **SKILLS (2000 PHASE)** | **PILOTS** | **CREW CHIEFS** | **AG/O** |
| FAM / INST | 16 | 8 | 8 |
| CAL | 16 | 8 | 8 |
| FORM | 16 | 8 | 8 |
| TERF | 16 | 8 | 8 |
| AG | 16 | 8 | 8 |
| TG | - | 8 | 8 |
| TAC | 16 | 8 | 8 |
| NS HLL | 16 | 8 | 8 |
| NS LLL | 16 | 8 | 8 |
| EXT | 16 | 8 | 8 |
| AIE | 8 | 4 | 4 |
| GTR | 16 | 8 | 8 |
| CQ | 16 | 8 | 8 |
| **MISSION SKILLS (3000 PHASE)** | **PILOTS** | **CREW CHIEFS** | **AG/O** |
| SEA | 16 | 8 | 8 |
| EXP | 16 | 8 | 8 |
| AT | 16 | 8 | 8 |
| RIE | 12 | 6 | 6 |
| TRAP | 16 | 8 | 8 |
| AE | 16 | 8 | 8 |
| CORE PLUS (4000 PHASE) | | | |
| **SKILLS** | **PILOTS[1]** | **CREW CHIEFS[1]** | **AG/O[1]** |
| MAT | [2/(8)] | [1/(4)] | [1/(4)] |
| CAL | [2/(8)] | [1/(4)] | [1/(4)] |
| CBRN | [2/(8)] | [1/(4)] | [1/(4)] |
| EXT | [2/(8)] | [1/(4)] | [1/(4)] |
| GTR | [2/(8)] | [1/(4)] | [1/(4)] |
| TAC | [2/(8)] | [1/(4)] | [1/(4)] |
| AIE | [2/(8)] | [1/(4)] | [1/(4)] |
| DM | [2/(8)] | [1/(4)] | [1/(4)] |
| CQ | [2/(8)] | [1/(4)] | [1/(4)] |
| **MISSION SKILLS** | **PILOTS[1]** | **CREW CHIEFS[1]** | **AG/O[1]** |
| AD | [2/(8)] | [1/(4)] | [1/(4)] |

Note[1]: In the Core Plus METS the first number represents the number of individuals the squadron is expected to train at all times in order to retain a cadre of capability within the squadron. The second number represents the number of MET capable individuals the squadron should train if that MET becomes required within an Assigned Mission/Directed Mission Set.

### 1.11.2 Fleet Replacement Squadron

| HMMT-164 | |
|---|---|
| CORE MODEL TRAINING STANDARD (CMTS) | |
| FRS CORE SKILLS (2000 PHASE) | |
| CORE SKILL | FRS PILOTS |
| FAM / INST | 23 |
| FRS CAL | 23 |
| FRS EXT | 23 |
| FRS TERF | 23 |
| FRS NSQ | 23 |

## 1.12 INSTRUCTOR DESIGNATIONS (5000 Phase)

### 1.12.1 HMM Tactical and Reserve Squadron

| HMM CH-46E | | |
|---|---|---|
| INSTRUCTOR DESIGNATIONS (5000 Phase) | | |
| DESIGNATION | PILOTS | CREW CHIEFS |
| BASIC INSTRUCTOR | 8 | N/A |
| NATOPS | 1 | 1 |
| ASST NATOPS | 4 | 4 |
| INST EVALUATOR | 5 | N/A |
| TERF I | 6 | 6 |
| DMI | 2 | 2 |
| NSI | 4 | 4 |
| NSFI | 0 | N/A |
| WTI | 2 | 2 |
| AGI | N/A | 4 |
| TGI | N/A | 2 |
| FLSE | 2 | N/A |

### 1.12.2 HMM(T) FRS Squadron

| HMMT-164 CH-46E | | |
|---|---|---|
| INSTRUCTOR DESIGNATIONS (5000 Phase) | | |
| DESIGNATION | FRS PILOTS | FRS CREW CHIEFS |
| BASIC INSTRUCTOR | 23 | N/A |
| NATOPS | 2 | 2 |
| ASST NATOPS | 4 | 4 |
| INST EVALUATOR | 5 | N/A |
| TERF I | 23 | 12 |
| DMI | 0 | 0 |
| NSI | 4 | 12 |
| NSFI | 18 | 10 |
| WTI | 1 | 1 |
| AGI | N/A | 1 |
| TGI | N/A | 0 |
| FLSE | 2 | N/A |
| FRSI | 23 | N/A |
| FRSCCI | N/A | 12 |

1.13 REQUIREMENTS, CERTIFICATIONS, QUALIFICATIONS, AND DESIGNATIONS (RCQD) (6000 Phase)

1.13.1 HMM Tactical and Reserve Squadron

| HMM CH-46E | |
|---|---|
| REQUIREMENTS, CERTIFICATIONS, QUALIFICATIONS, DESIGNATIONS (RCQD) (6000 Phase) | |
| DESIGNATION | PILOTS |
| FCP | 4 |

1.13.2 HMM(T) FRS Squadron

| HMMT-164 CH-46E | |
|---|---|
| REQUIREMENTS, CERTIFICATIONS, QUALIFICATIONS, DESIGNATIONS (RCQD) (6000 Phase) | |
| DESIGNATIONS | PILOTS |
| HAC | 23 |
| SECTION LEADER | 23 |
| DIVISION LEADER | 23 |
| FLIGHT LEADER | 2 |
| FCP | 8 |

1.14 UNIT EXTERNAL SYLLABUS RESOURCE REQUIREMENTS. The following matrix summarizes training resource requirements for CH-46E squadron training as outlined in Chapters 2 and 3 of this Manual.

CH-46E TRAINING RESOURCE REQUIREMENTS

| PHASE | STAGE | SIMULATORS | LANDING ZONES | AUTH TERF AREAS | AG/LASER RANGE | ORDNANCE | HST | HRST/JUMP/ CAST MASTER | FCLP PAD/SHIP DECK | FW/RW AGGRESSOR |
|---|---|---|---|---|---|---|---|---|---|---|
| CORE SKILL INTRODUCTION (1000) | FAM | X | X | | | | | | | |
| | INST | X | | | | | | | | |
| | NAV | | | | | | | | | |
| | CAL | X | X | | | | | | | |
| | FORM | X | X | | | | | | | |
| | EXT | X | X | | | | X | | | |
| | TERF | | X | X | | | | | | |
| | NS | X | X | | | | | | | |
| | REV | X | X | | | | | | | |
| | CSIX | | X | | | | | | | |
| CORE SKILL (2000) | FAM / INST | X | | | | | | | | |
| | CAL | X | X | | | | | | | |
| | FORM | X | | | | | | | | |
| | TERF | X | X | X | | | | | | |
| | AG/TG | | X | | X | X | | | | |
| | TAC | X | X | X | X | X | | | | |
| | NS HLL | X | X | X | | | | | | |
| | NS LLL | X | X | X | | | | | | |
| | EXT | X | X | | | | X | | | |
| | AIE | X | X | | | | | X | | |
| | GTR | X | X | X | X | X | | | | |
| | CQ | X | | | | | | | X | |
| MISSION SKILL (3000) | SEA | | | | | | | | | |
| | EXP | | | | | | | | | |
| | AT | | X | X | X | | X | | | |
| | RIE | | X | X | X | | | | | |
| | TRAP | | X | X | X | X | | | | |
| | AE | | X | | | | | | | |
| CORE PLUS SKILL (4000) | MAT | | | | | | | | | |
| | CAL | X | X | | | | | | | |
| | CBRN | X | X | | | | | | | |
| | EXT | X | X | X | | | X | | | |
| | GTR | X | X | X | X | X | | | | |
| | TAC | X | X | | X | | | | | X |
| | AIE | | | | | | | X | | |
| | DM | X | X | | X | | | | | X |
| | CQ | X | | | | | | | X | |
| MISSION PLUS SKILL | AD | | X | | | | | X | | |

Appendix A

# HMM

**Core METL**

| | |
|---|---|
| MCT 1.3.3.3.1 | Conduct Aviation Operations From Expeditionary Sea-Based Sites |
| MCT 1.3.3.3.2 | Conduct Aviation Operations From Expeditionary Shore-Based Sites) |
| MCT 1.3.4.1 | Conduct Combat Assault Transport |
| MCT 1.3.4.1.1 | Conduct Airborne Rapid Insertion/Extraction |
| MCT 6.2.1.1 | Conduct Aviation Support of Tactical Recovery of Aircraft and Personnel |
| MCT 6.2.2 | Conduct Air Evacuation |

**Core Plus**

| | |
|---|---|
| MCT 4.3.4 | Conduct Air Delivery |

**MCT 1.3.3.3.1 Conduct Aviation Operations From Expeditionary Sea-Based Sites**

**Conditions:**

**C 1.3.2.1 Light**
Light available to illuminate objects from natural or manmade sources. Descriptors: Bright (sunny day); Day (overcast day); low (dusk, dawn, moonlit, streetlight lit); Negligible (overcast night)

**C 1.3.1.3.1 Air Temperature**
Atmospheric temperature at ground level (degrees Fahrenheit). Descriptors: Hot (> 85 F); Temperate (40 to 85 F); Cold (10 to 39 F); Very cold (< 10 F).

**C 2.1.4.5 Intratheater Distance**
Mileage between two locations (e.g., airfield to the FEBA). Descriptors: Very short (< 10 NM); Short (10 to 50 NM); Moderate (50 to 150 NM); Long (150 to 500 NM).

**Standards:**

**Personnel**
- 12 aircrews formed
- 90% of squadron T/O personnel MOS qualified and deployable
  - And Level 2 (L2) IAW ALERTS.
- 100% critical MOS fill

**Equipment**
- 70% Full Mission Capable (FMC) aircraft of PAA (8 aircraft)

OR

Upon establishment, 100 percent RFT entitlement IAW T/M/S standard.
- Operational support equipment fully supports MCT

**Training**
- 8 aircrews MET-capable IAW T&R requirements

**Output Standards**
- 20 sorties daily sustained during contingency/combat operations

**MCT 1.3.3.3.2 Conduct Aviation Operations From Expeditionary Shore-Based Sites**

**Conditions:**

**C 1.1.1.2 Terrain Elevation**
Height of immediate terrain in reference to sea level. Descriptors: Very high (> 10,000 ft); High (6,000 to 10,000 ft); Moderately high (3,000 to 6,000 ft); Moderately low (1,000 to 3,000 ft); Low (500 to 1,000 ft); Very low (< 500 ft).

**C 1.3.2.1 Light**
Light available to illuminate objects from natural or manmade sources. Descriptors: Bright (sunny day); Day (overcast day); low (dusk, dawn, moonlit, streetlight lit); Negligible (overcast night)

**C 1.3.1.3.1 Air Temperature**
Atmospheric temperature at ground level (degrees Fahrenheit). Descriptors: Hot (> 85 F); Temperate (40 to 85 F); Cold (10 to 39 F); Very cold (< 10 F).

**C 2.7.2 Air Superiority**
The extent to which operations in the air, over sea and/or, over land can be conducted with acceptable losses due to hostile air forces and air defense systems action. Descriptors: Full (Air Supremacy); General; Local.

**Standards:**

**Personnel**

- 12 aircrews formed
- 90% of squadron T/O personnel MOS qualified and deployable
  - o And Level 2 (L2) IAW ALERTS.
- 100% critical MOS fill

**Equipment**

- 70% Full Mission Capable (FMC) aircraft of PAA (8 aircraft)

OR

Upon establishment, 100 percent RFT entitlement IAW T/M/S standard.

- Operational support equipment fully supports MCT

**Training**

- 8 aircrews MET-capable IAW T&R requirements.

**Output Standards**

- 20 sorties daily sustained during contingency/combat operations.

MCT 1.3.4.1 Conduct Combat Assault Transport

**Conditions:**

**C 1.1.1.2 Terrain Elevation**
Height of immediate terrain in reference to sea level.
Descriptors: Very high (> 10,000 ft); High (6,000 to 10,000 ft); Moderately high (3,000 to 6,000 ft); Moderately low (1,000 to 3,000 ft); Low (500 to 1,000 ft); Very low (< 500 ft).

**C 1.3.2.1 Light**
Light available to illuminate objects from natural or manmade sources.
Descriptors: Bright (sunny day); Day (overcast day); low (dusk, dawn, moonlit, streetlight lit); Negligible (overcast night)

**C.1.3.2.3 Aviation Meteorological Conditions**
Current weather/flight conditions affecting flight rules next 24 hours.
Descriptors: VMC (Conditions that permit flight using external cues and a distinguishable horizon.)

**C 2.7.2 Air Superiority**
The extent to which operations in the air, over sea and/or, over land can be conducted with acceptable losses due to hostile air forces and air defense systems action. Descriptors: Full (Air Supremacy); General; Local.

**Standards:**

**Personnel**
- 12 aircrews formed
- 90% of squadron T/O personnel MOS qualified and deployable
  - o And Level 2 (L2) IAW ALERTS.
- 100% critical MOS fill

**Equipment**
- 70% Full Mission Capable (FMC) aircraft of PAA (8 aircraft)
  OR
  Upon establishment, 100 percent RFT entitlement IAW T/M/S standard.
- Operational support equipment fully supports MCT

**Training**
- 8 aircrews MET-capable IAW T&R requirements

**Output Standards**
- 20 sorties daily sustained during contingency/combat operations

**MCT 1.3.4.1.1 Conduct Airborne Rapid Insertion/Extraction**

**Conditions:**

**C 1.3.2.1 Light**
Light available to illuminate objects from natural or manmade sources. Descriptors: Bright (sunny day); Day (overcast day); low (dusk, dawn, moonlit, streetlight lit); Negligible (overcast night)

**C.1.3.2.3 Aviation Meteorological Conditions**
Current weather/flight conditions affecting flight rules next 24 hours. Descriptors: VMC (Conditions that permit flight using external cues and a distinguishable horizon.)

**C 1.1.1.2 Terrain Elevation**
Height of immediate terrain in reference to sea level.
Descriptors: Very high (> 10,000 ft); High (6,000 to 10,000 ft); Moderately high (3,000 to 6,000 ft); Moderately low (1,000 to 3,000 ft); Low (500 to 1,000 ft); Very low (< 500 ft).

**C 2.7.2 Air Superiority**
The extent to which operations in the air, over sea and/or, over land can be conducted with acceptable losses due to hostile air forces and air defense systems action. Descriptors: Full (Air Supremacy); General; Local.

**Standards:**

**Personnel**

- 12 aircrews formed
- 90% of squadron T/O personnel MOS qualified and deployable
  - And Level 2 (L2) IAW ALERTS.
- 100% critical MOS fill

**Equipment**

- 70% Full Mission Capable (FMC) aircraft of PAA (8 aircraft)

OR

Upon establishment, 100 percent RFT entitlement IAW T/M/S standard.

- Operational support equipment fully supports MCT

**Training**

- 6 aircrews MET-capable IAW T&R requirements

**Output Standards:**

- 15 sorties daily sustained during contingency/combat operations.

MCT 6.2.1.1 Conduct Aviation Support of Tactical Recovery of Aircraft and Personnel

Conditions:

C 1.1.1.2 Terrain Elevation
Height of immediate terrain in reference to sea level.
Descriptors: Very high (> 10,000 ft); High (6,000 to 10,000 ft); Moderately high (3,000 to 6,000 ft); Moderately low (1,000 to 3,000 ft); Low (500 to 1,000 ft); Very low (< 500 ft).

C 1.3.2.1 Light
Light available to illuminate objects from natural or manmade sources.
Descriptors: Bright (sunny day); Day (overcast day); low (dusk, dawn, moonlit, streetlight lit); Negligible (overcast night)

C.1.3.2.3 Aviation Meteorological Conditions
Current weather/flight conditions affecting flight rules next 24 hours.
Descriptors: VMC (Conditions that permit flight using external cues and a distinguishable horizon.)

C 2.7.2 Air Superiority
The extent to which operations in the air, over sea and/or, over land can be conducted with acceptable losses due to hostile air forces and air defense systems action. Descriptors: Full (Air Supremacy); General; Local.

Standards:

Personnel
- 12 aircrews formed
- 90% of squadron T/O personnel MOS qualified and deployable
  - And Level 2 (L2) IAW ALERTS.
- 100% critical MOS fill

Equipment
- 70% Full Mission Capable (FMC) aircraft of PAA (8 aircraft)
  OR
  Upon establishment, 100 percent RFT entitlement IAW T/M/S standard.
- Operational support equipment fully supports MCT

Training
- 8 aircrews MET-capable IAW T&R requirements

Output Standards
- 20 sorties daily sustained during contingency/combat operations.

MCT 6.2.2 Conduct Air Evacuation

Conditions:

C 1.1.1.2 Terrain Elevation
Height of immediate terrain in reference to sea level.
Descriptors: Very high (> 10,000 ft); High (6,000 to 10,000 ft); Moderately high (3,000 to 6,000 ft); Moderately low (1,000 to 3,000 ft); Low (500 to 1,000 ft); Very low (< 500 ft).

C 1.3.2.1 Light
Light available to illuminate objects from natural or manmade sources.
Descriptors: Bright (sunny day); Day (overcast day); low (dusk, dawn, moonlit, streetlight lit); Negligible (overcast night)

C.1.3.2.3 Aviation Meteorological Conditions
Current weather/flight conditions affecting flight rules next 24 hours.
Descriptors: VMC (Conditions that permit flight using external cues and a distinguishable horizon.)

C 2.7.2 Air Superiority
The extent to which operations in the air, over sea and/or, over land can be conducted with acceptable losses due to hostile air forces and air defense systems action. Descriptors: Full (Air Supremacy); General; Local.

Standards:

Personnel
- 12 aircrews formed
- 90% of squadron T/O personnel MOS qualified and deployable
  - o And Level 2 (L2) IAW ALERTS.
- 100% critical MOS fill

Equipment
- 70% Full Mission Capable (FMC) aircraft of PAA (8 aircraft)
  OR
  Upon establishment, 100 percent RFT entitlement IAW T/M/S standard.
- Operational support equipment fully supports MCT

Training
- 8 aircrews MET-capable IAW T&R requirements

Output Standards
- 20 sorties daily sustained during contingency/combat operations

Core Plus

MCT 4.3.4 Conduct Air Delivery

Conditions:

C 1.1.1.2 Terrain Elevation
Height of immediate terrain in reference to sea level.
Descriptors: Very high (> 10,000 ft); High (6,000 to 10,000 ft); Moderately high (3,000 to 6,000 ft); Moderately low (1,000 to 3,000 ft); Low (500 to 1,000 ft); Very low (< 500 ft).

C 1.3.2.1 Light
Light available to illuminate objects from natural or manmade sources.
Descriptors: Bright (sunny day); Day (overcast day); low (dusk, dawn, moonlit, streetlight lit); Negligible (overcast night)

C.1.3.2.3 Aviation Meteorological Conditions
Current weather/flight conditions affecting flight rules next 24 hours.
Descriptors: VMC (Conditions that permit flight using external cues and a distinguishable horizon.)

C 2.7.2 Air Superiority
The extent to which operations in the air, over sea and/or, over land can be conducted with acceptable losses due to hostile air forces and air defense systems action. Descriptors: Full (Air Supremacy); General; Local.

Standards:

Personnel
- 12 aircrews formed
- 90% of squadron T/O personnel MOS qualified and deployable
  - And Level 2 (L2) IAW ALERTS.
- 100% critical MOS fill

Equipment
- 70% Full Mission Capable (FMC) aircraft of PAA (8 aircraft)
  OR
  Upon establishment, 100 percent RFT entitlement IAW T/M/S standard.
- Operational support equipment fully supports MCT

Training
- 4 aircrews MET-capable IAW T&R requirements

Output Standards
- 10 sorties daily sustained during contingency/combat operations

# CHAPTER 2

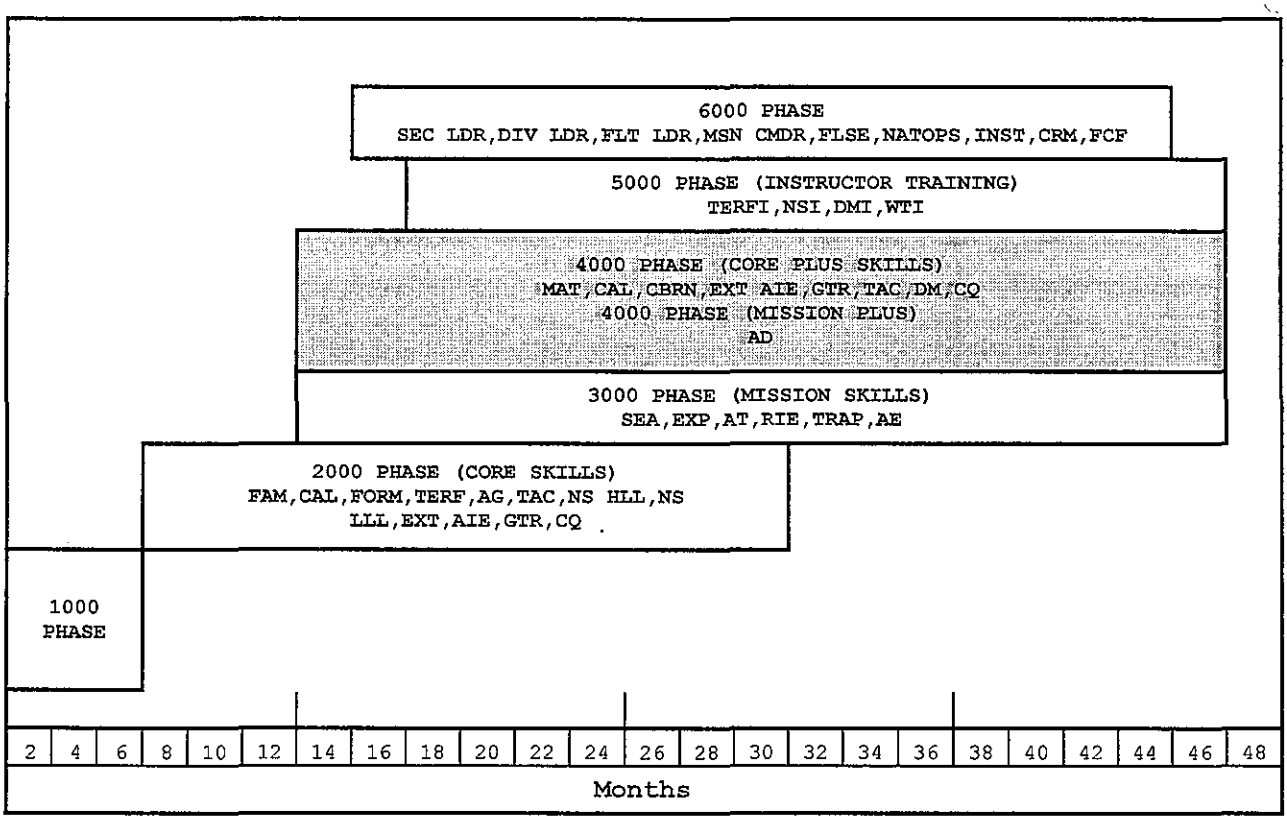
## CH-46E PILOT/7562

CHAPTER 2

CH-46E PILOT/7562

2.0 CH-46E PILOT/7562 INDIVIDUAL TRAINING AND READINESS REQUIREMENTS. This T&R syllabus is based on specific goals and performance standards designed to ensure individual proficiency in Core, Core Plus, and Mission Skills. The goal of this chapter is to develop individual and unit war fighting capabilities.

2.1 CH-46E PILOT TRAINING PROGRESSION MODEL. This model represents the recommended training progression for the average CH-46E pilot crewmember. Units should use the model as a guide to generate individual training plans.




2.2 INDIVIDUAL CORE SKILL PROFICIENCY (CSP) REQUIREMENTS. A CSP crew consists of individuals representing each crew position who have achieved and currently maintain individual CSP. In order to be considered proficient in a Core Skill, an individual must attain and maintain proficiency in Core Skill events as delineated in the below paragraphs.

2.2.1 Events Required to Attain Individual CSP. To initially attain CSP in a Core Skill, an individual must simultaneously have a 'proficient' status in all of the Core (2000-3000) T&R events listed in the table below for that Core Skill. If a Replacement Aircrew (RAC) or Refresher at the FRS is delayed in completing the 1000 Phase T&R events, an appropriate refly factor will be assigned at the discretion of the commanding officer.

| CH-46E FRS PILOT ATTAIN TABLE (Applies to Basic, Refresher, and Modified Refresher POIs) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| FAM / INST | | | NAV/CAL | FORM | EXT | TERF | NS | REV/CSIX |
| S1100 | 1108R | 1117R* | 1301 | S1500 | S1600 | 1701R | S1800 | S1900R |
| S1101R | 1109 | S1200R* | 1302 | 1501R | 1601 | | 1801R | 1901 |
| S1102 | 1110 | S1201R* | 1303 | 1502 | | | 1802 | 1902R* |
| S1103R | 1111 | S1202R* | S1400 | | | | 1803 | |
| S1105 | 1112 | 1203R* | 1401R | | | | | |
| S1106 | 1113R* | 1204R* | 1402 | | | | | |
| S1107R* | 1114 | 1205R* | | | | | | |
| S1118R* | 1115 | | | | | | | |
| S1119 | 1116R* | | | | | | | |
| Gray highlight and an R Suffix = Refresher POI | | | | | | | | |
| * = Modified Refresher POI | | | | | | | | |
| An S Prefix = Event conducted in a simulator | | | | | | | | |

| FRS PILOT INDIVIDUAL ATTAIN CSP | | | |
|---|---|---|---|
| FRS CALS | FRS EXT | FRS TERF | FRS NSQ |
| 2202R | 2701R | 2303 | 2601R |
| Gray highlight and an R Suffix = Refresher POI | | | |

| INDIVIDUAL CORE SKILL PROFICIENCY (CSP) ATTAIN TABLE<br>CH-46E Pilot | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| T&R events required to Attain CSP (2000 Phase) | | | | | | | | | | | |
| FAM/ INST | CAL | FORM | TERF | AG | TAC | NS HLL | NS LLL | EXT | AIE | GTR | CQ |
| S2100 | S2200 | S2300 | S2302 | 2401R | S2500 | S2600 | S2650 | S2700 | S2704 | S2800 | S2900 |
| 2101R | 2201 | 2301R | 2303 | 2405R | 2501 | 2601R | 2651R | 2701R | 2705R | 2801R | 2901R |
| 2102R | 2202 | | 2304 | | 2502R | 2602 | 2652R | S2702 | 2706 | | 2902R |
| | 2203R | | 2305R | | | 2603R | 2653 | 2703R | | | 2903R |
| | | | | | | 2604 | 2654R | | | | 2904R |
| | | | | | | 2605 | 2655R | | | | |
| | | | | | | 2606R | | | | | |
| Gray highlight & an R suffix on the event code = Refresher POI | | | | | | | | | | | |
| An S prefix on the event code = Event conducted in a simulator | | | | | | | | | | | |

2.2.2 Events Required to Maintain Individual CSP. To maintain CSP in a Core Skill, an individual must maintain proficiency in all 2000 phase T&R events listed for that Core Skill:

| INDIVIDUAL CORE SKILL PROFICIENCY (CSP) MAINTAIN TABLE<br>CH-46E Pilot | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| T&R events required to Maintain CSP (2000 Phase) | | | | | | | | | | | |
| FAM/ INST | CAL | FORM | TERF | AG | TAC | NS HLL | NS LLL | EXT | AIE | GTR | CQ |
| 2102R | 2203R | 2301R | 2305R | 2405R | 2502R | 2603R<br>2606R | 2654R<br>2655R | 2703R | 2705R | 2801R | 2904R |
| Gray highlight & an R suffix on the event code = Refresher POI | | | | | | | | | | | |
| An S prefix on the event code = Event conducted in a simulator | | | | | | | | | | | |

2.3 INDIVIDUAL MISSION SKILL PROFICIENCY (MSP) REQUIREMENTS. An MSP crew consists of individuals representing each crew position who have achieved and currently maintain Individual MSP. To be considered proficient in a Mission Skill, an individual must attain and maintain proficiency in Mission Skill events as delineated in the below paragraphs.

2.3.1 Events Required to Attain Individual MSP. To initially attain MSP in a Mission Skill, an individual must simultaneously have a proficient status in all 3000 phase T&R events listed for that Mission Skill:

| INDIVIDUAL MISSION SKILL PROFICIENCY (MSP) ATTAIN TABLE<br>CH-46E Pilot | | | | | |
|---|---|---|---|---|---|
| T&R events required to Attain MSP (3000 Phase) | | | | | |
| SEA | EXP | AT | RIE | TRAP | AE |
| 3101R | 3102R | 3103 | 3105 | 3107R | 3108R |
| See 2.14.2 | See 2.14.2 | 3104R | 3106R | | |
| Gray highlight & an R suffix on the event code = Refresher POI | | | | | |
| An S prefix on the event code = Event conducted in a simulator | | | | | |

2.3.2 Events Required to Maintain Individual MSP. To maintain MSP in a Mission Skill, an individual must maintain proficiency in all 3000 phase T&R events listed for that Mission Skill:

| INDIVIDUAL MISSION SKILL PROFICIENCY (MSP) MAINTAIN TABLE<br>CH-46E Pilot | | | | | |
|---|---|---|---|---|---|
| T&R events required to Maintain MSP (3000 Phase) | | | | | |
| SEA | EXP | AT | RIE | TRAP | AE |
| See 2.14.2 | See 2.14.2 | 3104R | 3106R | 3107R | 3108R |
| Gray highlight & an R suffix on the event code = Refresher POI | | | | | |
| An S prefix on the event code = Event conducted in a simulator | | | | | |

2.4 INDIVIDUAL CORE PLUS SKILL/MISSION PLUS SKILL PROFICIENCY REQUIREMENTS

2.4.1 Events Required to Attain Individual Proficiency in Core Plus Skills and Mission Plus Skills. Proficiency in Core Plus Skills/Mission Plus Skills is not required to obtain unit CSP. Training to Core Plus Skills/Mission Plus Skills is at the discretion of the unit commanding officer. To initially attain proficiency in a Core Plus Skill/Mission Plus Skill, an individual must simultaneously have a proficient status in all T&R events listed for that Core Plus Skill/Mission Plus Skill.

| INDIVIDUAL CORE PLUS SKILL PROFICIENCY (CSP+) ATTAIN TABLE<br>CH-46E Pilot | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| T&R events required to Attain CSP+ (4000 Phase) | | | | | | | | | |
| CORE PLUS SKILLS | | | | | | | | | MISSION PLUS |
| MAT | CAL | CBRN | EXT | GTR | TAC | AIE | DM | CQ | AD |
| S4200<br>4201R<br>4203R<br>4204R | 4202R<br>S4208<br>4209R<br>S4210<br>4211R | S4205<br>4206<br>4207R | 4301R | 4401R | S4500<br>4501<br>4502R | 4701R<br>4702R<br>4703R<br>4704R | S4800<br>4801R<br>4802R<br>S4803 | 4901<br>4902R | 4503R |
| Gray highlight & an R suffix on the event code = Refresher POI | | | | | | | | | |
| An S prefix on the event code = Event conducted in a simulator | | | | | | | | | |

2.4.2 Events Required to Maintain Individual Proficiency in Core Plus Skills and Mission Plus Skills. To maintain proficiency in a Core Plus Skill/Mission Plus Skill, an individual must maintain proficiency in all T&R events listed in the table below for that Core Plus Skill Mission Plus Skill:

| INDIVIDUAL CORE PLUS SKILL PROFICIENCY (CSP+) MAINTAIN TABLE<br>CH-46E Pilot | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| T&R events required to Maintain CSP+ (4000 Phase) | | | | | | | | | |
| CORE PLUS SKILLS | | | | | | | | | MISSION PLUS |
| MAT | CAL | CBRN | EXT | GTR | TAC | AIE | DM | CQ | AD |
| 4203R<br>4204R | 4202R | 4207R | 4301R | 4401R | 4502R | 4701R<br>4702R<br>4703R<br>4704R | 4801R<br>4802R | 4902R | 4503R |
| Gray highlight & an R suffix on the event code = Refresher POI | | | | | | | | | |
| An S prefix on the event code = Event conducted in a simulator | | | | | | | | | |

2.5 CERTIFICATION, QUALIFICATION AND DESIGNATION TABLES. The tables below delineate T&R events required to be completed to attain proficiency, initial qualifications and designations. In addition to event requirements, all required stage lectures, briefs, squadron training, prerequisites, and other criteria shall be completed prior to completing final events. Certification, qualification and designation letters signed by the commanding officer shall be placed in Aircrew Performance Records (APR) and NATOPS. Loss of proficiency in all qualification events causes the associated qualification to be lost. Regaining a qualification requires completing all R-coded syllabus events associated with that qualification.

| INDIVIDUAL QUALIFICATION REQUIREMENTS | |
|---|---|
| Qualification | Initial Event Qualification Requirements |
| NATOPS | NTPS-6001, NTPS-6002, NTPS-6003, NTPS-6101 |
| INSTRUMENT | INST-6004, INST-6005, INST-6006, INST-6102 |
| CRM | CRM-6007, CRM-6103 |
| TERFQ | 2302, 2303, 2304, 2305R |
| NSQ HLL | 2600, 2601R, 2602, 2603, 2604R, 2605, 2606R |
| NSQ LLL | 2650, 2651R, 2652R, 2653, 2654R, 2655R |
| CQ | 2901R, 2902R, 2903R, 2904R |
| DMQ | 4801R, 4802R |
| FRS TERFQ | 5108 |
| FRS NSQ | 5112 |

| Individual Designation Requirements | |
|---|---|
| Designation | Initial Event Designation Requirements |
| HAC | 6201, 6202, 6203, 6204 (Re-designation shall require, at a minimum, 6203 or 6204. Additional flights in the HAC syllabus for HAC re-designation shall remain at the discretion of the commanding officer.) |
| BIP | 5300, 5301, 5302, 5303, 5304R |
| NSSI | 5501, 5502, 5503 |
| NSFI | 5601, 5602, 5603 |
| TERFI | 5701, 5702, 5703 |
| DMI | 5801, 5802 |
| NSI | 5901, 5902, 5903, 5904, 5905, 5906 |
| FRSI | 5703, 6404, 5101-5112. |
| WTI | IAW WTI Course Catalog |
| SEC LDR | 6301, 6302, 6303, 6304, 6305, 6306, 6307R |
| DIV LDR | 6401, 6402, 6403, 6404R |
| FLT LDR | 6501R |
| AIR MSN CDR | 6601R |
| ANI | NTPS-6101 |
| NI | NTPS-6101 |
| FCP | Upon successful completion of FCF-6137, the Commanding Officer may designate the PUI a Functional Check Pilot. |
| FLSE | IAW Flight Leadership Program Manual requirements. |

## 2.6 CH-46E PILOT PROGRAMS OF INSTRUCTION (POI)

2.6.1 POI For Basic Pilot. Transition and Conversion pilots will fly the Basic POI.

| WEEKS | COURSE/PHASE | ACTIVITY |
|---|---|---|
| 1-2 | FRS Academic | Training Squadron |
| 3-20 | Core Skill Introduction | Training Squadron |
| 21-29 | Core Skill | Tactical Squadron |
| 30-49 | Mission Skill | Tactical Squadron |
| 50-56 | Core Skill Plus | Tactical Squadron |

2.6.2 POI For Refresher/Modified Refresher Pilot

| WEEKS | COURSE/PHASE | ACTIVITY |
|---|---|---|
| 1 | FRS Academic | Training Squadron |
| 2-9 | Core Skill Introduction | Training Squadron |
| 10-13 | Core Skill | Tactical Squadron |
| 14-17 | Mission Skill | Tactical Squadron |
| 18-20 | Core Skill Plus | Tactical Squadron |

2.6.3 POI For FRS Instructor Pilot

| WEEKS | COURSE/PHASE | ACTIVITY |
|---|---|---|
| 1 | Ground/Academic Training | Training Squadron |
| 2-4 | Instructor Pilot Flight Training | Training Squadron |

2.6.4 NATOPS/Instrument POI

| WEEKS | COURSE/PHASE | ACTIVITY |
|---|---|---|
| 1 | Ground/Academic Evaluation | Training/Tactical Squadron |

2.6.5 POI For Contract Instructor

| WEEKS | COURSE/PHASE | ACTIVITY |
|---|---|---|
| 1-2 | Ground/Academic Training | Training Squadron |
| 3-6 | Instructor Pilot Simulator Training | Training Squadron |

2.6.6 Basic Instructor Pilot POI

| DAYS | COURSE/PHASE | ACTIVITY |
|---|---|---|
| 1 | Ground/Academic Training | Training Squadron |
| 2-3 | Simulator Instruction | Training Squadron |
| 4-12 | Flight Events | Tactical Squadron |

2.7 ACADEMIC TRAINING

2.7.1 General. The Academic syllabus is designed to ensure pilots are receiving the proper academic training prior to starting a new phase and stage of training. Within each phase of training (1000-8000) there are corresponding stages, each stage has a required academic syllabus that must be completed prior to starting that stage of instruction. The required academic syllabus for each stage of training is further delineated in the beginning paragraphs of each phase.

2.7.2 Purpose. The purpose of adding the academic syllabus is to ensure the required academic courses for each phase/stage of training are completed and logged in M-SHARP for each pilot. A summary of academic classes that is required for all of the phases of training (0000-8000) are listed below with their corresponding T&R code.

| T&R CODE | ACADEMIC SYLLABUS |
|---|---|
| | FRS ACADEMIC PHASE (0000) |
| ACAD-0001 | (U) PFAM |
| ACAD-0002 | (U) FRS WELCOME ABOARD |
| ACAD-0003 | (U) ODO |
| ACAD-0004 | (U) SDO |
| ACAD-0005 | (U) FRS COURSE RULES |
| ACAD-0006 | (U) LOAD COMPUTATIONS |
| ACAD-0007 | (U) CNCS/JMPS |
| ACAD-0008 | (U) ECCS |
| ACAD-0009 | (U) CBT'S (ALL COURSEWARE COMPLETE) |
| ACAD-0011 | (U) COURSE RULES EXAM |
| ACAD-0012 | (U) SOP EXAM |
| ACAD-0021 | (U) NAV CLASS |
| ACAD-0022 | (U) TERF |

| T&R CODE | ACADEMIC SYLLABUS<br>ERS ACADEMIC PHASE (0000) |
|---|---|
| ACAD-0023 | (U) MISSION PLANNING |
| ACAD-0031 | (U) NIGHT SYSTEMS CLASS |
| ACAD-0042 | (U) NS LAB |

| T&R CODE | ACADEMIC SYLLABUS<br>CORE SKILL PHASE (2000) |
|---|---|
| ACAD-2000 | (U) CH-46E HAVEQUICK/SINCGARS* |
| ACAD-2001 | (U) CH-46E CNCS EMPLOYMENT |
| ACAD-2002 | (U) TERRAIN FLIGHT |
| ACAD-2003 | (U) RESERVED FOR FUTURE USE |
| ACAD-2004 | (U) NITE LAB NVG ENVIRONMENT |
| ACAD-2005 | (U) TACTICS IN THE NIGHT ENVIRONMENT |
| ACAD-2006 | (U) CH-46E NVG HUD |
| ACAD-2007 | (U) 6 FUNCTIONS OF MARINE AVIATION |
| ACAD-2008 | (S) FIXED WING THREAT TO THE MAGTF |
| ACAD-2009 | (S) ROTARY WING THREAT TO THE MAGTF |
| ACAD-2010 | (S) SURFACE TO AIR THREAT TO THE MAGTF |
| ACAD-2011 | (U) NITE LAB NVG OPERATIONS |
| ACAD-2012 | (U) NITE LAB NVD ROUTE CONSIDERATIONS |
| ACAD-2013 | (U) BASIC RADAR PRINCIPLES |
| ACAD-2014 | (U) CH-46E GROUND THREAT REACTION |
| ACAD-2015 | (S) RF SAMs* |
| ACAD-2016 | (S) IR SAM THREAT TO ASSAULT SUPPORT AIRCRAFT* |
| ACAD-2017 | (S) ADA THREAT TO ASSAULT SUPPORT AIRCRAFT* |
| ACAD-2018 | (S) ALE 47 AND AAR 47 V2* |
| ACAD-2019 | (S) APR 39 V1* |
| ACAD-2020 | (S) ALQ 157* |
| ACAD-2021 | (U) ROE PLANNING |
| ACAD-2022 | (U) TACTICAL FLIGHT BRIEFING* |
| ACAD-2023 | (U) LARGE FLIGHT LEADERSHIP |
| ACAD-2024 | (U) OBJECTIVE AREA PLANNING* |
| ACAD-2025 | (U) BATTLEFIELD ILLUMINATION AND ITG CONSIDERATIONS |
| ACAD-2026 | (S) ASSAULT SUPPORT ESCORT TACTICS |
| ACAD-2027 | (S) CH-46E AN-AAQ-24 DIRCM |
| ACAD-2028 | (U) EXECUTION CHECKLIST |
| ACAD-2029 | (U) MAGTF TARGETING AND FIRE SUPPORT PLANNING* |
| ACAD-2030 | (U) INTELLIGENCE PREPARATION OF THE BATTLESPACE |
| ACAD-2031 | (U) PROBLEM FRAMING |
| ACAD-2032 | (S) EVASIVE MANUEVERS AND COUNTER-TACTICS |
| ACAD-2033 | RESERVED FOR FUTURE USE |
| ACAD-2034 | (U) AVIATION GROUND SUPPORT |
| ACAD-2035 | (U) NITE LAB NVG HUMAN VISUAL SYSTEM |

| T&R CODE | ACADEMIC SYLLABUS<br>CORE SKILL PHASE (2000) |
|---|---|
| ACAD-2036 | (U) NITE LAB NVG MISPERCEPTIONS AND ILLUSIONS |
| ACAD-2037 | (U) NITE LAB NVG ADJUSTMENT |
| ACAD-2038 | (U) NITE LAB FLIR SENSOR INTEGRATION |
| ACAD-2039 | (U) AIE OPERATIONS |
| ACAD-2040 | RESERVED FOR FUTURE USE |

* Denotes annual academic training requirements.

| T&R CODE | ACADEMIC SYLLABUS<br>MISSION SKILL PHASE (3000) |
|---|---|
| ACAD-3000 | (S) TRAP TTPS |
| ACAD-3001 | (S) MILITARY OPERATIONS IN URBANIZED TERRAIN (MOUT) |
| ACAD-3002 | (U) CASEVAC |
| ACAD-3003 | (U) NEO EXECUTION |
| ACAD-3004 | (S) REC THREAT TO THE MAGTF |
| ACAD-3005 | (U) RAPID RESPONSE PLANNING PROCESS* |
| ACAD-3006 | (S) AIR ASSAULT OPERATIONS |

* Denotes annual academic training requirements.

| T&R CODE | ACADEMIC SYLLABUS<br>CORE PLUS SKILL PHASE (4000) |
|---|---|
| ACAD-4002 | (S) NATIONAL THEATER AND MAGTF ISR EMPLOYMENT |
| ACAD-4003 | (U) ROTARY WING OFFENSIVE AIR SUPPORT |
| ACAD-4004 | (U) FIXED WING OAS CAPABILITIES |
| ACAD-4005 | (U) CH-46E DEFENSIVE MEASURES |
| ACAD-4006 | (U) CH-46E HELICOPTER EXCESS POWER/ENERGY MANEUV. |
| ACAD-4007 | (S) ATTACK HELICOPTER THREAT TO ASSAULT SUPPORT A/C |
| ACAD-4008 | (S) FIXED WING THREAT TO RW AIRCRAFT |
| ACAD-4009 | RESERVED FOR FUTURE USE |
| ACAD-4010 | RESERVED FOR FUTURE USE |
| ACAD-4011 | (U) AIR MISSION COMMANDER |
| ACAD-4012 | (U) CLOSE AIR SUPPORT (CAS) |
| ACAD-4013 | (S) JOINT CAS AIRCRAFT CAPABILITES |
| ACAD-4014 | (S) LASER THREAT |
| ACAD-4015 | (U) AIRBORNE EARLY WARNING |
| ACAD-4016 | (U) ASSAULT SUPPORT KEY PLAYERS |
| ACAD-4018 | (S) AIR ASSAULT RAID PLANNING |

* Denotes annual academic training requirements.

| T&R CODE | ACADEMIC SYLLABUS |
|---|---|
| | INSTRUCTOR TRAINING PHASE (5000) |
| ACAD-5000 | (U) INSTRUCTIONAL TECHNIQUES |

| T&R CODE | ACADEMIC SYLLABUS |
|---|---|
| | AVIATION CAREER PROGRESSION MODEL PHASE (8000) |
| ACPM-8200 | (U) MACCS AGENCIES, FUNCTIONS, AND CONTROL OF AIRCRAFT AND MISSILES |
| ACPM-8201 | (U) MWCS BRIEF |
| ACPM-8202 | (U) ACA AND AIRSPACE |
| ACPM-8210 | (U) AVIATION GROUND SUPPORT |
| ACPM-8230 | (U) ACE BATTLESTAFF |
| ACPM-8231 | (U) BATTLE COMMAND DISPLAY |
| ACPM-8240 | (U) SIX FUNCTIONS OF MARINE AVIATION |
| ACPM-8241 | (U) JTAR/ASR INTRODUCTION AND PRACTICAL APPLICATION |
| ACPM-8242 | (U) SITE COMMAND PRIMER |
| ACPM-8250 | (U) THEATER AIR GROUND SYSTEM (TAGS) |
| ACPM-8300 | (U) AIR DEFENSE |
| ACPM-8310 | (U) FORWARD ARMING AND REFUELING POINT (FARP) OPERATIONS |
| ACPM-8311 | (U) MARINE CORPS TACTICAL FUEL SYSTEMS |
| ACPM-8320 | (U) JOINT STRUCTURE AND JOINT AIR OPERATIONS |
| ACPM-8321 | (U) JOINT AIR TASKING CYCLE PHASE 1: STRATEGY DEVELOPMENT |
| ACPM-8322 | (U) JOINT AIR TASKING CYCLE PHASE 2: TARGET DEVELOPMENT |
| ACPM-8323 | (U) JOINT AIR TASKING CYCLE PHASE 3: WEAPONEERING AND ALLOCATION |
| ACPM-8324 | (U) JOINT AIR TASKING CYCLE PHASE 4: JOINT ATO PRODUCTION |
| ACPM-8325 | (U) JOINT AIR TASKING CYCLE PHASE 5: FORCE EXECUTION |
| ACPM-8326 | (U) JOINT AIR TASKING CYCLE PHASE 6: COMBAT ASSESSMENT |
| ACPM-8340 | (U) INTEGRATING FIRES AND AIRSPACE WITHIN THE MAGTF |
| ACPM-8350 | (U) PHASING CONTROL ASHORE |
| ACPM-8351 | (U) TACRON ORGANIZATIONS AND FUNCTIONS |
| ACPM-8630 | (U) TACTICAL AIR COMMAND CENTER (TACC) |
| ACPM-8660 | (U) JOINT OPERATIONS INTRODUCTION |
| ACPM-8640 | (U) JOINT DATA NETWORK |
| ACPM-8641 | (U) MAGTF THEATER AND NATIONAL ISR EMPLOYMENT |
| ACPM-8620 | (U) ESG/CSG INTEGRATION |

## 2.8 SYLLABUS NOTES

### 2.8.1 General

2.8.1.1 Within this section of the T&R are some of the critical notes, guidelines, definitions and codes that have been consolidated from the T&R Program Manual. This information is critical to understanding this document and the contents within. For further guidance or explanation refer to the Program Manual.

| Environmental Conditions | |
|---|---|
| Code | Meaning |
| D | Shall be flown during hours of daylight: (by exception - there is no use of a symbol) |
| N | Shall be flown during hours of darkness, may be aided or unaided |
| N* | Shall be flown during hours of darkness must be flown unaided |
| (N*) | May be flown during hours of darkness - If flown during hours of darkness must be flown unaided |
| (N) | May be flown during darkness - If flown during hours of darkness; may be flown aided or unaided |
| NS | Shall be flown during hours of darkness - Mandatory use of Night Vision Devices |
| (NS) | May be flown during darkness - If flown during hours of darkness; must be flown with Night Vision Devices |
| | |
| Note - If the event is to be flown in the simulator the Simulator Instructor shall set the desired environmental conditions for the event. | |

2.8.1.2 Pilots should fly all simulator training codes prior to the first flight in the aircraft in stage.

2.8.1.3 Simulators. The Weapons Systems Trainer (WST)/Aircrew Procedures Trainer (APT) should be used in those flights designated S or S/A within the syllabus. Demonstration and exercise modes of the flight simulator shall be used within the training syllabus. If the flight simulator is not available, simulator periods designated as S may be waived by the commanding officer.

2.8.1.4 Aircraft/Simulator Codes. These codes are assigned to delineate whether the event uses a simulator or an airframe. The codes are located in the event header following the POI codes. A = aircraft, S = simulator, A/S = aircraft preferred/simulator optional, S/A = simulator preferred/aircraft optional.

2.8.2 Computer Based Training (CBT) Program. The CBT program is only applicable to the FRS. All pilots assigned to the FRS shall complete assigned CBT lessons prior to completion of the applicable stage per the FRS Training Orientation Guide.

### 2.8.3 Evaluation Sorties

2.8.3.1 A designated NATOPS Evaluator/NATOPS Instructor(NI)/Assistant NATOPS Instructor (ANI) shall evaluate NTPS-6101.

2.8.3.2 A designated Instrument Evaluator shall evaluate INST-6102.

2.8.3.3 A designated CRM Evaluator/Instructor shall evaluate CRM-6103.

2.8.3.4 Unless a specific instructor pilot requirement is assigned to the event, at a minimum a Helicopter Aircraft Commander (HAC) or appropriate Instructor Pilot (IP) acting as Pilot In Command (PIC), proficient in a given event should evaluate all initial events required for a basic Conversion, Transition, or Refresher Pilot Under Instruction (PUI), or any non-proficient (e.g. delinquent) pilot who has exceeded the refly factor. The evaluator shall complete an Aviation Training Form (ATF) for the event.

2.8.3.5 If the commanding officer has waived/deferred a syllabus event, the squadron Pilot Training Officer/WTI/WTCCI must place a waiver/deferral letter in section 3 of the APR.

2.8.3.6 All 1000 phase ATFs will be developed and maintained by the syllabus sponsor (FRS).

2.8.3.7 All 2000-6000 phase ATFs will be developed and maintained by the syllabus sponsor (MAWTS-1). Updated ATFs will be disseminated in conjunction with the publication of Interim Approved T&Rs.

2.8.3.8 All flights annotated with an E shall be evaluated per the T&R Program Manual.

2.8.3.9 The Pilot Training Officer/WTI/Enlisted WTI shall ensure all ATFs are entered in section 3 of the Aircrew Performance Record (APR) for all initial events flown. These ATFs shall remain until a more current ATF replaces it. Multiple ATFs may be collected per training event if applicable or directed.

2.8.3.10 Transition and Conversion pilots shall be assigned to the Basic POI and shall have ATFs entered in section 3 of the APR for all flights. Refresher pilots shall have ATFs entered in section 3 of the APR for all flights designated by a R or MR in the flight description. These ATFs will replace ATFs previously entered in section 3.

2.8.3.11 A designated FCP shall conduct FCF-6130, 6131, 6132, 6133, 6134, 6135, 6136, and 6137.

2.8.4 Syllabus Assignment. Basic, Transition, and Conversion pilots shall fly the entire syllabus. Refresher/Modified Refresher pilots should fly those flights designated by an R or MR in the flight description. The FRS CO may waive or defer Core Skill Introduction syllabus events as required and in accordance with the T&R Program Manual.

2.8.5 Refresher Syllabus. The Refresher syllabus is designed for pilots who have previous experience in the CH-46E. Pilots returning to a squadron, who have previously been assigned to the Basic POI (completed at least one squadron fleet tour) shall be assigned to the Refresher POI.

2.8.5.1 FRS Refresher Training. FRS Refresher training is prescribed for pilots returning to a DIFOP operating force billet, who have previously been assigned to the Basic POI but have not flown the model aircraft within established time intervals. Pilots who have been out of type longer than 485 days but less than or equal to 730 days will receive a Modified Refresher (MR) syllabus at the FRS. Pilots who have been out of type for greater than 730 days shall receive full Refresher syllabus (R) at the FRS. Upon joining a tactical squadron they will continue to complete the Refresher POI by flying all R-coded events.

2.8.5.2 Tactical Squadron Refresher Training. Delinquent pilots returning to the tactical squadron shall be assigned to the Refresher POI and shall complete 2000-8000 phase R-coded events. When all R-coded events in a stage are successfully completed, all remaining events in that stage that are proficient or delinquent are updated. Incomplete (never previously completed in the Basic POI) events are not updated and must be completed in addition to R-coded events.

2.8.5.3 Refresher Waivers and Deferrals. Commanding officers may waive or defer portions of a Refresher pilot's training requirements per the Aviation T&R Program Manual. For waived events, event proficiency status shall be updated. For deferred events, the pilot must complete the event at a later date when equipment and logistics can support. For both waived and deferred events, a documentation letter will be placed in Section 3 of the pilot's APR.

2.8.5.4 Refresher Designations. Refresher pilots may regain previously held flight leadership designations (HAC, Sec Ld, Div Ld, Flt Ld, AMC) by re-completing the associated flight leadership evaluation event for each previously accomplished designation. A designation letter will be placed in the pilot's APR and NATOPS.

2.8.5.5 Refresher Qualifications. Refresher pilots may regain previously held qualifications by successfully re-completing all R-coded events associated with the respective qualification unless waived per the Aviation T&R Program Manual. A qualification letter will be placed in the pilot's APR and NATOPS.

2.8.5.6 Refresher Certifications. Refresher pilots may regain previously held certifications in accordance with the MAWTS-1 CH-46E Course Catalog or the T&R as appropriate. Refer to the Course Catalog for re-certification requirements for all instructor certifications, excluding FRSCCI. A certification letter will be placed in the pilot's APR and NATOPS.

2.8.6 Aircrew Evaluation Flights. All pilots shall have the appropriate evaluation form filled out upon completion of the following:

2.8.6.1 Annual NATOPS Check (NTPS-6101).

2.8.6.2 Annual Instrument Check (INST-6102).

2.8.6.3 Annual CRM Check (CRM-6103)

2.8.6.4 Any flight in the Core Skill, Mission Skill, Core Plus Skill, or Mission Plus Skill stage as recommended by the squadron standardization board.

2.8.7 Crew Resource Management (CRM). Aircrews shall brief techniques of CRM for all flights and/or events.

2.8.8 Definitions

2.8.8.1 Demonstrate. The description and performance of a particular maneuver completed by the instructor, observed by the PUI. The PUI is responsible for knowledge of the procedures prior to the demonstration of a required maneuver.

2.8.8.2 Discuss. An explanation of systems, procedures, or maneuvers during the brief, in flight, or post flight.

2.8.8.3 Evaluate. Any flight designed to evaluate aircrew standardization that does not fit another category.

2.8.8.4 Introduce. The instructor may demonstrate a procedure or maneuver to a student, or may coach the PUI through the maneuver without demonstration. The PUI performs the procedures or maneuver with coaching as necessary. The PUI is responsible for knowledge of the procedures.

2.8.8.5 Review. Demonstrated proficiency of a maneuver by the PUI.

## 2.9 FRS ACADEMIC PHASE (0000)

2.9.1 Purpose. To ensure Replacement Air Crew (RACs) assigned to the Fleet Replacement Squadron (FRS) are given the proper academic instruction prior to beginning the Corps Skill Introduction Phase.

2.9.2 General. Each RAC assigned to the FRS shall receive all of the academic classes listed in the matrix below prior to beginning the Core Skill Introduction Phase (1000). The academic classes have corresponding T&R codes associated with them and will be tracked and logged in M-SHARP.

2.9.3 Ground/Academic Training. The following matrix will be used to track academic and administrative training:

| T&R CODE | EVENT |
|---|---|
| ACAD-0001 | PFAM |
| ACAD-0002 | FRS WELCOME ABOARD |
| ACAD-0003 | ODO |
| ACAD-0004 | SDO |
| ACAD-0005 | FRS COURSE RULES |
| ACAD-0006 | LOAD COMPUTATIONS |
| ACAD-0007 | CNCS/JMPS |
| ACAD-0008 | ECCS |
| ACAD-0009 | CBT'S (ALL COURSEWARE COMPLETE) |
| ACAD-0011 | COURSE RULES EXAM |
| ACAD-0012 | SOP EXAM |
| ACAD-0021 | NAV CLASS |
| ACAD-0022 | TERF |
| ACAD-0023 | MISSION PLANNING |
| ACAD-0031 | NIGHT SYSTEMS CLASS |
| ACAD-0042 | NS LAB |

## 2.10 CORE SKILL INTRODUCTION PHASE (1000)

### 2.10.1 General

2.10.1.1 The CH-46E Fleet Replacement Squadron (FRS) shall develop the standardization of introductory flight maneuvers, classroom materials and procedures for instructional/student training, maintain the Core Skill Introduction FRS Academics and the Core Skill Introduction Phase syllabus for the CH-46E T&R.

2.10.1.2 FRS Instructors shall log 2000 to 4000 phase codes as appropriate that are comparable in performance standards of a 1000 phase code.

2.10.1.3 Within the Core Skill Introduction Phase (1000) there are (10) stages. Those stages include are as follows:

| STAGE | NAME |
|---|---|
| 1 | Familiarization (FAM) |
| 2 | Instrument (INST) |
| 3 | Navigation (NAV) |
| 4 | Confined Area Landings (CAL) |
| 5 | Formation (FORM) |
| 6 | External Cargo Operations (EXT) |
| 7 | Terrain Flight (TERF) |
| 8 | Night Systems (NS) |
| 9 | Review (REV) |
| 10 | Core Skill Introduction Check (CSIX) |

2.11 CORE SKILL INTRODUCTION STAGES (1000)

2.11.1 Familiarization (FAM)

2.11.1.1 Purpose. To develop preliminary flight skills in the CH-46E and become familiar with aircraft flight characteristics, limitations, emergency procedures, and to develop proficiency in all maneuvers contained in the familiarization stage.

2.11.1.2 General

a. Pilots will find detailed descriptions of all flight maneuvers in the CH-46E NATOPS Flight Manual and the FRS CH-46E Standardization Manual.

b. All pilots shall study and obtain a basic knowledge of aircraft systems and discuss them in a brief. All emergency procedures and limitations shall be memorized and evaluated in flight IAW the CH-46E NATOPS Flight Manual.

c. All pilots shall be responsible for all emergencies and maneuvers previously discussed or flown throughout this stage of flight.

d. All pilots shall have a flight physical, emergency egress and NASTP (Physiology and Water Survival) completed and up-to-date prior to flying a FAM-1109.

e. Pilots will be prepared to discuss the seven critical steps of CRM as applicable to each event.

2.11.1.3 Crew Requirements

a. Simulator Training - One RAC/Sim instructor.

b. Flight Training - FRSI/RAC/CC or FRSI/REF/CC.

2.11.1.4 Ground/Academic Training

a. All pilots shall complete all assigned CBT lessons per the FRS Training Orientation Guide.

b. All pilots shall complete the Course Rules Class (ACAD-0005), Load Computation Class (ACAD-0006), and Crew Resource Management Class (CRM-6007) prior to FAM-1109.

c. RACs shall complete the Pilot Familiarization (PFAM) Class (ACAD-0001), CNCS/JMPS Introduction Class (ACAD-0007) prior to FAM-1109.

d. All pilots shall complete the NATOPS Open Book Test (NTPS-6001), Course Rules Test (ACAD-0011), and SOP exam (ACAD-0012) prior to FAM-1109.

e. Pilots will be prepared to discuss the seven critical steps of CRM as applicable to each event.

SFAM-1100 2.0 B, E WST S

Goal. Introduce cockpit preflight inspection, checklists, and engine start procedures.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
- The Engine and related sub-systems.
- Scan during Start-up/Shutdown
- CRM during Start-up/Shutdown
- Start/shutdown limitations.

Introduce/Evaluate:
- Interior inspection/pre-start checklist.
- Normal engine start.
- Single engine start/engagement.
  - Rotor brake slippage on engine start.
- Pre-taxi checklist.
- Radios and communication.
  - ICS operation.
  - UHF & VHF operation.
- Normal shutdown.

Emergencies:
- Engine start malfunctions.
  - Hot start/cold hang-up.
  - Starter hang-up.

Performance Standards. Pilot shall demonstrate knowledge of engine systems, NATOPS Checklists, and communication systems.

SFAM-1101 2.0 B,R,MR E WST S

Goal. Introduce hover work and ground emergencies.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
- Aircraft Electrical Systems (A/C, D/C, and APU)
- VFR Scan for Hover.

Introduce/Evaluate:
- Ground taxi.
- Takeoff checklist.
- Vertical takeoff.
- Hover patterns.
- Vertical landing.

Review:
- Engine start/shutdown.
- Rotor engagement.
- Communication procedures.

Emergencies:
- APP/APU malfunctions.
  - APU fire.
- Engine condition actuator malfunctions.
  - ECA failure rotor brake on.
  - ECA failure on shutdown (FREEZE/MAX/MIN).
- Transformer rectifier failure.
- Cross-tie failure (APU running).
- Engine compartment fire (on deck).
- Flexible driveshaft failure (on deck).
- Rotor brake failure on rotor engagement.

Performance Standards. Pilot shall demonstrate knowledge of APU and start emergencies, conduct engine start and shutdown IAW NATOPS pocket checklist and basic FAM maneuvers IAW FRS Standardization Manual.

Prerequisite. SFAM-1100, appropriate FRS CBT program lessons.

SFAM-1102 2.0 B,E WST S

Goal. Introduce engine related problems in the transition stage and practice basic FAM maneuvers.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
- AFCS.
  - Single and dual AFCS malfunctions.
  - Uncommanded control imputs.

Introduce/Evaluate:
- Communications procedures.
- Transition to forward flight.
- Introduce trim techniques.
- Normal Pattern / VFR Scan.
- Landing checklist.

Normal approach to a hover/no hover.

Review: Start and shutdown checklist and all previously introduced maneuvers.

Emergencies:
- Single engine emergencies.
  - HIGE.
  - HOGE.
  - Takeoff.
- Single AFCS malfunctions.
- Uncommanded altitude hold engagement.

Performance Standards. Pilot shall demonstrate knowledge of the automatic flight control system, and single engine operations while hovering in/out of ground effect, and during take-off.

Prerequisite. SFAM-1101, appropriate FRS CBT program lessons.

SFAM-1103 2.0 B, R, MR E WST S

Goal. Introduce running takeoffs and landings and Max Gross Wt (minimum power) takeoffs and landings.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
- The Engine Condition Control System.
  - Theory of Operation.
  - Normal mode operation.
  - Manual mode operation.
  - Fail freeze circuitry.

Introduce/Evaluate:
- Max Gross Wt (minimum power) takeoffs and landings.
- Running takeoff.
- Running landing.
- Trim and trim techniques.

Review: All previously introduced malfunctions and procedures.

Emergencies:
- LCT failures.
- ECA Failures in flight.
  - Maximum.
  - Minimum.
  - Intermittent.

Performance Standards. Pilot shall demonstrate knowledge of the automatic flight control system, maximum gross weight operations, steep approaches, and running takeoffs and landings.

Prerequisite. SFAM-1102, appropriate FRS CBT program lessons.

SFAM-1104 2.0 B,R,MR E WST S

Goal. Review previous pattern work and introduce single engine flight/approach/landings and autorotations.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
Single engine procedures.

Introduce/Evaluate:
Single engine Landings/waveoffs.
Straight in 80 kt autorotation.

Review: All previously introduced malfunctions and procedures.

Emergencies:
Single engine emergencies.
Lube pump drive shaft failure.
Compressor stall.

Performance Standards. Pilot shall demonstrate knowledge of single engine operation, and autorotations.

Prerequisite. SFAM-1103, appropriate FRS CBT program lessons.

SFAM-1105 2.0 B,E WST S

Goal. Introduce 90-degree power recovery autorotation, steep approaches, and review previous maneuvers.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
Transmission drive system / transmission oil system

Introduce/Evaluate:
Steep approaches.
Hover landing.
No hover landing.
Obstacle takeoff.

Review: All previously introduced procedures.

Emergencies:
Single engine emergencies.
Power turbine speed signal interruption (Flex shaft failure).
Sprag clutch slippage.
PRV diaphragm failure.

Performance Standards. Pilot shall demonstrate knowledge of the transmission drive/oil systems, steep approach, and obstacle takeoff.

Prerequisite. SFAM-1104, appropriate FRS CBT program lessons.

SFAM-1106 2.0 B,E WST S

Goal. Review/evaluate all previously introduced maneuvers and emergencies.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
Flight control hydraulic boost systems.

Introduce/Demonstrate:
AFCS off during portions of flight.
Straight in 80 kt autorotation.

Review: All previously introduced maneuvers and emergencies.

Emergencies:
Dual AFCS malfunctions.
Uncommanded control imputs.
Control boost malfunctions.
Transmission malfunctions.
Gauge malfunctions.
Imminent failure.

Performance Standards. Pilot shall demonstrate knowledge of the flight control hydraulic boost systems, autorotations, and all previously introduced maneuvers and emergencies.

Prerequisites. SFAM-1105, appropriate FRS CBT program lessons.

SFAM-1107 2.0 B,R,MR E WST S

Goal. Review all FAM stage maneuvers.

Requirement.

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
Fuel system & fuel control

Introduce/Evaluate:
110 knot and 90-degree autorotation.

Review: Straight in 80 kt autorotation and AFCS-off flight, as well as, all previously introduced maneuvers.

Emergencies:
Fuel contamination.
Fuel boost malfunctions.
Engine driven fuel pump failure.
Engine fire in flight.

Performance Standards. Pilot shall demonstrate knowledge of the fuel system, autorotations, AFCS-off flight, and all previously introduced maneuvers and emergencies.

Prerequisite. SFAM-1106, appropriate FRS CBT program lessons.

SFAM-1118 2.0 B,R,MR E WST S

Goal. Demonstrate an understanding of all FAM maneuvers, in-flight systems failures, in-flight emergency procedures, and single engine procedures.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
Utility hydraulic system & sub-systems

Review/Evaluate:
Fam maneuvers, max gross wt take-offs/landings, running take-offs/landings, steep approaches, Auto-rotations, and AFCS-off flight.

Emergencies:
AC Essential Bus failures.
Electrical fire/smoke.
Rotor brake failure in flight.
All previously introduced in-flight emergencies, and systems failures.

Performance Standards. Pilot shall demonstrate knowledge of start, shutdown and in flight emergencies and demonstrate proficiency in checklists and cockpit layout.

Prerequisite. SFAM-1107, appropriate FRS CBT Lessons.

SFAM-1119 2.0 B,E WST S

Goal. Review/Evaluate checklist and all ground operations/emergencies.

Requirement

Review: Start and shutdown checklist and previously introduced emergencies.

Emergencies:
Hot start/cold hang-up.
Starter hang-up.
ECA failure with rotor brake engaged
Flex shaft failure on deck.
Sprag clutch slippage on deck.
Transformer rectifier failure.
A/C, D/C crosstie failures.
Rotor brake failure on rotor engagement.
Engine compartment fire on the ground.
APU fire.

Rotor brake slippage on engine start.

Performance Standards. Pilot shall demonstrate knowledge of start, shutdown and ground emergencies and demonstrate proficiency in checklists and cockpit layout.

Prerequisite. SFAM-1118, appropriate FRS CBT Lessons.

FAM-1108 0.0 B,R,MR E 1 STATIC ACFT A

Goal. Introduce normal ground and preflight procedures.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, FRS Preflight Manual)

Systems

CNCS (To include AIMS).

Emergencies

All emergency procedures covered in simulator stage.

Introduce/Evaluate:

Mission Brief to include ODO and NATOPS Brief. Load Computation and CG Limitations.

Aircraft Discrepancy Book to determine aircraft status: up/down discrepancies, discrepancies that modify the mission plan, and aircraft properly serviced for mission.

Preflight routine to include gear checkout/preflight, flight line safety and tour of squadron maintenance spaces.

Preflight.

Postflight.

Visual communication with hand signals ashore (start/engage/shutdown).

Hot seat procedures to include harness operation.

Emergency engine shutdown with emergency egress.

CNCS FAM on APU/ground power to include AIMS demo.

NATOPS Checklists (prestart/starting engines/engaging rotors/pretaxi/pretakeoff/takeoff/prelanding/post-landing/shutdown).

Performance Standards. Pilot shall demonstrate knowledge of aircraft systems and nomenclature and squadron procedures for flight line safety.

Prerequisite. SFAM-1107, appropriate FRS CBT program lessons.

External Syllabus Support. Ground power source as required.

FAM-1109 2.0 B,E 1 CH-46E A

Goal. Introduce start, normal ground and flight procedures including low work and normal approaches.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)

CRM (Decision Making).
Systems
Flight Control System.
AFCS to include Trim techniques.

Emergencies
Hot start/engine fire.
Engine compartment fire.
Rotor brake slippage during engine start.
ECA failure with rotor brake on.
ECA failure on shutdown.
Cold hang-up.
APU compartment fire
ECA failure in flight

Demonstrate/Introduce:
Normal cockpit procedures.
Starting procedures.
Communication procedures.
Pretaxi procedures.
Ground taxiing.
Elevated nose wheel taxi/rearward taxi (demo).
Vertical takeoff.
Transition to forward flight (demo).
Normal approach (demo).
Max gross takeoff and landing (demo).
Hover patterns.
Operation of engine beep trim switches.
Shutdown procedures.
Aircraft trim/CDRB usage.
Home field course rules.

Performance Standards. Pilot shall demonstrate knowledge of aircraft systems and introduce basic FAM maneuvers.

Prerequisite. FAM-1108, ACAD-0001 through ACAD-0012 complete.

FAM-1110 2.0 B,E 1 CH-46E A

Goal. Introduce landing pattern options. Practice start, normal ground and previously introduced flight procedures.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
CRM (Assertiveness)
Systems
Engine Condition Control System.
Emergencies
Single engine failure while HIGE.
Single engine failure on takeoff.
Lost communications per local course rules.
Single engine failure in flight.
Dual engine failure in flight.
Engine restart in flight.
All previously introduced emergencies.

Demonstrate/Introduce:
- No hover landing (demo).
- Simulated single engine/runway landing (demo).
- Steep approach (demo).
- Running takeoff/landing (demo).
- Ramp and hatch usage (demo).
- Torque horn (demo).
- Local course rules.

Review/Evaluate:
- Normal cockpit procedures.
- Starting procedures.
- Communication procedures.
- Pretaxi procedures.
- Ground taxiing.
- Elevated nose wheel taxi/rearward taxi.
- Vertical takeoff.
- Transition to forward flight.
- Normal approach.
- Max gross takeoff and landing.
- Hover patterns.
- Operation of engine beep trim switches.
- Shutdown procedures.
- Aircraft trim/CDRB usage.
- Home field course rules.

Performance Standards. Pilot shall demonstrate knowledge of aircraft systems introduce and review basic FAM maneuvers.

Prerequisite. FAM-1109 and appropriate FRS CBT program lessons.

FAM-1111 2.0 B,E 1 CH-46E A

Goal. Review previous FAM maneuvers. Practice normal cockpit procedures. Review hover/low work, ground taxi, and normal approaches.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
- CRM (Mission Analysis)
- Systems
  - Electrical Systems to include AC, DC, and generators.
- Emergencies
  - Generator failure.
  - Electrical Fire.
  - Single AFCS failure.
  - Dual AFCS failure.

Demonstrate/Introduce:
- Single engine failure on takeoff and HIGE (demo).
- Straight-in autorotation (demo).
- AFCS off flight (demo).
- Steep approach.
- Single engine flight/approach/wave-off.
- No-hover landing.

Running takeoff/landing.
Local course rules.

Review/Evaluate:
Ground taxiing.
Vertical takeoff.
Transition to forward flight.
Normal approach.
Max gross takeoff and landing.
Communications procedures.
Previously introduced maneuvers and emergencies.

Performance Standards. Pilot shall demonstrate knowledge of aircraft systems, introduce and review basic FAM maneuvers.

Prerequisite. FAM-1110 and appropriate FRS CBT program lessons.

FAM-1112 2.0 B,E 1 CH-46E A

Goal. Introduce AFCS off flight and minimum power pattern work.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
CRM (Communication)
Systems
Transmissions and Drive System to include Sprag Clutch.
Emergencies
Fuselage fire in flight.
Smoke and fume elimination.
Engine fire in flight.
Imminent transmission failure.
Rotor brake failure in flight.
Sprag clutch seizure.
Sprag clutch slippage.

Demonstrate/Introduce:
Ninety-degree power recovery autorotation (demo).
Single engine to a spot (demo).
Straight-in autorotation.
AFCS off flight.
Single engine failure on takeoff/HIGE.

Review/Evaluate:
Running takeoff and landing.
Single engine flight/approach/waveoff.
No hover landing.
Local course rules.
Steep Approach.
Max gross weight/min power takeoff and landings.
Previously introduced maneuvers and emergencies.

Performance Standards. Pilot shall demonstrate knowledge of aircraft systems, introduce and review basic FAM maneuvers.

Prerequisites. FAM-1111 and appropriate FRS CBT program lessons.

FAM-1113 1.5 B,R,MR E 1 CH-46E A

Goal. Review previous pattern work.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E FRS Standardization Manual)
- CRM (Leadership)
- Systems
  - Engine Fuel Control.
  - Engine Fuel System.
- Emergencies
  - Nf flex shaft failure.
  - Fuel jettison.
  - Fuel boost pump failure.
  - Engine driven fuel pump failure.
  - Fuel quantity indicator failure.
  - Compressor stall.
  - Single engine failure HOGE.
  - Dual engine failure HOGE.

Demonstrate/Introduce:
- Max-glide power recovery autorotation (demo).
- Simulated ECA failure in flight (demo).
- Ninety degree power recovery autorotation.
- Simulated single engine to a spot.

Review/Evaluate:
- Straight-in power recovery autorotation.
- Max gross weight/min power takeoff and landings.
- AFCS off flight/approaches.
- Simulated single engine approach/landings.
- Simulated single engine failure on takeoff.
- Simulated single engine failure HIGE.
- Previously introduced maneuvers and emergencies.

Performance Standards. Pilot shall demonstrate knowledge of aircraft systems, introduce and review basic FAM maneuvers.

Prerequisite. FAM-1112 and appropriate FRS CBT program lessons.

FAM-1114 1.5 B,E 1 CH-46E A

Goal. Review previous pattern work. Review maneuvers from SFAM-1104.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
- CRM (Adaptability/Flexibility)
- Systems
  - Utility Hydraulic System.
  - Hydraulic Boost System.
- Emergencies

Hydraulic flight control boost failures.
Utility hydraulic system/subsystem failure.
Utility hydraulic system overheating.
LCT actuator failures.
Other emergencies as required.

Demonstrate/Introduce:
FAM maneuvers in various cyclic trim modes (demo).
Manual trim approach/landings.
Maximum glide power recovery autorotation.

Review/Evaluate:
Ninety degree power recovery autorotation.
Single engine to a spot.
Max gross weight/min power takeoff and landings.
AFCS off flight/approaches.
Steep approach.
Previously introduced maneuvers and emergencies.

Performance Standards. Pilot shall demonstrate knowledge of aircraft systems, introduce and review basic FAM maneuvers.

Prerequisite. FAM-1113 and appropriate FRS CBT program lessons.

FAM-1115 1.5 B,E 1 CH-46E A

Goal. Review/evaluate all previously introduced maneuvers and emergencies.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
CRM (Situational Awareness)
Systems
Integrated Cargo Handling Systems.
Review all system limitations.
Emergencies
Engine AGB chip light/lube pump drive shaft failure.
All previously introduced emergencies as required.
Miscellaneous
Ditching.
Single engine takeoff from water/water taxi.
Cargo jettison.
Water landings.

Review/Evaluate:
All previously introduced FAM maneuvers and emergencies.
Max glide power recovery autorotation.

Performance Standards. Pilot shall demonstrate knowledge of aircraft systems, introduce and review basic FAM maneuvers.

Prerequisite. FAM-1114 and appropriate FRS CBT program lessons.

FAM-1116 1.5 B,R,MR,E 1 CH-46E A

Goal. FAM stage progress check.
Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
Review all system limitations.
All previously introduced emergencies.

Review/Evaluate:
All FAM stage maneuvers.
All previously introduced emergencies.

Performance Standards. Pilot shall demonstrate knowledge of aircraft systems and basic FAM maneuvers as well as the capability to preflight the aircraft.

Prerequisite. FAM-1115 and appropriate FRS CBT program lessons.

FAM-1117 1.5 B,R,MR E 1 CH-46E A N*

Goal. Introduce night unaided operations.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
Aircraft lighting and use.
Radar altimeter use.
CRM.
Night scan.
Prelaunch communications with light signals.
Emergency procedures at night.

Introduce/Evaluate:
Takeoff to a hover.
Transition to forward flight.
Normal approach.
Vertical landing from a hover.
Running landing.
Steep approach.
Power recovery autorotations.
AFCS off flight/approach/landing.
Simulated single engine approach/landing.

Performance Standards. Pilot shall demonstrate the ability to operate the aircraft and systems during night operations.

Prerequisite. FAM-1116 and appropriate FRS CBT lessons.

2.11.2 Instruments (INST)

2.11.2.1 Purpose. To develop proficiency in instrument flight procedures under instrument conditions using all navigation aids.

2.11.2.2 General

a. Pilots will find maneuver descriptions in the NATOPS Instrument Flight Manual and explanations in the FRS CH-46E Standardization Manual. Pilots should also review instrument requirements/minimums (filing, takeoff, approach, annual hours) found in the OPNAV 3710.

b. Pilots will conduct all instrument flights day or night under actual instrument conditions or hooded in the case of simulated instrument flight. Instructor pilots shall discuss aircraft lighting prior to RAC's first night flight.

c. All flights will terminate with an instrument approach when practical.

d. Pilots will be prepared to discuss the seven critical steps of CRM as applicable to each event.

2.11.2.3 Prerequisite. Appropriate FRS CBT program lessons.

2.11.2.4 Crew Requirement

a. Simulator Training - Two pilots/Qualified Instructor.

b. Flight Training - FRSI/RAC/CC or FRSI/REF/CC.

2.11.2.5 Ground Training. All pilots that do not possess a current instrument rating shall complete IGS prior to INST-1205.

SINST-1200 2.0 B,R,MR E WST S

Goal. Introduce Communication and Navigation Control System (CNCS) Procedures.

Requirement

Discuss:
- CNCS System Architecture.
- CNCS Components.
- AIMS basic operation and alarms.

Demonstrate/Introduce:
- Function Keys.
- Line Select Keys (LSK)
- Dedicated Keys.
- HHSI Modes.
- Apply/Check Power.
- Check System Status.
- Loading/Creating a Flight Plan.
- Changing Radios/Scan/Presets.
- Changing TACAN.
- Changing IFF/Mode 3/Mode C.
- Direct-to a Waypoint.
- Holding Pattern.
- Bearing/Distance Waypoint from know Position.
- AIMS operation.

Emergencies: System Failures and Trouble Shooting CNCS.

Performance Standards. Pilot shall demonstrate all basic knowledge of the CNCS IAW CH-46E NATOPS.

SINST-1201 2.0 B,R,MR E WST S (N*)

Goal. Introduce radio, TACAN, UHF DF, and radar altimeter procedures.

Requirement

Review:
- Instrument checklist.
- ITO.
- Altitude hold procedures.
- Level speed change.
- Timed turns.
- S-1 patterns.
- Full/partial panel unusual attitude recoveries.
- Partial panel.
- Oscar pattern.
- Instrument autorotation.

Introduce/Evaluate:
- TACAN procedures.
- UHF DF procedures.
- GCA procedures.
- In flight emergencies.

Performance Standards. Pilot shall perform all basic instrument maneuvers IAW FRS Standardization Manual as well as conduct a TACAN approach within the parameters set forth in the Instrument Manual.

Prerequisite. SINST-1200, appropriate FRS CBT program lessons.

SINST-1202 2.0 B,R,MR E WST S (N*)

Goal. Practice basic instrument flight and coordination maneuvers.

Requirement

Discuss:
- Maneuver limitations.
- Compass system control panel.
- Instrument scan.

Introduce/Evaluate:
- Instrument checklist.
- Level speed change.
- Timed turns (standard and one-half standard rate).
- Climbs and descents.
- Unusual attitudes.
- Partial panel at cruise altitude.
- Oscar pattern.
- Vertical S-1 pattern.

Emergencies: Perform as required.

Performance Standards. Pilot shall perform all basic instrument maneuvers IAW FRS Standardization Manual as well as conduct a TACAN approach within the parameters set forth in the Instrument manual.

Prerequisite. SINST-1201, appropriate FRS CBT lessons.

INST-1203 1.5 B,R,MR E 1 CH-46E/WST A/S (N*)

Goal. Practice TACAN/GCA procedures.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
- All TACAN Procedures
- Emergencies in Approach Environment
- Communication w/Approach Controllers
- GCA (PAR/ASR) Procedures.
- Unusual attitude recoveries.

Introduce/Evaluate:
- TACAN point-to-point navigation.
- TACAN tracking, radial changes.
- TACAN holding.
- TACAN arcing.
- TACAN approach.
- TACAN missed approach.
- TACAN departure.
- GCA (PAR/ASR) approach.
- Unusual attitude recoveries.

Review/Evaluate:
- Instrument takeoff.
- UHF DF orientation.

Emergencies: As required.

Performance Standards. Pilot shall perform all basic instrument maneuvers IAW FRS Standardization Manual as well as conduct a TACAN/GCA approach to an approved military field within the parameters set forth in the Instrument Manual.

Prerequisite. SINST-1202, FAM-1112, appropriate FRS CBT program lessons.

External Syllabus Support. Operable TACAN, GCA approach.

INST-1204 1.5 B,R,MR E 1 CH-46E/WST A/S (N*)

Goal. Introduce enroute procedures.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, OPNAV 3710.)
- Fuel management.
- Internal fuel tank procedures.
- Cross-Country Procedures.
  - Flight logs.
  - File flight plan.
  - Departure/airways/arrival procedures.
  - Close out flight plan.
  - Takeoff and Approach Minimums.

Introduce/Evaluate:
- Cross-Country Procedures.
  - ILS Procedures.
  - Flight logs.
  - File flight plan.
  - Departure/airways/arrival procedures.
  - Close out flight plan.

Review/Evaluate:
- GCA (PAR, ASR) procedures.
- TACAN procedures.
- Basic instruments.

Emergencies: Perform as required.

Performance Standards. Pilot shall perform all basic instrument maneuvers IAW FRS Standardization Manual as well as conduct a TACAN/GCA approach an approved military field within the parameters set forth in the Instrument manual.

Prerequisite. INST-1203, appropriate FRS CBT program lessons.

External Syllabus Support. Operable TACAN, GCA Approach.

INST-1205 1.5 B,R,MR E 1 CH-46E/WST A/S (N*)

Goal. RAC Instrument Review or Refresher Instrument Check.

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, OPNAV 3710.)
Annual instrument requirements/minimums.

Requirement

Review/Evaluate: All previously introduced instrument maneuvers and procedures.

Emergencies: Perform as required.

Performance Standards. Pilot shall demonstrate the ability to perform instrument maneuvers safely IAW Instrument Flight Manual.

Prerequisites. INST-1204, appropriate instrument minimums per OPNAVINST 3710.7.

External Syllabus Support. Operable TACAN, GCA approach.

2.11.3 Navigation (NAV)

2.11.3.1 Purpose. To develop navigation skills using charts and maps.

2.11.3.2 General

a. Pilots will find information on Navigation in the FRS CH-46E Standardization Manual and the ANTTP series publications.

b. All Conversion aircrews qualified and current in navigation in previous type aircraft are exempt.

c. Pilots will be prepared to discuss the 7 critical steps of CRM as applicable to each event.

d. Pilots will be prepared to pull a Lat/Long and 8-digit Grid off of the applicable map and load them into the CNCS.

2.11.3.3 Crew Requirement. FRSI/RAC/CC.

2.11.3.4 Ground Academics. All RACs shall complete the Navigation Class and Mission Planning Class prior to NAV-1301

NAV-1301 1.5 B,E 1 CH-46E A

Goal. Introduce day visual navigation.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, ANTTP series publications).
- CRM/Crew Integration.
- Onboard navigation systems/integration.
- Lost plane procedures.
- Time/distance/fuel considerations.
- Distance estimation and map legend information.
- Map Preparation.
- METT-TSL considerations on route selection.
- Building a Route.

Introduce:
- Navigation procedures emphasizing use of terrain, contour features, and triangulation to determine position.
- Use of 1:250,000 maps.
- Point-to-point navigation to at least 5 checkpoints at 200 to 500 feet AGL. Remain within 1 NM of course line.

Performance Standards. Pilot shall perform a navigation route utilizing a 1:250,000 map remaining within 1 NM of course throughout the route that consists of a minimum of 5 checkpoints.

Prerequisite. FAM-1112, FRS Navigation Class (ACAD-0021) and Mission Planning Class (ACAD-0023).

NAV-1302 1.5 B,E 1 CH-46E A

Goal. Review NAV-1301.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, ANTTP series publications).
- Comfort level.
- Navigation techniques.
- Map preparation.
- Boundaries.
- Wind correction for DR navigation.
- In flight route changes.
- Onboard navigation systems/integration.
- Use of Aviation Life Support Systems (ALSS) equipment.

Plan and navigate at 200-300 feet AGL to a minimum of 6 predetermined terrain features using 1:50,000 maps. Remain within 500 meters of course line. Use appropriate onboard navigation systems, if available.

Performance Standards. Pilot shall perform a navigation route utilizing a 1:50,000 map remaining within 500 meters of course for a minimum of 6 checkpoints.

Prerequisite. NAV-1301.

NAV-1303 1.5 B,E 1 CH-46E A N*

Goal. Introduce visual navigation at night.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, ANTTP series publications.)
- CRM/Crew Integration.
- Special characteristics of night NAV.
- Map preparation/mission planning.
- Onboard navigation systems/integration.
- Aircraft Signatures.
- METT-TSL considerations on route selection.

Introduce:
- Dead reckoning navigation to at least 4 points using pre-computed times and airspeeds.
- Altitude at 500-1,000 feet AGL.

Review: 1:250,000 maps/onboard navigation systems.

Performance Standards. Pilot shall perform a night navigation route utilizing a 1:250,000 map remaining within 1 NM of course for a minimum of 4 checkpoints at night.

Prerequisite. FAM-1117 and NAV-1302.

2.11.4 Confined Area Landings (CAL) ....

2.11.4.1 Purpose. Develop takeoff and landing skills in confined areas.

2.11.4.2 General

a. Pilots will find information on Confined Area Landings in the CH-46E NATOPS Flight Manual, FRS CH-46E Standardization Manual, and the ANTTP series publications.

b. Pilots will be prepared to discuss the 7 critical steps of CRM as applicable to each event.

2.11.4.3 Crew Requirement. FRSI/RAC/CC or FRSI/REF/CC.

SCAL-1400 2.0 B,E WST S

Goal. Introduce confined area work.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, ANTTP series publications).
- CRM.
- Aircraft clearance.
- Zone brief.

Introduce/evaluate:
- Confined area approach.
- Confined area landing.
- Masking/unmasking.
- Low level quick stops.
- Bunts/rolls.
- Low level flight.

Emergencies:
- Emergency landing in trees.
- Others as required.

Performance Standards. Pilot shall perform landing to a confined area emphasizing obstacle clearance and TERF Maneuvers IAW the ANTTP series publications.

CAL-1401 1.5 B,R,E 1 CH-46E A

Goal. Introduce confined area work.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, ANTTP series publications.)
- CRM.
- Aircraft clearance.
- Zone brief.
- Confined area approaches and landings.
- Aircraft vulnerability.
- Use of brakes and cyclic trim on CALs.

Demonstrate: Mainmount landing.
Slope Landings.

Introduce/Evaluate:
Confined area approach.
Confined area landing.
Obstacle Approach.
Waveoff.
Obstacle takeoff.

Emergencies:
Emergency landing in trees.

Performance Standards. Pilot shall perform confined area landings to an unprepared surface.

Prerequisite. FAM-1116, appropriate FRS CBT lessons.

External Syllabus Support. CAL zones.

CAL-1402 1.5 B,E, 2 CH-46E A

Goal. Conduct multiple aircraft approaches, landings and departures to a confined area.

Requirement

Discuss: (ref: CH-46E NATOPS Flight Manual, CH-46E FRS Standardization Manual, ANTTP series publications).
CRM.
Section cruise principles.
Section formation types.
Section approaches to a confine area.
Section landings and departures to a confined area.
Lead change.

Evaluate:
Section cruise formation.
Section cruise approaches and landings to a confined area.
Section cruise departures from a confine area.
Lead change.

Review: FORM-1501.

Performance Standards. Pilot shall perform cruise formation flight and multiple cruise landings to a confined area or landing zone. Pilot shall fly established pattern, recognize closure rate to landing point, remain oriented in zone, maintain safe obstacle clearance, and maintain section integrity during approach and landing.

Prerequisite. CAL-1401, FORM-1501, FAM-1116.

External Syllabus Support. CAL zone to accommodate a section.

2.11.5 Formation (FORM)

2.11.5.1 Purpose. To develop parade and cruise formation principles and techniques.

2.11.5.2 General

a. Pilots will find information on Formation in the CH-46E NATOPS Flight Manual, FRS CH-46E Standardization Manual and the ANTTP series publications.

b. Pilots will be prepared to discuss the 7 critical steps of CRM as applicable to each event.

2.11.5.3 Crew Requirements. FRSI/RAC/CC or FRSI/REF/CC.

SFORM-1500 2.0 B,E WST S (NS)

Goal. Introduce day/night formation procedures.

Requirement

Discuss:
- Aircraft lighting and use.
- Radar altimeter use.
- CRM.
- Day scan.
- Visual cues for day formation.
- Depth perception/relative motion.
- Hazards peculiar to formation.

Introduce/Evaluate:
- Section takeoff.
- Cruise formation.
- Parade formation.
- Breakup and Rendezvous.
  - Running rendezvous.
  - Carrier rendezvous.
- Crossovers.
  - Cruise crossovers.
  - Parade crossovers.
- Turns.
  - Cruise turns.
  - Parade turns.
- Lead Changes.
  - Cruise lead changes.
  - Parade lead changes.
- Section landings.

Emergencies: Electrical system malfunctions or as required.

Performance Standards. Pilot shall perform cruise formation flight and 5 section cruise landings to an unprepared surface.

Prerequisite. SCAL-1400, appropriate FRS CBT program lessons.

External Syllabus Support. WST/APT.

FORM-1501 1.5 B,R,E 2 CH-46E A

Goal. Introduce formation procedures.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, ANTTP series publications).
- Cruise principles.
- Radius of turn concept.
- Formation types.
- Break up and rendezvous.
- Overrun.
- IIMC Break up.
- Lost Comm procedures.

Introduce/Evaluate:
- Cruise formation.
- Cruise turns and turn pattern.
- Break up and rendezvous.
- Overrun (demo).
- Section cruise confined area takeoffs and landings.
- Lead change.

Emergencies: Perform as required.

Performance Standards. Pilot shall perform cruise formation flight and 5 section cruise landings to an unprepared surface.

Prerequisite. CAL-1401, appropriate FRS CBT Lessons.

External Syllabus Support. CAL zones.

FORM-1502 1.5 B,E 2 CH-46E A

Goal. Introduce parade formation procedures.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, ANTTP series publications).
- Parade principles.
- CRM within the Section.

Introduce/Evaluate:
- Parade formation.
- Crossovers.
- Parade turns and modified turn pattern.
- Break up and rendezvous.
- Overrun.
- Lead changes.
- Section parade takeoffs and landings.

Emergencies: Perform as required.

Performance Standards. Pilot shall perform parade formation flight and section parade landings.

Prerequisite. FORM-1501, appropriate FRS CBT lessons.

External Syllabus Support. Prepared surface runway.

2.11.6 External Cargo Operations(EXT)

2.11.6.1 Purpose. To develop skills necessary for external cargo operations.

2.11.6.2 General

a. Pilots will be prepared to discuss the 7 critical steps of CRM as applicable to each event.

b. Pilots will find information on external operations in the CH-46E NATOPS Flight Manual, FRS CH-46E Standardization Manual and the Air NTTP 3-22.3 CH-46E.

2.11.6.3 Crew Requirements. FRSI/RAC/CC.

SEXT-1600 2.0 B,E WST S

Goal. Introduce day external cargo operations.

Requirement

Discuss:
- HST signals.
- Power available versus power required limitations.
- CRM.
- Crew comfort level.
- Obstacle clearance.
- Load and pendant.

Introduce/Evaluate:
- Configure aircraft for external cargo.
- Approach to pickup zone.
- Cargo hookup.
- Departure from pickup zone.
- Enroute phase.
- Cargo delivery.
- Simulated hoist operations.
- External cargo operations to a confined area.
- Obstacle takeoff with external cargo.
- Confined area landings.
- Steep approach to a confined area.

Emergencies: Perform as required.
- Failure of one engine with an external load.
- Loss of ICS.
- Aerodynamically unstable/oscillating loads.
- Cargo jettison.

Performance Standards. Pilot shall perform 5 pickups and dropoffs to a confined zone.

Prerequisite. SCAL-1400, appropriate FRS CBT program lessons.

EXT-1601 1.5 B,E 1 CH-46E A

Goal. Introduce external cargo operations.

Requirement

Discuss:
Inadvertent IMC while conducting external operations.
Approach to pickup zone.
Cargo hookup.
Departure from pickup zone.
Enroute phase.
Cargo delivery.
External operations to a confined area.
Obstacle takeoff with external cargo.
Standard terminology.
Hook/pendant preflight.
Cargo jettisoning.
Loss of ICS.
HST Brief.
Oscillating external load.
External load emergencies.

Introduce/Evaluate:
Pickup and delivery of FMF equipment (when available).
External cargo operations to a confined area.
Obstacle takeoff with external cargo.

Review/Evaluate:
Confined area landings.
Steep approach to a confined area.
Obstacle takeoff.
Emergencies: Perform as required.

Performance Standards. Pilot shall perform a minimum of five pickups and dropoffs of external load within 10 meters to a confined area.

Prerequisite. CAL-1401, appropriate FRS CBT lessons.

External Syllabus Support. HST, external load, pendant, hook, and CAL zones.

2.11.7 Terrain Flight (TERF)

2.11.7.1 Purpose. To introduce the PUI to Terrain Flight (TERF) operations and maneuvers.

2.11.7.2 General

a. Maneuver descriptions; refer to CH-46E FRS Standardization Manual and ANTTP series publications.

b. Pilots will be prepared to discuss the seven critical steps of CRM as applicable to each event.

2.11.7.3 Crew Requirements. FRSI/RAC/CC/AGO or FRSI/REF/CC/AGO.

2.11.7.4 Ground/Academic Training. All RACs shall complete the TERF Class (ACAD-0022) prior to TERF-1701.

TERF-1701 1.5 B,R,MR E 1 CH-46E A

Goal. Introduce TERF operations.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, ANTTP series publications).
- CRM.
- Aircraft clearance.
- Emergencies in TERF environment.
- TERF maneuvers.
- TERF regimes.

Introduce/evaluate:
- Maximum performance takeoff.
- Performance checks.
- Masking/unmasking.
- Low level quick stops.
- Bunts/rolls.
- Low level flight/turns.
- Zoom climb.
- Spiral climbout/approach.
- Low level approach.
- Offset approach.

Emergencies:
- Emergency landing in trees.
- Others as required.

Performance Standards. Pilot shall perform TERF maneuvers emphasizing obstacle clearance IAW the ANTTP series publications.

Prerequisite. CAL-1401, ACAD-0022.

External Syllabus Support. Low level TERF area in controlled airspace.

2.11.8 Night Systems (NS)

2.11.8.1 Purpose. Introduce Pilot to NS in performing all basic FAM, NAV, and CAL maneuvers under a HLL Condition.

2.11.8.2 General

a. Pilots will find information on Formation in the FRS CH-46E Standardization Manual, CH-46E NATOPS Flight Manual, MAWTS-1 NVD Manual and the ANTTP series publications.

b. Pilots will be prepared to discuss the seven critical steps of CRM as applicable to each event.

2.11.8.3 Crew Requirement. FRSI/RAC/CC/AGO or FRSI/REF/CC/AGO

2.11.8.4 Ground/Academic Training

a. All pilots shall complete the Nite Lab (ACAD-0042) and NS Class (ACAD-0031) prior to SNS-1800.

b. All pilots shall be FAM Stage, NAV Stage, and CAL Stage complete before SNS-1800.

SNS-1800 2.0 B,E WST S NS

Goal. Introduce NS procedures.

Requirement

Introduce/Evaluate:
- Goggle/Degoggle.
- NS eyelane/goggle preflight.
- Aircraft lighting procedures.
- Scan techniques.
- Vertical takeoffs/landings.
- Hover patterns.
- Normal approaches.
- HUD Use.

Emergencies: Any previously introduced emergency as appropriate.

Performance Standards. Pilot shall practice NS procedures and scan technique to prepare for aircraft events.

Prerequisite. SFAM-1107, ACAD-0031, ACAD-0042.

NS-1801 2.0 B,R,E 1 CH-46E A NS

Goal. Introduce NS flight.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, MAWTS-1 NVD Manual)
- CRM/Lookout Doctrine.
- Crew comfort levels.
- NS failures.
- Depth perception.
- Aircraft lighting.
- Emergency procedures.
- MAWTS-1 NS Manual.
- ANVIS 9 NS, and NVG HUD (HMD).

Introduce:
- Use of NS at an unlighted outlying field under ambient light levels greater than or equal to .0022 LUX as depicted by the Light Level Planning Calendar.
- Use and wear of NS while performing taxi, basic air work, low work, and touch-and-go pattern work.

Emergencies: Perform as required.

Performance Standards. Pilot shall practice basic FAM maneuvers safely while wearing NS.

Prerequisite. SNS-1800, INST 1203, Nite Lab ACAD-0042, Night Systems class ACAD-0031, appropriate FRS CBT lessons.

External Syllabus Support. Unlit airfield.

NS-1802 1.5 B,E 1 CH-46E A NS

Goal. Introduce NS navigation.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, ANTTP series publications, MAWTS-1 NVD Manual)
- Map preparation.
- Cockpit interior lighting.
- CRM.
- Crew comfort levels.
- Inadvertent IMC.
- NS navigation techniques.
- Onboard navigation systems/integration.
- Wind/Wx considerations.
- Use of Aviation Life Support Systems (ALSS) equipment.

Introduce/Evaluate:
- Navigation to at least five points using 1:250,000 maps.
- Altitude 200-500 feet AGL.

Emergencies: Perform as required.

Performance Standards. Pilot shall perform a navigation route utilizing NS remaining within 1 NM of course for a minimum of five checkpoints.

Prerequisite. NAV-1303, NS-1801.

External Syllabus Support. NAV route

NS-1803 1.5 B,E 1 CH-46E A NS

Goal. Introduce NS CALs.

Requirement

Discuss:
- CRM.
- Crew comfort levels.
- NS failures.
- Brownout and Waveoffs.

Introduce/Evaluate: NS confined area landings/takeoffs at various unlighted CAL zones.

Emergencies: Perform as required.

Performance Standards. Pilot shall perform confined area landings to an unprepared surface utilizing NS.

Prerequisite. CAL-1401, NS-1802.

External Syllabus Support. CAL zones.

2.11.9 Review (REV)

2.11.9.1 Purpose. To demonstrate proficiency in performing Core Skill Introduction events per NATOPS and other appropriate publications.

2.11.9.2 General

a. All pilots under instruction shall complete SREV-1900. Moreover, all CH-46 pilots shall fly this event once per quarter if an approved simulator is available. If an approved simulator is not available, the squadron NATOPS officer will continue to administer the monthly EP examination on normal and emergency procedures.

b. Pilots will be prepared to discuss the seven critical steps of CRM as applicable to each event.

2.11.9.3 Crew Requirements. FRSI/RAC/CC.

2.11.9.4 Ground Training. Completion of NATOPS open, closed book, oral examination.

SREV-1900 2.0 B,R,E WST S

Goal. Review previous maneuvers and emergencies.

Requirement

Review/Evaluate:
FAM stage maneuvers.
Instrument stage maneuvers.
Confined area landings.

Emergencies: Perform all previously introduced emergencies.

Performance Standards. Pilot shall perform all FAM maneuvers and emergencies IAW CH-46E NATOPS and FRS Standardization Manuals.

Prerequisite. Appropriate FRS CBT program lessons. All previous stages complete.

REV-1901 1.5 B,E 1 CH-46E A

Goal. Review previous maneuvers and emergencies.

Requirement

Review/Evaluate: All maneuvers from all previous Core Skill Introduction flights.

Emergencies: All previously introduced emergencies.

Performance Standards. Pilot shall perform all FAM maneuvers and emergencies IAW CH-46E NATOPS and FRS Standardization Manuals.

Prerequisite. SREV-1900.

2.11.10 Core Skill Introduction Check (CSIX)

2.11.10.1 Purpose. The PUI will demonstrate proficiency in performing duties as a Core Skill Introduction complete copilot per this syllabus, NATOPS and other appropriate publications.

2.11.10.2 General

a. At the completion of CSIX-1902, the PUI shall be designated a Helicopter Second Pilot (H2P) in the CH-46E.

b. The PUI is responsible for any/all maneuvers and emergencies contained in the Core Skill Introduction phase.

c. Prerequisite. The PUI shall meet all CBT and NATOPS prerequisites prior to this flight.

2.11.10.3 Crew Requirements. FRSI/RAC/CC or FRSI/REF/CC.

2.11.10.4 Academic Training. Completion of open, closed book and oral examinations.

CSIX-1902 1.5 B,R,MR E 1 CH-46E A

Goal. RAC/Refresher NATOPS evaluation.

Performance Standards. Pilot shall perform all FAM maneuvers and emergencies IAW CH-46E NATOPS, ANTTP series publications and FRS Standardization Manuals.

Prerequisite. REV-1901.

2.12 CORE SKILL PHASE (2000)

2.12.1 Purpose. To introduce and develop proficiency in the execution of the Core Skills required as a pilot within a Marine Medium Helicopter Squadron (HMM). The Core Skill Phase represents the basic skill sets required to eventually conduct the Mission Skills (3000 Phase). In order for a pilot to conduct those Mission Skills he/she must first be current and proficient in all of the required prerequisite Core Skills within that Marine Corps Task. This phase encompasses a combination of academic and flight events to train that individual pilot to the level required to conduct the assigned Mission Skills.

2.12.2 General

2.12.2.1 The following events within this phase require a Basic Instructor Pilot (BIP) for all initial/Refresher flights.

| T&R EVENT | DESCRIPTION |
|---|---|
| FAM-2101 | Day/Night FAM |
| FAM-2102 | Day/Night Instruments |
| CAL-2201 | Day Single Ship CALs |
| CAL-2202 | Day Section CALs |
| CAL-2203 | Day Division CALs |
| FORM-2301 | Day FORM/TACFORM |
| EXT-2701 | Day External Cargo Operations |
| AIE-2705 | Day Fastrope/Rappel |
| CQ-2901 | Day FCLPs |
| CQ-2903 | Day CQs |

2.12.2.2 Within the Core Skill Phase (2000) there are (12) stages. These stages are as follows:

| STAGE | NAME |
|---|---|
| 1 | Familiarization (FAM)/Instruments (INST) |
| 2 | Confined Area Landings (CAL) |
| 3 | Formation Flight (FORM) |
| 4 | Terrain Flight (TERF) |
| 5 | Aerial Gunnery (AG) |
| 6 | Tactics (TAC) |
| 7 | NS High Light Level (HLL) |
| 8 | NS Low Light Level (LLL) |
| 9 | External Cargo Operations (EXT) |
| 10 | Alternate Insertion/Extraction (AIE) |
| 11 | Ground Threat Reaction (GTR) |
| 12 | Carrier Qualification (CQ) |

2.12.3 Minimum Crew Requirement. Crew composition (P = Pilot, CP = Co-Pilot, CC = Crew Chief, AGO = Aerial Gunner/Observer) for the Core Skill Phase will be delineated within each stage of training.

2.12.4 Ground/Academic Training. Prior to commencement of each stage within the Core Skill Phase the required academic syllabus shall be completed in accordance with this Manual and the MAWTS-1 CH-46E Course Catalog. The required academic classes will be logged and tracked in M-SHARP.

2.12.5 Core Skill Event Requirements. In addition to all requirements and performance standards listed for each Core Skill event, each initial and Refresher PUI shall be evaluated on the following:

2.12.5.1 Preparation:

a. Load computation.

b. Map preparation.

c. Participation in flight/mission planning.

d. Mission products.

e. Time management.

f. Teamwork and initiative.

2.12.5.2 Execution:

a. Professionalism.

b. Airwork.

c. Crew Resource Management (CRM).

d. NATOPS adherence.

e. SOPs/Orders adherence.

## 2.13 CORE SKILL STAGES (2000)

### 2.13.1 Familiarization (FAM)/Instruments (INST)

2.13.1.1 Purpose. To review day and night FAM maneuvers, navigation procedures, and basic instrument procedures.

2.13.1.2 General

a. Pilots will find FAM maneuver descriptions in the CH-46E NATOPS Manual and Maneuver Description Guide.

b. The NATOPS Instrument Flight Manual (NAVAIR 00-80T-112) defines basic instrument procedures.

c. The CH-46E NATOPS (A1-H46AE-NFM-300 VOL. 1) describes normal and emergency procedures.

d. Pilots shall discuss CRM as applicable to each event.

e. Aircrew shall be NSQ for the appropriate light level, or NS-2651 complete and instructed by an NSI for events conducted on NS. If not NSQ for the appropriate light level, FAM-2101 shall be conducted in the local pattern.

f. A Basic Instructor Pilot (BIP) is required for Initial/Refresher FAM/INST-2101-2102 flights.

2.13.1.3 Ground Training. The MAWTS-1 CH-46E Course Catalog contains the required readings, chalk talks, and lectures which shall be completed prior to starting the FAM/INST stage.

2.13.1.4 Prerequisites. The following events/designations are prerequisites prior to the commencement of the familiarization stage:

| EVENT TYPE | T&R CODE / DESIGNATION PREREQUISITES |
|---|---|
| ACADEMIC | ACAD-2000, ACAD-2001 |
| FLIGHT | CSIX-1902 |
| DESIGNATION | H2P |

2.13.1.5 Minimum Crew Requirements. P/CP/CC.

SFAM/INST-2100 2.0 B 1 CH-46E WST/APT S/A (N)

Goal. Review day and night familiarization maneuvers and basic instrument procedures.

Requirement

Discuss:
- FAM maneuvers.
- Aircraft lighting and use.
- Night scan.
- Night fixation.
- CRM.
- Basic instrument procedures.
- CDNU operations and precision navigation equipment.
- Wing/Group/MEU and Squadron SOPs.

Introduce:
- Integrated comm/nav equipment.
- ARC-210 Remote head.
- Local course Rules.
- Local instrument pattern and approaches.

Review:
- FAM maneuvers.
- Operations at lighted and unlighted fields.
- Basic instrument maneuvers to include turn patterns, vertical S-1 patterns, Oscar patterns, partial panel flight, and instrument autorotations.
- Instrument Approaches.
- Emphasize emergency procedures that pilot cannot fly in the aircraft; e.g., dual engine failure, full autorotation, flex shaft failure, ECA malfunctions, compressor stalls, etc.

Performance Standards. IAW NATOPS/Instrument Flight Manuals.

FAM/INST-2101 1.5 180 B,R 1 CH-46E A (N)

Goal. Review day and/or night familiarization maneuvers and navigation above 200 feet.

Requirement

Discuss:
- CRM.
- Local course rules.

Map preparation.
Route selection.
Night scan.
Night fixation.
Wing/Group/MEU and Squadron SOPs.

Review:
FAM maneuvers.
Emergency procedures, as required.
CNCS operation.

Performance Standards. Pilot shall remain within 5 feet and 5 kts of briefed parameters during low work/taxi operations, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, established pattern checkpoints, recognize closure rate to a landing point, remain oriented on zone, respond promptly and safely to altitude and drift calls from aircrew, and land within 100 feet of intended point of landing.

Prerequisite. SFAM/INST-2100.

External Syllabus Support. Landing areas.

FAM/INST-2102 1.5 180 B,R 1 CH-46E A (N)

Goal. Review day and/or night basic instrument procedures.

Requirement

Discuss:
Aircraft lighting and use.
Basic instrument procedures.
IFR planning and flying procedures.
CRM.
Map preparation.
Route selection.

Review:
Basic instrument maneuvers to include turn patterns, vertical S-1 patterns, Oscar pattern, partial panel flight, and instrument autorotations.
Instrument navigation and approaches.
Instrument scan.
IFR planning and flying procedures.

Performance Standards. Pilot shall perform all basic instrument maneuvers IAW the FRS Standardization Manual as well as conduct a TACAN/GCA approach to an approved field within the parameters set forth in the Instrument Manual.

Prerequisite. SFAM/INST-2100.

External Syllabus Support. NAVAIDS and/or IFR capable facility.

2.13.2 Confined Area Landings (CAL)

2.13.2.1 Purpose. To develop proficiency in takeoffs and landings in a confined area single ship and with multiple aircraft within the same landing zone.

2.13.2.2 General

a. Pilots will find maneuver descriptions in the NATOPS Flight Manual and Maneuver Description Guide.

b. Pilots shall discuss CRM as applicable to each event.

c. BIP required for Initial/Refresher CAL-2200-2203 flights.

2.13.2.3 Minimum Crew Requirements. P/CP/CC.

2.13.2.4 Ground Training. The MAWTS-1 CH-46E Course Catalog contains the required readings, chalk talks, and lectures which shall be completed prior to starting the CAL stage.

SCAL-2200 2.0 B 1 CH-46E WST/APT S (N)

Goal. Conduct day and night single and multiple aircraft confined area landings, tactical approaches and departures.

Requirement

Discuss:
- Standard CAL pattern.
- Low/high threat tactical approaches, landings and departures to a confined area.
- Power settling/settling with power.
- Power required vs Power Available
- Low altitude emergency procedures (e.g., landing in trees).
- Power requirements at high gross weights to affect safe takeoffs/landings.
- LZ brief/evaluation.
- Cruise turn principles.
- CRM during CAL operations.
- Crew comfort level.

Introduce:
- Low/high threat tactical approaches.
- Landings and departures to a confined area.
- CRM.
- Night fixation.
- Crosswind landings.
- Use of parking brake.

Review: CAL-1401.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure rate to landing point, remain oriented in zone, demonstrate power management, maintain

safe obstacle clearance, and land within 100 feet of intended point of landing.

CAL-2201 1.5 180 B,R 1 CH-46E A D

Goal. Conduct single aircraft confined area landings, tactical approaches and departures.

Requirement

Discuss:
- Standard CAL pattern.
- Low/high threat tactical approaches, landings and departures to a confined area.
- Power settling/settling with power.
- Power required vs power available
- Low altitude emergency procedures (e.g., landing in trees).
- Power requirements at high gross weights to effect safe takeoffs/landings (power checks).
- Rotor blade clearances (blade walk).
- LZ brief/evaluation.
- Sloped landing considerations.
- Use of the parking brake.
- CRM during CAL operations.
- Crew comfort level.

Introduce:
- Landings and departures to a confined area.
- CRM.
- Crosswind landings.
- Use of parking brake.

Review: CAL-1401.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure rate to landing point, remain oriented in zone, demonstrate power management, maintain safe obstacle clearance, respond promptly and safely to altitude and drift calls from aircrew, and land within 100 feet of intended point of landing. Successful completion of CAL-2201 requires the PUI to conduct a minimum of five landings.

Prerequisite. SCAL-2200.

External Syllabus Support. CAL zones.

CAL-2202 1.5 180 B 2 ACFT A D

Goal. Conduct section aircraft tactical approaches, landings and departures to a confined area.

Requirement

Discuss:
- Section tactical approaches.

Landings and departures to a confined area in all threat environments.
Cruise turn principles.
Welded wing patterns.
Power management and settings.
Cross cockpit landings.
CRM during section CALs.
Crew comfort level.

Introduce:
Section tactical approaches.
Landings and departures to a confined area in all threat environments.

Review: FORM-1501.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure rate to landing point, remain oriented in zone, demonstrate power management, maintain safe obstacle clearance, respond promptly and safely to altitude and drift calls from aircrew, land within 100 feet of intended point of landing (lead), provide a stable and predictable platform as lead, recognize proper closure rate with lead aircraft, and maintain section integrity during approach and landing (wingman). Successful completion of CAL-2202 requires a minimum of three landings in both the lead and dash two position.

Prerequisite. CAL-2201.

External Syllabus Support. CAL zone that accommodates multiple aircraft.

CAL-2203 1.5 180 B,R 3+ ACFT A D

Goal. Conduct division tactical approaches, landings and departures to a confined area.

Requirement

Discuss:
Division and large flight pattern and approach considerations.
Cruise turn principles.
Welded wing patterns and landings.
Flight landings with dissimiliar T/M/S aircraft.
Division formation flight considerations with emphasis on dash two, three, and four.
Dash two, three, and four CAL considerations.

Introduce:
Division tactical approaches.
Landings and departures to a confined area in all threat environments.

Review: FORM-1501.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure rate to landing point, remain oriented in zone, demonstrate power management, maintain safe obstacle clearance, respond promptly and safely to altitude and drift calls from aircrew, land within 100 feet of intended point of landing (lead), provide a stable and predictable platform as lead, recognize proper closure rate with lead aircraft/wingmen, and maintain section integrity during approach and landing (wingman). Successful completion of CAL-2203 requires a minimum of two landings in the lead position and a minimum of two landings in the dash two position and two landings in any position from dash three through dash last.

Prerequisite. CAL-2202.

External Syllabus Support. CAL zone that accommodates multiple aircraft.

2.13.3 Formation Flight (FORM)

2.13.3.1 Purpose. To review formation and introduce tactical formation maneuvering.

2.13.3.2 General

a. Pilots shall discuss CRM as applicable to each event.

b. Initial/refresher flights shall be flown during the day. Subsequent flights may be flown at night if proficient in the day sortie and NSQ for the appropriate light level.

c. BIP required for Initial/Refresher FORM-2300-2301 flights.

2.13.3.3 Minimum Crew Requirements. P/CP/CC/AGO.

2.13.3.4 Ground Training. The MAWTS-1 CH-46E Course Catalog contains the required readings, chalk talks, and lectures which shall be completed prior to starting the FORM stage.

SFORM-2300 2.0 B 1 CH-46E WST/APT S D

Goal. Review section formation and introduce tactical section/division formation maneuvering.

Requirement

Discuss:
- CRM during formation flight.
- Crew comfort level.
- Closure rate.
- Lead changes (to include EMCON) and tactical lead considerations.
- Standard terminology.
- Section formation considerations.
- Division formation considerations, emphasize dash three and four positions.

Tactical formation maneuvering.
Appropriate formation maneuvers against a FW threat, RW threat, IR missile threat, radar guided missile threat, and AAA threat.
Intra and inter aircraft communications.
Inadvertent IMC.

Introduce:
TACFORM walk-through
Break turns, center turns, pinch/dig, cover, TAC turns, in-place turns, split turns, cross turns.
Combat spread and combat cruise.

Review:
Parade formation.
Section takeoffs/landings.
Cruise principles, crossover, break-up and rendezvous, and lead changes.

Performance Standards. Pilots shall exercise appropriate CRM, maintain situational awareness, maintain section integrity and mutual support, maintain appropriate cruise formation and rotor separation throughout maneuvers, utilize radius of turn principles, recognize closure rate with lead aircraft, and employ appropriate commands to maneuver flight.

External Syllabus Support. WST/APT/operable TEN.

FORM-2301 1.5 365 B,R 2+ CH-46E A (NS)

Goal. Review formation and introduce tactical formation maneuvering.

Requirement

Discuss:
CRM during formation flight.
Crew comfort level.
Closure rate.
Lead changes (to include EMCON).
Standard terminology.
Section formation considerations.
Division formation considerations, emphasize dash-3 position.
Tactical formation maneuvering.
Appropriate formation maneuvers against a FW threat, RW threat, IR missile threat, radar guided missile threat, and AAA threat.
Intra and inter aircraft communications.
Inadvertent IMC.

Introduce:
TACFORM walk-through
Break turns, center turns, pinch/dig, cover, TAC turns, in-place turns, split turns, cross turns.
Combat spread and combat cruise.
IIMC Breakup.

Review: Cruise principles, turn patterns, crossover, break-up and rendezvous, and lead changes.

Performance Standards. Pilots shall exercise appropriate CRM, maintain situational awareness, maintain section integrity and mutual support, maintain appropriate cruise formation and rotor separation throughout maneuvers, utilize radius of turn principles, recognize closure rate with lead aircraft, and employ appropriate commands to maneuver flight.

Prerequisite. CAL-2201, SFORM-2300.

2.13.4 Terrain Flight (TERF)

2.13.4.1 Purpose. To qualify the PUI in TERF operations/navigation procedures.

2.13.4.2 General

a. TERF 2303-2305 instructional flights require a TERF Instructor.

b. Successful completion of TERF-2305 constitutes TERF Qualified. A qualification letter signed by the commanding officer stating the pilot is TERFQ is required. The original shall be placed in the pilot's NATOPS jacket and a copy in the APR with a corresponding logbook entry.

c. T&R Program Manual establishes TERF altitude restrictions and currency requirements.

2.13.4.3 Minimum Crew Requirements. P/CP/CC/AGO.

2.13.4.4 Ground Training. The MAWTS-1 CH-46E Course Catalog contains the required readings, chalk talks, and lectures which shall be completed prior to starting the (TERF) stage. The following matrix will be used to track academic and administrative training:

2.13.4.5 Prerequisites. The following events/designations are prerequisites prior to the commencement of the TERF stage.

| EVENT TYPE | T&R CODE / DESIGNATION PREREQUISITES |
|---|---|
| ACADEMIC | ACAD-2002 |
| FLIGHT | FAM-2101, FAM-2102, CAL-2202, FOR TERF-2305:FORM 2301 |
| DESIGNATION | H2P |

STERF-2302 2.0 B 1 CH-46E WST S D

Goal. Conduct single and multiple aircraft TERF maneuvers in the low level and contour profiles.

Requirement

Discuss:
CRM during TERF.
Crew comfort level during TERF.
Emergency procedures in TERF environment.

TERF maneuvers (bunts, rolls, quick-stops, masking and unmasking).
Considerations and application of different TERF profiles (low level, contour and NOE flight).
Map preparation / map study
Route selection considerations.
Mission planning systems.
Cockpit management and CNCS employment considerations/ techniques.

Introduce: Contour and low level flight.

Review: TERF maneuvers (bunts, rolls, quick-stops, masking and unmasking).

Performance Standards. Pilots shall plan and fly a route to a minimum of five checkpoints below 200 feet AGL, TERF navigation utilizing 1:250,000 and 1:50,000 scale maps as appropriate, remain oriented on route within 500 meters, ensure effective CRM for navigation and obstacle clearance, retain positive aircraft control, demonstrate effective cockpit management for precision navigation (GPS as secondary source), utilize proper terminology, as lead retain situational awareness of wingman position and drive section appropriately, as wingman retain situational awareness during navigation, TAC FORM maneuvers utilized properly to control flight.

Prerequisite. ACAD-2002.

TERF-2303 1.5 180 B 1 CH-46E A D

Goal. Conduct TERF maneuvers in low level and contour profiles.

Requirement

Discuss:
CRM during TERF.
Crew comfort level during TERF.
Emergency procedures in TERF environment.
TERF maneuvers (bunts, rolls, quick-stops, masking/unmasking).
Considerations and application of different TERF profiles (low level, contour and NOE flight).
Map preparation (hazards, etc).
Low vs. high threat tactical approaches.
Altitude awareness.

Introduce: TERF maneuvers (bunts, rolls, quick-stops, masking/unmasking).

Review: Blade walk/power checks.

Performance Standards. Ensure effective CRM for obstacle clearance, retain positive aircraft control, and utilize proper terminology.

Prerequisite. STERF-2302.

External Syllabus Support.. TERF area (special use airspace preferred).

TERF-2304 1.5 180 B 1 CH-46E A D

Goal. Navigate a TERF route in low level and contour profiles.

Requirement

Discuss:
CRM during TERF navigation.
Standard terminology used during TERF navigation.
Hazard map usage.
Map preparation / map study (1:50,000 & 1:250,000).
Navigation considerations (altitude, terrain, barrier/funnel features, intermediate CPs, time and distance checks).
Cockpit management and CNCS employment considerations/ techniques.
"Columbus" procedures.

Introduce:
Navigate a TERF route with a minimum of five checkpoints in the low level and contour profile, and remain oriented within 500 meters of course line.
Onboard navigation systems (CNCS/GPS).

Review: TERF-2303.

Performance Standards. Pilots shall plan and fly a route to a minimum of five checkpoints at or below 200 feet AGL, TERF navigation utilizing 1:250,000 and 1:50,000 scale maps as appropriate, remain oriented on route within 500 meters, ensure effective CRM for navigation and obstacle clearance, retain positive aircraft control, demonstrate effective cockpit management and use of CNCS (GPS as secondary source), utilize proper terminology.

Prerequisite. TERF-2303.

External Syllabus Support. Approved TERF route (special use airspace preferred).

TERF-2305 1.5 180 B,R 2+ ACFT A D

Goal. Tactical formations and navigation in the low level and contour profiles in the TERF environment.

Requirement

Discuss:
CRM during formation flight in TERF environment.
Standard terminology.
Altitude awareness.
TERF formation considerations
Cruise turn principles.
"Magellan" procedures.

Introduce: Tactical formations and navigation in the low level and contour profiles.

Review: FORM-2301 and TERF-2304.

Performance Standards. Pilots shall plan and fly a route to a minimum of five checkpoints as lead below 200 feet AGL, utilize TACFORM maneuvering as necessary to control the flight, maintain proper separation and mutual support using cruise turn principles in the TERF environment, TERF navigation utilizing 1:50,000 and 1:250,000 scale maps as appropriate, remain oriented on route within 500 meters, arrive at the LZ or final checkpoint within 2 minutes of planned arrival time, ensure effective CRM for navigation, altitude and obstacle clearance, retain positive aircraft control, demonstrate effective cockpit management and use of CNCS, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, and as wingman, retains situational awareness during navigation.

Prerequisite. FORM-2301, TERF-2304.

External Syllabus Support. Approved TERF route (special use airspace preferred).

2.13.5 Aerial Gunnery (AG)

2.13.5.1 Purpose. To develop CRM proficiency during day and NS Aerial Gunnery and Tail Gunnery.

2.13.5.2 General

a. Employ onboard weapons systems to conduct aerial gunnery during day and utilizing NS.

b. Entire crew must be present for the brief.

c. Discuss CRM as applicable.

d. NSI required for AG-2405 if PUI is not NSQ for appropriate light level.

e. .50 cal machine guns and/or M240 Ramp Mounted Weapon System (RMWS) shall be employed.

2.13.5.3 Minimum Crew Requirements. For day or NS AG and TG - P/CP/CC/AGO/TG as required.

2.13.5.4 Ground Training. The MAWTS-1 CH-46E Course Catalog contains the required readings, chalk talks, and lectures which shall be completed prior to starting the (AG) stage.

2.13.5.5 Prerequisites. The following events/designations are prerequisites to the commencement of the AG stage.

| EVENT TYPE | T&R CODE / DESIGNATION PREREQUISITES |
|---|---|
| ACADEMIC | ACAD-2005, ACAD-2021, ACAD-2024, ACAD-2029 |
| FLIGHT | FAM-2101, FORM-2301, FOR AG-2405: AG-2401 AND NS-2601 |
| DESIGNATION | H2P |

AG-2401 1.5 365 B,R 1+ CH-46E A D

Goal. Introduce day Aerial Gunnery procedures.

Requirement

Discuss:
- CRM.
- Crew comfort levels.
- Weapons preflight.
- Types of ammunition.
- Standard weapons commands.
- Lost communication procedures.
- Visual signals.
- Weapons safety considerations, malfunctions/emergencies.
- Weapons conditions.
- Sectors/Fields of fire.
- Weapons engagement zones, surface danger zones, and weapons ranges.
- Moving target techniques.

Introduce:
- Aerial gunnery and tail gunnery, as applicable.
- Weapons control.
- Weapons commands.
- Weapons malfunctions.

Performance Standards. Pilots shall use proper weapon procedures and commands to direct AG/TG, demonstrate understanding of weapons parameters and employment, demonstrate proper response to weapon malfunctions, demonstrate understanding of briefed ROE, demonstrate understanding of weapons conditions, fly weapons delivery profile in accordance with briefed parameters, and demonstrate understanding of weapons control within briefed fields of fire and sectors of fire.

Prerequisite. FAM-2101 and FORM-2301.

Ordnance. 500 rounds of .50 cal and/or 7.62, 2 smoke grenades.

Range Requirements. Appropriate aerial gunnery range equipped with multiple scored targets ranging from personnel to APC size.

AG-2405 1.5 365 B,R 1+ CH-46E A NS

Goal. Introduce NS Aerial gunnery.

Requirement

Discuss:
CRM.
Crew comfort levels.
Weapon preflight.
Standard weapons commands.
Lost communication procedures.
Visual signals.
Weapon malfunctions/stoppage.
LASER employment and considerations/safety precautions.
Sectors of fire/fields of fire.
Moving target techniques.
Weapon conditions.

Introduce:
NS aerial gunnery.
Effects of ordnance, expendables, pyrotechnics on NS.
Laser employment.

Review: AG-2401.

Performance Standards. Pilots shall maintain effective NS scan, utilize solid instrument scan, recognize proper closure with intended point of landing, demonstrate understanding of NS considerations WRT weapons employment, use proper gun procedures and commands to direct aerial gunnery, demonstrate understanding of weapons parameters, demonstrate proper response to weapon malfunctions, demonstrate proper understanding of aircraft maneuvers in response to threat (demonstrates understanding of briefed ROE), demonstrate understanding of weapons conditions, fly weapons delivery profile IAW briefed parameters, demonstrate understanding of gun control within briefed fields of fire and sectors of fire.

Prerequisite. NS-2601 and AG-2401.

Ordnance. 500 rounds of .50 cal and/or 7.62, expendables as available.

Range Requirements. Appropriate laser authorized aerial gunnery range equipped with multiple scored targets ranging from personnel to APC size.

2.13.6 Tactics (Low/Medium Threat) (TAC)

2.13.6.1 Purpose. To introduce and develop proficiency in tactical planning, briefing and execution of assault support operations in the following mission areas in a low/medium threat environment.

a. Aviation Operations From Expeditionary Sea-Based Sites (MCT 1.3.3.3.1).

b. Aviation Operations From Expeditionary Shore-Based Sites (MCT 1.3.3.3.2).

c. Combat Assault Transport (MCT 1.3.4.1).

d. Rapid Insertion/Extraction (MCT 1.3.4.1.1).

e. Aviation Support of Tactical Recovery of Aircraft and Personnel (TRAP) (MCT 6.2.2.1).

f. Air Evacuation (MCT 6.2.2).

2.13.6.2 General

a. Utilizing a low to medium threat scenario, the PUI should assist in planning and briefing the mission. The AMC/flight leader should delegate planning and briefing responsibilities to PUIs.

b. Squadron ordnance shall mount .50 caliber machine guns for all tactical flights. Consideration should be given to utilizing the ramp mounted weapon system.

c. Pilots shall discuss CRM as applicable to each event.

d. A WTI/Flight leader should instruct an initial TAC-2501 event for PUI.

e. An NSI shall instruct an initial TAC-2502 event for PUI.

f. Squadrons are permitted and encouraged to conduct the TAC-2501 event in conjunction with other day initial training flights including AG-2401 and GTR-2801 as well as all day flight leadership events. Additionally, squadrons are permitted and encouraged to conduct the TAC-2502 event in conjunction with any initial NS event for NS-2603 through NS-2655 and AG-2405 as well as Flight Leadership events conducted using NS.

2.13.6.3 Minimum Crew Requirement. P/CP/CC/AGO for all aircraft events.

2.13.6.4 Ground Training. The MAWTS-1 CH-46E Course Catalog contains the required readings, chalk talks, and lectures which shall be completed prior to starting the (TAC) stage.

2.13.6.5 Prerequisites

| EVENT TYPE | T&R CODE / QUAL PREREQUISITES |
|---|---|
| ACADEMIC | ACAD-2000, ACAD-2005, ACAD-2007, ACAD-2008, ACAD-2009, ACAD-2010, ACAD-2015, ACAD-2016 ACAD-2017, ACAD-2018, ACAD-2019, ACAD-2020, ACAD-2023 ACAD-2024, ACAD-2025, ACAD-2026, ACAD-2028, ACAD-2030 ACAD-2031, ACAD-2034, ACPM-8200, ACPM-8201, ACPM-8210 ACPM-8230, ACPM-8231, ACPM-8240, ACPM-8241, ACPM-8242, ACPM-8250 |
| FLIGHT | GTR-2801 |
| QUALIFICATION | TERFQ |

STAC-2500 2.0 B 1 CH-46E WST S (NS)

Goal. Conduct day or NS assault support operation in a low threat environment.

Requirement

Discuss:
Tactical planning, briefing, and execution.
Use of onboard ASE during the mission.
CRM during the ingress, objective area, and egress phases of the mission.
Rules of engagement/weapons conditions as they apply to the mission.
Tactics used in a low threat environment.
Low versus medium altitude tactics.
Use of onboard navigation systems.
NS considerations with multiple aircraft aerial gunnery.

Introduce:
Tactical planning, briefing, execution, and use of precision navigation systems.
PUI will assist in planning and conducting the tactical brief.
Tactical conduct of assigned tasks from the mission statement, emphasizing tactical formations and approaches as contained in the ANTTP series publications.
Radio procedures and discipline consistent with EMCON conditions.
DASC control.
Ingress and egress routes.
Air control points.
Escort tactics.

Performance Standards. Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 1 minute of briefed plan, land at intended point of landing within 100 feet, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate situational awareness of other aircraft through all phases of flight, flight leadership control, demonstrate proper understanding of C4I utilization to facilitate execution and information flow, demonstrate appropriate respect for threat from planning through execution, demonstrate understanding of aircraft maneuver with regard to threat response in concert with proper aerial gunnery employment, demonstrate proper understanding of escort considerations, demonstrate proper understanding of secure and active communications, demonstrate understanding of FSCM utilization, demonstrate understanding of contingency considerations.

Prerequisite. See TAC stage prerequisite matrix.

External Syllabus Support. WST/APT, operable TEN and ASE.

TAC-2501 1.5 180 B 2+ ACFT A D

Goal. Conduct a day assault support operation in a low or medium threat environment.

Requirement

Discuss:
Tactical planning, briefing, and execution.

Use of onboard ASE during the mission.
CRM during the ingress, objective area, and egress phases of the mission.
Rules of engagement/weapons conditions as they apply to the mission.
Tactics used in a low threat environment.
Use of onboard navigation systems.
CRM during an assault support mission.
Flight countertactics for air and ground threats.
ASE utilization.
Escort considerations.
Fire support considerations and control measures.
Control and terminology for onboard defensive weapons.
EMCON procedures.
CBRN considerations.
TERF considerations.
Medium altitude considerations.

Introduce:

Tactical planning, briefing, execution, and use of precision navigation systems.
PUI will assist in planning and conducting the tactical brief.
Tactical conduct of assigned tasks from the mission statement, emphasizing tactical formations and approaches as contained in the ANTTP series publications.
Radio procedures and discipline consistent with EMCON conditions.
DASC control.
Ingress and egress routes.
Air control points.
Escort tactics.
Mission planning using a preplanned scenario and mission.
Tactical formations and maneuvers.
Navigation time and distance checks to meet a planned L-Hour.
Multi-plane aerial gunnery in an objective area/LZ, if possible.
Escort aircraft utilization, if available.
FARP and FOB operations if available.

Performance Standards. Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 1 minute of briefed plan, land at intended point of landing within 100 feet, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate situational awareness of other aircraft through all phases of flight, flight leadership control, demonstrate proper understanding of C4I utilization to facilitate execution and information flow, demonstrate appropriate respect for threat from planning through execution, demonstrate understanding of aircraft maneuver with regard to threat response in concert with proper aerial gunnery employment, demonstrate proper understanding of escort considerations, demonstrate proper understanding of secure and active communications, demonstrate understanding of FSCM utilization, demonstrate understanding of contingency considerations and proper FARP/FOB procedures.

Prerequisites. CAL-2202, STAC-2500, GTR-2801 and TERFQ.

Ordnance. Optional.

Range Requirements. Authorized TERF area, CAL site, (special use airspace with live fire range preferred). Appropriate aerial gunnery range equipped with multiple scored static/moving targets, ranging from personnel to APC size.

TAC-2502 1.5 180 B,R 2+ ACFT A NS

Goal. Conduct a NS assault support operation in a low or medium threat environment.

Requirement

Discuss:
- Tactical planning, briefing, and execution.
- Use of onboard ASE during the mission.
- CRM during the ingress, objective area, and egress phases of the mission.
- Rules of engagement /weapon conditions as they apply to the mission.
- Tactics used in a low threat environment.
- Use of precision navigation systems.
- Ordnance effects on NS.
- Laser aiming devices.
- CRM conducting a NS mission.
- Escort considerations at night.
- Fire support considerations at night.
- NS mission briefing.
- NS considerations during tactical missions.
- Precision navigation systems.
- ASE utilization for night missions.
- CBRN considerations.
- TERF considerations.

Introduce:
- Tactical planning, briefing, execution, and use of onboard navigation systems.
- PUI will assist in planning and conducting the tactical brief.
- Tactical conduct of assigned tasks from the mission statement, emphasizing tactical formations and approaches as contained in the ANTTP series publications.
- Radio procedures and discipline consistent with EMCON conditions.
- DASC control.
- Approach and retirement routes.
- Air control points.
- Escort tactics.
- Tactical assault support mission at night using NS.
- Escort aircraft utilization, if available.
- Multi-aircraft NS aerial gunnery in an objective area if possible.
- FARP and FOB operations if available.

Review: GTR-2801, AG-2401 and AG-2405.

Performance Standards. Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 1 minute of briefed plan, land at intended point of landing within 100 feet, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate situational awareness of other aircraft through all phases of flight, flight leadership control, demonstrate proper understanding of NS considerations with multiple aircraft aerial gunnery, demonstrate proper understanding of Laser employment, demonstrate proper understanding of C4I utilization to facilitate execution and information flow, demonstrate appropriate respect for threat from planning through execution, demonstrate understanding of aircraft maneuver with regard to threat response in concert with proper aerial gunnery employment, demonstrate proper understanding of escort considerations, demonstrate proper understanding of secure and active communications, demonstrate understanding of FSCM utilization, demonstrate understanding of contingency considerations and proper FARP/FOB procedures.

Prerequisites. AG-2405, TAC-2501, NS-2603

Ordnance. Optional.

Range Requirements. Authorized TERF area, CAL site, (special use airspace with live fire range preferred). Appropriate laser authorized aerial gunnery range equipped with multiple scored static/moving targets, ranging from personnel to APC size.

2.13.7 NS High Light Level (HLL)

2.13.7.1 Purpose. To develop skill in the use of NS under light levels greater than or equal to .0022 lux (HLL) as predicted by the Solar Lunar Almanac Prediction (SLAP) and to qualify the PUI in NS HLL operations.

2.13.7.2 General

a. All instructional flights require a Night Systems Instructor (NSI).

b. Successful completion of NS-2606 constitutes Night Systems Qualified (NSQ) HLL. A qualification letter signed by the commanding officer is required stating the pilot is NSQ HLL to carry troops under HLL conditions. The original shall be placed in the pilot's NATOPS jacket, and a copy in the APR with a corresponding logbook entry.

2.13.7.3 Minimum Crew Requirements. P/CP/CC/AGO.

2.13.7.4 Ground Training. The MAWTS-1 CH-46E Course Catalog contains the required readings, chalk talks, and lectures which shall be completed prior to starting the NS(HLL) stage.

2.13.7.5 Prerequisites. The following events/designations are prerequisites prior to the commencement of the NS HLL stage:

| EVENT TYPE | T&R CODE / QUAL PREREQUISITES |
|---|---|
| ACADEMIC | ACAD-2004, ACAD-2006, ACAD-2011<br>ACAD-2012, ACAD-2035, ACAD-2036, ACAD-2037 |
| FLIGHT | FAM-2101, CAL-2201 |
| DESIGNATION | H2P |

SNS-2600 2.0 B 1 CH-46E WST S NS

Goal. Introduce NS single and multiple aircraft FAM, CALs, and TERF/Navigation in HLL.

Requirement

Discuss:
- CRM during NS CAL operations.
- Crew comfort level during NS CAL operations.
- NS scan techniques.
- Emergencies in the night environment.
- NVG malfunctions/failures.
- NVG HUD utilization.
- Aircraft / cockpit lighting considerations.

Introduce:
- Section CALs in HLL.
- NVG HUD operations.

Review:
- NVG preflight/set up.
- FAM Maneuvers in HLL.
- Single aircraft CALs in HLL.

Performance Standards. Pilots shall plan and fly a route to a minimum of four checkpoints below 200 feet AGL, maintain effective NS/instrument scan, recognize proper closure rate with intended point of landing, remain oriented on route within 500 meters, ensure effective CRM for navigation and obstacle clearance, retain positive aircraft control, demonstrate effective cockpit management for precision navigation, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, wingman retains situational awareness during navigation, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on zone, and land within two rotors of intended point of landing.

Prerequisite. See HLL stage prerequisite matrix.

NS-2601 1.5 180 B,R 1 CH-46E A NS

Goal. Review NS single aircraft FAM, CALs, and maneuvers in HLL.

Requirement

Discuss:
- CRM during NS CAL operations.

Crew comfort level during NS CAL operations.
Standard NS CAL pattern.
Single aircraft NS CAL techniques.
Emergencies in the night environment.
NVG malfunctions/failures.
Light level planning requirements.
Inadvertent IMC.
NVG preflight/set up.
NVG theory of operations(Nomenclature, BSP, ABC)
LZ brief and evaluation.
Aircraft lighting considerations (internal and external) while conducting NS CALs.
Chem. light considerations.
Far and near Initial Terminal Guidance (ITG).

Review: Single aircraft low work/taxi operations, FAM maneuvers, and CALs while NS in HLL.

Performance Standards. Pilots shall maintain effective NS/instrument scan, remain within 5 feet and 5 kts of briefed parameters during low work/taxi operations, recognize proper closure rate with intended point of landing, retain positive aircraft control, demonstrate effective cockpit management, utilize proper terminology, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on zone, respond promptly and safely to altitude and drift calls from aircrew, and land within 100 feet of intended point of landing. Successful completion of NS-2601 requires the PUI to conduct a minimum of five landings.

Prerequisite. SNS-2600, FAM-2101, CAL-2201.

External Syllabus Support. NS compatible CAL zones.

NS-2602 1.5 180 B 2 CH-46E A NS

Goal. Conduct NS formation flight in HLL.

Requirement

Discuss:
CRM during NS formation operations.
Crew comfort level during NS formation operations.
NS formation techniques (combat cruise vs. combat spread vs. parade, visual cues, closure).
Aircraft lighting during NS formation (light show).
Inadvertent IMC during as a section.
NVG malfunctions/failures during formation flight.

Introduce: Formation flight while using NS in HLL.

Review: FORM-2301, CNCS employment if available, turn patterns and break up/rendezvous.

Performance Standards. Pilots shall maintain effective NS/instrument scan, ensure effective CRM for formation and obstacle clearance, recognize proper closure rate with intended

point of landing, retain positive aircraft control, demonstrate effective cockpit management, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, wingman retains situational awareness during flight, recognizes proper closure rate with lead aircraft, and wingman maintains proper NS combat cruise position.

Prerequisite. FORM-2301, NS-2601.

NS-2603 1.5 180 B,R 2 CH-46E A NS

Goal. Conduct NS tactical section approaches, landings, and departures to a confined area in HLL.

Requirement

Discuss:
CRM during NS section CALs.
Crew comfort level during NS section CALs.
NS section CAL techniques (lead considerations, dash 2 considerations, cruise turn principles, welded wing, cross cockpit landings).
LZ brief and evaluation.
Power management (power settings, power settling vs. settling with power, power required vs. power available).

Introduce: Section CALs while using NS in HLL.

Review: CAL-2202, NS-2601 and NS-2602.

Performance Standards. Pilots shall maintain effective NS/instrument scan, ensure effective CRM for formation and obstacle clearance, recognize proper closure rate with intended point of landing, retain positive aircraft control, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, lead provides a stable and predictable platform, wingman retains situational awareness during flight, recognize proper closure rate with lead aircraft, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on zone, respond promptly and safely to altitude and drift calls from aircrew, and land within 100 feet of intended point of landing. Successful completion of NS-2603 requires the PUI to conduct a minimum of three landings as lead and dash two.

Prerequisite. CAL-2202, NS-2602.

External Syllabus Support. NS compatible CAL zones that accommodate multiple aircraft.

NS-2604 1.5 B 3+ ACFT A NS

Goal. Conduct NS division formation and CALs emphasizing the dash three position.

Requirement

Discuss:
CRM during NS division formation and CALs.
Crew comfort level during NS division formation and CALs.
NS division formation flight techniques (formations, visual cues, closure).
NS division CAL techniques (dash two, three, and four considerations, cruise principles, welded wing, cross cockpit landings).
Inadvertent IMC as a division.
Obstacle clearance.
LZ brief and evaluation.
Flight landings with dissimiliar T/M/S.
Power management.

Introduce:
Division formation while using NS in HLL.
Division CALs while using NS in HLL.

Review: NS-2602 and NS-2603.

Performance Standards. Pilots shall maintain effective NS/instrument scan, ensure effective CRM for formation and obstacle clearance, recognize proper closure rate with intended point of landing, retain positive aircraft control, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, wingman retains situational awareness during flight, recognizes proper closure rate with lead aircraft/wingmen, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on zone, respond promptly and safely to altitude and drift calls from aircrew, and land within 100 feet of intended point of landing. Successful completion of NS-2604 requires the PUI to conduct a minimum of two landings in the lead position, two landings as dash two and two landings in any position from dash three through dash last.

Prerequisite. CAL-2203, NS-2603.

External Syllabus Support. NS compatible CAL zones that accommodate multiple aircraft.

NS-2605 1.5 180 B 1 CH-46E A NS

Goal. Conduct NS TERF navigation.

Requirement

Discuss:
CRM during NS TERF navigation.
Crew comfort level during NS TERF navigation.
NS navigation techniques.
Map preparation/map study.
Lunar illumination/shadow effects on NS navigation.
NS low altitude emergencies.

Cockpit management and CNCS employment considerations.
Introduce:
TERF navigation while using NS in HLL (navigate a route below 200 feet AGL with at least five checkpoints and remain oriented within 500 meters of course line utilizing 1:250,000/1:50,000 maps).

Review: TERF-2305. Use of CNCS/GPS to assist with navigation.

Performance Standards. Pilots shall plan and fly a route to a minimum of five checkpoints below 200 feet AGL, maintain effective NS/instrument scan, remain oriented on route within 500 meters, ensure effective CRM for navigation and obstacle clearance, retain positive aircraft control, demonstrate effective cockpit management and use of CNCS, utilize proper terminology.

Prerequisite. TERF qualified TERF-2305, NS-2601.

External Syllabus Support. Approved TERF route (special use airspace preferred).

NS-2606 1.5 180 B,R 2 CH-46E A NS

Goal. Conduct NS TERF formation, navigation flight.

Requirement

Discuss:
CRM in the NS TERF environment.
NS TERF/formation techniques.
NVG HUD utilization.
Emergencies in the TERF environment while using NS.

Introduce:
NS tactical formation flight and navigation in the TERF environment (navigate a route below 200 feet AGL with at least five checkpoints and remain oriented within 500 meters of course line utilizing 1:250,000/1:50,000 maps).
NVG HUD operation.

Review: TERFQ and NS-2602.

Performance Standards. Pilots shall maintain effective NS/instrument scan, recognize proper closure rate with intended point of landing, ensure effective CRM for formation and obstacle clearance, retain positive aircraft control, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, wingman retains situational awareness during navigation, employs NS combat cruise principles, recognize proper closure rate with lead aircraft, plan and fly a route to a minimum of five checkpoints below 200 feet AGL, remain oriented on route within 500 meters, demonstrate effective cockpit management and use of CNCS, and demonstrate NVG HUD operations.

Prerequisite. TERF qualified TERF-2305, NS-2602, NS-2605.

External Syllabus Support. Approved TERF route (special use airspace preferred).

2.13.8 NS Low Light Level (LLL)

2.13.8.1 Purpose. Qualify the PUI in NS LLL operations.

2.13.8.2 General

a. Upon completion of NS-2655, a qualification letter signed by the commanding officer is required stating the pilot is NSQ to carry troops under any ambient light level condition. The original shall be placed in the pilot's NATOPS jacket and a copy in his APR with a corresponding logbook entry. Upon signature of this document all pilots currently NSQ LLL may log 2651-2655 without flying the associated event.

b. Initial/Refresher flights require an NSI.

c. Pilots shall fly all events in light levels less than .0022 lux.

2.13.8.3 Minimum Crew Requirements. P/CP/CC/AGO.

2.13.8.4 Ground Training. The MAWTS-1 CH-46E Course Catalog contains the required readings, chalk talks, and lectures which shall be completed prior to starting the NS(LLL) stage.

2.13.8.5 Prerequisites. The following events/qualifications are prerequisites prior to commencement of the NS LLL stage.

| EVENT TYPE | T&R CODE // QUAL PREREQUISITES |
|---|---|
| ACADEMIC | ACAD-2038 |
| FLIGHT | NS-2600 |
| QUALIFICATION | NSQ HLL |

SNS-2650 2.0 B 1 CH-46E WST S NS

Goal. Conduct NS LLL TERF formation, navigation, single, section and division CALs.

Requirement

Discuss:
- CRM during NS LLL operations.
- Crew comfort level during NS LLL operations.
- NS LLL considerations.
- Single aircraft CAL techniques in LLL.
- Aircraft lighting considerations during NS LLL operations.
- Low altitude emergencies.
- NVG malfunctions/failures.

Introduce: Single aircraft CALs while using NS in LLL.

Review: SNS-2600, NVG HUD operations.

Performance Standards. Pilots shall fly a navigation route with at least five checkpoints, fly route below 200 feet AGL, remain oriented on route within 500 meters, arrive at final checkpoint within 1 minute of planned arrival time, maintain effective instrument and NS scan, recognize proper closure with intended point of landing, ensure effective CRM for navigation and obstacle clearance, retain positive aircraft control, demonstrate effective cockpit management for precision navigation, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, wingman maintains situational awareness during navigation, TAC FORM maneuvers utilized properly to control flight, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 100 feet of intended point of landing.

Prerequisite. SNS-2600, ACAD-2038

External Syllabus Support. NS capable WST/APT.

NS-2651 1.5 180 B,R 1 CH-46E A NS

Goal. Introduce single aircraft NS LLL CALs.

Requirement

Discuss:
- CRM during NS LLL CALs.
- Crew comfort level during NS LLL CALs.
- NS LLL considerations.
- Single aircraft CAL techniques in LLL.
- Aircraft lighting considerations during NS LLL operations.
- Low altitude emergencies.
- NVG HUD utilization.

Introduce: Single aircraft CALs while using NS in LLL.

Review: NVG HUD operations in LLL.

Performance Standards. Pilots shall maintain effective NS/instrument scan, recognize proper closure rate with intended point of landing, retain positive aircraft control, demonstrate effective cockpit management, utilize proper terminology, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on zone, respond promptly and safely to altitude and drift calls from aircrew, and land within 100 feet of intended point of landing. Successful completion of NS-2651 requires the PUI to conduct a minimum of five landings.

Prerequisite. SNS-2650, 2606.

External Syllabus Support. NS compatible CAL zone.

NS-2652 1.5 180 B,R 2 CH-46E A NS

Goal. Introduce NS LLL formation and section CALs.

Requirement

Discuss:
CRM during NS LLL section formation.
Crew comfort level during NS LLL formation operations.
NS LLL formation techniques.
NS LLL section CAL techniques.
External aircraft lighting considerations during NS LLL formation operations.

Introduce:
Formation flight while using NS in LLL.
Section CALs while using NS in LLL.

Review: NS-2651.

Performance Standards. Pilots shall maintain effective NS/instrument scan, ensure effective CRM for formation and obstacle clearance, recognize proper closure rate with intended point of landing, retain positive aircraft control, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, lead provides a stable and predictable platform, wingman retains situational awareness during flight, recognize proper closure rate with lead aircraft, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on zone, respond promptly and safely to altitude and drift calls from aircrew, and land within 100 feet of intended point of landing. Successful completion of NS-2652 requires the PUI to conduct a minimum of three landings as lead and dash two.

Prerequisite. NS-2651.

External Syllabus Support. NS compatible CAL zone that accommodates multiple aircraft.

NS-2653 1.5 180 B 1 CH-46E A NS

Goal. Conduct NS LLL TERF navigation.

Requirement

Discuss:
CRM during NS LLL TERF navigation.
Crew comfort level during NS LLL TERF navigation.
NS LLL navigation techniques.
Map preparation/map study.
Lunar illumination/shadow effects on NS LLL navigation.
NS low altitude emergencies.
Cockpit management and CNCS employment considerations.
Introduce:
TERF navigation while using NS in LLL (navigate a route below 200 feet AGL with at least five checkpoints and remain

oriented within 500 meters of course line utilizing 1:250,000/1:50,000 maps).

Review: TERF-2305, NS-2606. Use of CNCS/GPS to assist with navigation.

Performance Standards. Pilots shall plan and fly a route to a minimum of five checkpoints below 200 feet AGL, maintain effective NS/instrument scan, remain oriented on route within 500 meters, ensure effective CRM for navigation and obstacle clearance, retain positive aircraft control, demonstrate effective cockpit management and use of CNCS, utilize proper terminology.

Prerequisite. NS-2652.

External Syllabus Support. Approved TERF route (special use airspace preferred).

NS-2654 1.5 180 B,R 3+ACFT A NS

Goal. Conduct NS LLL formation and division CALs.

Requirement

Discuss:
CRM during NS LLL division formation flight.
Crew comfort level during NS LLL formation operations.
NS LLL division formation flight techniques.
NS LLL division CAL techniques.

Introduce:
Division formation while using NS in LLL.
Division CALs while using NS in LLL.

Review: NS-2604 and NS-2652.

Performance Standards. Pilots shall maintain effective NS/instrument scan, ensure effective CRM for formation and obstacle clearance, recognize proper closure rate with intended point of landing, retain positive aircraft control, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, wingman retains situational awareness during flight, recognizes proper closure rate with lead aircraft/wingmen, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on zone, respond promptly and safely to altitude and drift calls from aircrew, and land within 100 feet of intended point of landing. Successful completion of NS-2654 requires the PUI to conduct a minimum of two landings as lead, two landings as dash two and two landings from any position from dash three through dash last.

Prerequisite. NS-2653.

External Syllabus Support. NS compatible CAL zone that accommodates multiple aircraft.

NS-2655 1.5 180 B,R 2 CH-46E A NS

Goal. Conduct NS LLL TERF formation, navigation, and section CALs.

Requirement

Discuss:
CRM during NS LLL TERF navigation and tactical formation flight.
Crew comfort level during NS TERF operations.
NS navigation considerations under LLL conditions.
Cockpit management and CNCS utilization.
Emergencies in TERF environment while using NS.
Utilization of onboard lighting (IR smacks, IR Searchlight).
Step-up and step-down considerations.

Introduce: TERF navigation and tactical formation flight while using NS in LLL, (navigate a route below 200 feet AGL with at least five checkpoints and remain oriented within 500 meters of course line utilizing 1:250,000/1:50,000 maps to an L-hour/TOT).

Review: NS-2606, NS-2652, 2653, and use of CNCS and GPS to assist with navigation.

Performance Standards. Pilots shall navigate a route below 200 feet AGL with at least five checkpoints and remain oriented within 500 meters of course line, arrive at the final checkpoint within 1 minute of the planned arrival time, maintain effective NS/instrument scan, recognize proper closure rate with intended point of landing, remain oriented on route within 500 meters, ensure effective CRM for navigation and obstacle clearance, retain positive aircraft control, demonstrate effective cockpit management for precision navigation, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, wingman retains situational awareness during navigation, recognize proper closure rate with lead aircraft, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on zone, respond promptly and safely to altitude and drift calls from aircrew, and land within 100 feet of intended point of landing. Successful completion of NS-2655 requires the PUI to conduct a minimum of three landings as lead and dash two.

Prerequisite. NS-2654

External Syllabus Support. NS compatible CAL zone that accommodates multiple aircraft, approved TERF route.

2.13.9 External Cargo Operations (EXT)

2.13.9.1 Purpose. To develop proficiency in day and night systems external cargo operations and introduce external cargo operations in a confined area with close coordination of a Helicopter Support Team (HST).

2.13.9.2 General

a. BIP required for Initial/Refresher EXT-2700-2701 flights.

b. Pilots shall discuss CRM as applicable to external cargo operations for each event.

c. NSI required for Initial/Refresher EXT-2703. Aircrew shall be NSQ for the appropriate light level.

2.13.9.3 Minimum Crew Requirements. P/CP/CC/AGO.

2.13.9.4 Ground Training. The MAWTS-1 CH-46E Course Catalog contains the required readings, chalk talks, and lectures which shall be completed prior to starting the EXT stage.

2.13.9.5 Prerequisites. FAM-2101, NSQ for the appropriate light level. NS-2606 if HLL, NS-2655 if LLL.

SEXT-2700 2.0 B 1 CH-46E WST S D

Goal. Conduct day external load hookups and drops to a confined area.

Requirement

Discuss:
- Standard external pattern.
- CRM during external load operations.
- Tactical considerations during external lift operations.
- Emergency procedures with external loads.
- Voice commands.

Review: EXT-1601.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, utilize solid instrument and visual scan, demonstrate proper CRM/voice commands, properly respond to crew positioning calls, recognize closure/descent rates, maintain briefed clearance below load, maintain situational awareness of obstacle clearance, demonstrate ability to hold extended hover, demonstrate understanding of HOGE requirements and place load within 15 feet of intended point of drop.

External Syllabus Support. WST/APT.

EXT-2701 1.5 365 B,R 1 CH-46E A D

Goal. Review day external load operations from a confined area.

Requirement

Discuss:
- Standard external pattern.
- CRM during external load operations.
- Tactical considerations during external lift operations.

Load aerodynamic characteristics.
Hoist and winch operations.
Emergency procedures during external operations.
Voice commands.
Command jettisoning procedures.
HST Brief.

Review: EXT-1601.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, utilize solid instrument scan, demonstrate proper CRM/voice commands, properly respond to crew positioning calls, recognize closure/descent rates, maintain briefed clearance below load, maintain situational awareness of obstacle clearance, demonstrate ability to hold extended hover, demonstrate understanding of HOGE requirements, place load within 15 feet of intended point of drop. Successful completion of EXT-2701 requires the PUI to conduct a minimum of five hookups and drops.

Prerequisite. SEXT-2700, CAL-2201.

External Syllabus Support. HST, external load, LZ, hook and pendant.

SEXT-2702 2.0 B 1 CH-46E WST S (NS)

Goal. To conduct external operations in the TERF and/or NS environment.

Requirement

Discuss:
Emergency procedures during TERF external operations.
Limitations on power available, speed, maneuverability and altitude during TERF external operations.
LZ lighting for NS external operations.
Common terminology for NS external operations.
Aircraft and NS emergencies.

Introduce:
Fly a TERF route with a minimum of 4 checkpoints in the contour profile while carrying an external load.
External load operations to a confined area in an NS environment.

Review: SEXT-2700, STERF-2302 and SNS-2600 if applicable.

Performance Standards. Pilot shall properly respond to crew positioning calls, place load within 15 feet of intended point, recognize closure/descent rates, maintain briefed clearance below load, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, maintain effective NS scan, utilize solid instrument scan, utilize proper CRM, demonstrate proper voice commands, maintain SA of obstacle clearance, demonstrate ability to hold extended hover,

demonstrate understanding of load computation and HIGE/HOGE requirements.

Prerequisites. SEXT-2700, STERF-2302, and (SNS-2600) if applicable.

External Syllabus Support. External capable WST/APT.

EXT-2703 1.5 365 B,R 1 CH-46E A NS

Goal. Conduct NS external cargo operations to a confined area.

Requirement

Discuss:
CRM during external operations.
Crows foot lighting considerations.
NVG considerations during external operations.

Introduce: External load operations to a confined area in an NS environment.

Review: SEXT-2702, EXT-2701, and NS-2601.

Performance Standards. Pilots shall properly respond to crew positioning calls, place load within 15 feet of intended point, recognize closure/ descent rates, maintain briefed clearance below load, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, maintain effective instrument and NS scan, utilize proper CRM, demonstrate proper voice commands, maintain SA of obstacle clearance, demonstrate ability to hold extended hover, demonstrate understanding of load computation and HIGE/HOGE requirements. Successful completion of EXT-2703 requires the PUI to conduct a minimum of five hookups and drops.

Prerequisites. EXT-2701, NS-2606 if flown in HLL, NS-2655 if flown in LLL.

External Syllabus Support. Single-point load (1000-4000 pounds preferred), HST, confined area landing zone, cargo hook and pendant.

2.13.10 Alternate Insertion/Extraction Techniques ( AIE)

2.13.10.1 Purpose. To develop proficiency in AIE procedures.

2.13.10.2 General

a. Pilot, copilot, crew chief, aerial observer, HRST master, and HRST safety observer shall brief together prior to commencing fastrope, rappelling, and SPIE.

b. ICS cranials and gunner's belts are required for HRST Master.

c. CRM as applicable to AIE operations.

d. BIP required for Initial/Refresher AIE-2704-2706 flights.

e. An NSI is required for Initial/Refresher AIE-2706.

2.13.10.3 External Syllabus Support. HRST master and safety observer.

2.13.10.4 Minimum Crew Requirements. P/CP/CC/AGO.

2.13.10.5 Ground Training. The MAWTS-1 CH-46E Course Catalog contains the required readings, chalk talks, and lectures which shall be completed prior to starting the (AIE) stage.

2.13.10.6 Prerequisites

| EVENT TYPE | T&R CODE / DESIGNATION PREREQUISITES |
|---|---|
| ACADEMIC | ACAD-2005, ACAD-2006, ACAD-2039, ACAD-2040 |
| FLIGHT | FAM-2101, CAL-2201 |
| DESIGNATION | H2P |
| NS | NS-2606 if HLL, NS-2655 if LLL |

SAIE-2704 2.0 B 1 CH-46E WST S (NS)

Goal. Introduce fastrope, SPIE rig, paraops, helocast, and rescue hoist ops.

Requirement

Discuss:
HIGE/HOGE requirements.
Voice communication/standard terminology.
Current Force Order/Wing SOP.
Emergency procedures.
Tactical considerations for various AIE techniques.
Fastrope, SPIE rig, paraops, helocast, and rescue hoist ops procedures.

Introduce:
Skills involved for holding an extended high hover.
Troop insertion and extraction via fastrope, SPIE rig, paraops, helocast, and rescue hoist ops.

Review: SEXT-2700.

Performance Standards. Pilots shall execute AIE per local SOPs, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize proper closure to insertion point, remain oriented on insertion point, utilize solid instrument scan, demonstrate proper CRM/ voice commands, maintain SA of obstacle clearance, demonstrate ability to hold extended high hover, demonstrate understanding of HOGE requirements.

Prerequisite. See AIE stage prerequisite matrix.

External Syllabus Support. WST/APT.

AIE-2705 1.5 365 B,R 1 CH-46E A D

Goal. Introduce and develop proficiency in day fastrope and/or rappel operations.

Requirement

Discuss:
HIGE/HOGE requirements.
CRM. Pilots, crew chief, HRST master and HRST safety observer brief together.
Voice communication/standard terminology.
ICS failure/hand and arm signals.
Current Force Order/Wing SOP.
Obstacle clearance/waveoff.
Rope specific emergency procedures.
Tactical considerations for fastrope/rappel operations.

Introduce:
Preflight of fastrope frame/rappel rigging.
Skills involved for holding an extended high hover.
Troop insertion via fastrope/rappelling.

Review: SAIE-2704.

Performance Standards. Pilots shall demonstrate ability to insert ropers within 10 feet of intended insertion point, execute AIE per local SOPs, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize proper closure to insertion point, remain oriented on insertion point, utilize solid instrument scan, demonstrate proper crew resource management/voice commands, maintain SA of obstacle clearance, demonstrate ability to hold extended high hover, demonstrate understanding of HOGE requirements.

Prerequisite. CAL-2201, EXT-2701, SAIE-2704.

External Syllabus Support. Applicable AIE support equipment.

HIE-2706 1.5 B 1 CH-46E A NS

Goal. Introduce and develop proficiency in NS fastrope and/or rappel operations.

Requirement

Discuss:
CRM.
NS considerations during NS AIE operations.
Emergency procedures during NS AIE operations.

Introduce: NS fastrope/rappel procedures.

Review: AIE-2705.

Performance Standards. Pilots shall demonstrate ability to insert ropers within 10 feet of intended insertion point, execute AIE per local SOPs, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize proper closure to insertion point, remain oriented on insertion point, maintain effective NS scan, utilize solid instrument scan, demonstrate proper CRM/voice commands, maintain SA of obstacle clearance, demonstrate ability to hold extended high hover, demonstrate understanding of HOGE requirements.

Prerequisite. EXT-2703, AIE-2705, NSQ Appropriate light level, NS-2606 if HLL, NS-2655 if LLL.

External Syllabus Support. Applicable AIE support equipment.

2.13.11 Ground Threat Reaction (GTR)

2.13.11.1 Purpose. To introduce and develop proficiency in using Aircraft Survivability Equipment (ASE), tactics, and on-board defensive weapon systems to evade ground-to-air threats.

2.13.11.2 General

a. Conduct GTR-2801 against simulated surface to air fires (smokey SAMS, MADSS, Malina/BARC, hand-held pyrotechnics, etc.) and use ground based threat simulation.

b. Refer to the ANTTP series publications for ASE operating procedures. Refer to the GTR Program Guide for GTR training standards.

c. .50 cal machine guns shall be mounted for all GTR flights. M240 Ramp Mounted Weapon System (RMWS) may be employed.

d. Minimum altitude for GTR flights is 50 feet.

e. Enlisted aircrew instructors shall not have lookout duties during initial training events.

f. All initial flights shall be conducted during the daytime and require a GTR-proficient WTI or DMI.

g. Prior to conducting GTR-2801, pilots shall be proficient in AG-2401.

h. All event participants shall attend the recommended academic training and flight brief. A walkthrough should be conducted.

i. When conducted at night, all aircrew shall be NSQ (for the appropriate light level).

j. Prior to conducting GTR-2801 at night, pilots shall be proficient in AG-2405.

2.13.11.3 Minimum Crew Requirements. P/CP/CC/AGO.

2.13.11.4 Ground Training. The MAWTS-1 CH-46E Course Catalog contains the required readings, chalk talks, and lectures which shall be completed prior to starting the (GTR) stage. Additional ground training should consist of:

a. Current theater specific ROE training from a Staff Judge Advocate.

b. Enemy situation to include threat systems and related tactics.

2.13.11.5 Prerequisites

| EVENT TYPE | T&R CODE / DESIGNATION PREREQUISITES |
|---|---|
| ACADEMIC | ACAD-2002, ACAD-2010, ACAD-2014, ACAD-2016, ACAD-2017, ACAD-2018 ACAD-2019, ACAD-2020, ACAD-2021, ACAD-2032 ACPM-8250 |
| FLIGHT | FORM-2301, SGTR-2800, AG-2401, (AG-2405-IF CONDUCTED AT NIGHT) |
| DESIGNATION | TERFQ, NSQ (APPROPRIATE LIGHT LEVEL IF CONDUCTED AT NIGHT) |

SGTR-2800 2.0 B 1 CH-46E WST S D

Goal. Introduce ground threat reactions.

Requirement

Discuss:
CRM/crew comfort level.
Five axioms of survival.
Intra/ inter-plane communication.
Non-verbal cues.
Use of ALE-47, APR-39, ALQ-157, and AAR-47.
Use of RADAR horizons, RADAR masking, maneuver, and chaff to defeat threat RADAR systems.
Use of terrain masking, maneuver, IR jammers, and flares to defeat threat IR missiles.
Tactical expendables.
Threat recognition/ effective hostile fire.
Rules of engagement/ engagement criteria.
Point of Origin (POO), PID, collateral damage, and proportional response.
RADAR resolution cell.
Terrain masking/ background clutter.

Introduce:
Use of all onboard ASE.
Tactics against small arms, RPGs, AAA, IR SAMs, and RADAR SAMs.

Performance Standards. Pilots shall demonstrate proper operation of ASE, understanding and interpretation of APR/AAR indications, ability to break lock when tracked, effective flight maneuvering

in response to threat, and proper ASE employment with regard to threat.

Prerequisite. See GTR stage prerequisite matrix.

GTR-2801 1.5 365 B,R 2+ CH-46E A (NS)

Goal. Introduce ground threat reactions in a non-radar environment.

Requirement

Discuss:
- CRM/crew comfort level.
- Five axioms of survival.
- Intra/ inter-plane communication.
- Non-verbal cues.
- ASE considerations (emphasis on ALE-47, ALQ-157, and AAR-47).
- Use of terrain masking, maneuver, IR jammers, and flares to defeat threat IR missiles.
- Tactical expendables.
- Threat recognition/ effective hostile fire.
- ROE/ engagement criteria.
- POO, PID, collateral damage and proportional response.
- Weapons conditions/ pre-briefed clearance to fire.

Introduce:
- GTR against non-radar threat systems emphasizing use of all onboard ASE and defensive weapon systems.
- Threat avoidance maneuvers and tactics to counter threat systems.
- Appropriate evasive maneuvers when engaged by a non-radar ground based threat, to include defensive suppressive fires.

Review: SGTR-2800.

Performance Standards. All aircrew shall demonstrate proper operation of ASE, understanding and interpretation of AAR indications, effective maneuvering in response to threat, and proper ASE employment with regard to the threat.

Prerequisite. FORM-2301, AG-2401, AG-2405 if conducted at night, SGTR-2800, TERFQ (TERF-2305).

Ordnance. 120 flares, 2 x .50 cal weapon systems, 500 rnds .50 cal, (RMWS and 400 rnds 7.62mm optional).

Range Requirements. Live fire range and threat simulation devices (smokey SAMS, MADSS, Malina/BARC, hand-held pyrotechnics, etc.) with sufficient range space to employ and maneuver at least a section of aircraft.

2.13.12 Carrier Qualification (CQ)

2.13.12.1 Purpose. To qualify the PUI in day and NS FCLPs and train/refresh the PUI in day and NS shipboard landings.

2.13.12.2 General. Refer to LHA/LPH/LHD NATOPS Manuals and NWP-42 for Shipboard Operations.

a. An NSI is required for Initial/Refresher NS FCLP (CQ-2902) and NS CQ (CQ-2904) flights.

b. A BIP is required for Initial/Refresher CQ-2901 and CQ-2903 flights.

c. Night CQ Requirements for initial/Refresher/delinquent:

(1) Five day FCLPs.

(2) Five NS FCLPs.

(3) Five day CQs.

(4) Five NS CQs.

d. Night CQ Requirements for Pilots previously night CQ shall complete the following to maintain proficiency:

(1) Two day FCLPs.

(2) Two NS FCLPs.

(3) Two day CQs.

(4) Two NS CQs.

e. CQ-2902 may be flown under any light level condition. PUI must be NSQ for appropriate light level. An NSI is required for initial/refresher flights.

f. CQ-2904 shall be flown under HLL conditions for initial qualification. NSI required for initial/refresher NS flights. Currency and requalification flights may be flown under any light level condition.

g. Pilot is CQ upon completion of CQ-2903 and CQ-2904.

h. Pilots are authorized to carry passengers during daylight hours when proficient in CQ-2903.

i. Pilots are authorized to carry passengers at night with NS when proficient and current in CQ-2904 and NSQ for the appropriate light level.

j. Pilots shall discuss CRM as applicable to each event.

2.13.12.3 Minimum Crew Requirements

a. CQ-2901 and CQ-2903. P/CP/CC.

b. CQ-2902 and CQ-2904. P/CP/CC/AGO.

2.13.12.4 Ground Training. The MAWTS-1 CH-46E Course Catalog contains the required readings, chalk talks, and lectures which shall be completed prior to starting the (CQ) stage.

2.13.12.5 Prerequisites

| EVENT TYPE | T&R CODE / DESIGNATION PREREQUISITES |
|---|---|
| ACADEMIC | ACPM-8200, ACPM-8202 |
| FLIGHT | FAM-2101, FAM-2102, CAL-2201 |
| DESIGNATION | H2P |

SCQ-2900 2.0 B 1 CH-46E WST S (N)

Goal. Introduce day, night unaided, and NS CQ.

Requirement

Discuss:
- CRM during shipboard landings.
- Standard patterns for shipboard operations.
- Communications used in shipboard environment.
- LSE signals.
- Emergency procedures over water (water landings/ ditching).
- Aircraft lighting used during shipboard operations.
- Aviation Capable/Air Capable class ships.
- Basic instrument scan.
- Waveoff procedures.

Introduce: Day, night, and NS CQ patterns, approaches, landings, and emergency procedures peculiar to shipboard operations.

Review: Instrument procedures.

Performance Standards. Pilots shall demonstrate proper shipboard and aircraft lighting procedures, maintain effective instrument/NS scan, execute proper cockpit switchology, fly established CQ pattern demonstrating understanding of proper upwind, crosswind and interval parameters, fly 300 feet/80 kt pattern within 50 feet and 10 kts, maintain proper closure and bearing with intended point of landing, maintain proper orientation to LSE, respond promptly and safely to altitude and drift calls from aircrew, remain oriented on assigned landing spot, and land within 3 feet of intended point of landing.

Prerequisite. See CQ stage prerequisite matrix.

CQ-2901 1.5 365 B,R 1 CH-46E A D

Goal. Conduct day FCLPs.

Requirement

Discuss:
- CRM during shipboard landings.
- Standard patterns for shipboard operations.
- Communications used during shipboard landings.
- LSE signals.

Water landings/ditching.
Aircraft lighting used during shipboard landings.
Basic instrument scan.
Waveoff procedures.
Shipboard airspace.
Shipboard C2 agencies.

Introduce: Day FCLP patterns, approaches, landings, and emergency procedures peculiar to shipboard operations.

Performance Standards. Pilots shall demonstrate proper shipboard communications and aircraft lighting procedures, maintain effective instrument scan, execute proper cockpit switchology, fly established CQ pattern demonstrating understanding of proper upwind, crosswind and interval parameters, fly 300 feet/80 kt pattern within 50 feet and 10 kts, maintain proper closure and bearing with intended point of landing, respond promptly and safely to altitude and drift calls from aircrew, remain oriented on assigned landing spot, and land within 3 feet of intended point of landing.

Prerequisite. SCQ-2900.

External Syllabus Support. Approved FCLP pad.

CQ-2902 1.5 365 B,R 1 CH-46E A NS

Goal. Conduct NS FCLPs.

Requirement

Discuss:
CRM during NS shipboard landings.
Crew comfort levels during NS shipboard landings.
Situational awareness during NS shipboard landings.
Emergency procedures (aircraft and NS).
Aircraft and deck lighting during NS shipboard operations.
Basic instrument scan.

Introduce: NS FCLPs.

Review: CQ-2901.

Performance Standards. Pilots shall demonstrate proper shipboard communications and aircraft lighting procedures, maintain effective instrument/NS scan, execute proper cockpit switchology, fly established CQ pattern demonstrating understanding of proper upwind, crosswind and interval parameters, fly 300 feet/80 kt pattern within 50 feet and 10 kts, maintain proper closure and bearing with intended point of landing, respond promptly and safely to altitude and drift calls from aircrew, remain oriented on assigned landing spot, and land within 3 feet of intended point of landing.

Prerequisite. CQ-2901. NSQ for the appropriate light level, NS-2606 HLL, NS-2655 LLL.

External Syllabus Support. NS capable FCLP pad.

CQ-2903 1.5 365 B,R 1 CH-46E A D

Goal. Conduct day CQ.

Requirement

Discuss:
- CRM during shipboard landings.
- Standard patterns for shipboard operations.
- Communications used during shipboard landings.
- LSE signals.
- Water landings/ditching.
- Aircraft lighting used during shipboard landings.
- Rotor engagement/disengagement.
- Launch/recovery wind envelopes.
- Basic instrument scan.
- Waveoff procedures.

Introduce: Day CQ patterns, approaches, landings, and emergency procedures peculiar to shipboard operations.

Review: CQ-2901.

Performance Standards. Pilots shall fly 300 feet/80 kt pattern within 25 feet and 10 kts, fly established CQ pattern demonstrating understanding of proper upwind, crosswind and interval parameters, maintain proper orientation to LSE, respond promptly and safely to altitude and drift calls from aircrew, remain oriented on assigned landing spot, land within 3 feet of intended point of landing, utilize solid instrument scan, recognize proper closure with intended point of landing, demonstrate understanding of shipboard communications and aircraft lighting.

Prerequisite. CQ-2901.

External Support. Air capable ship deck.

CQ-2904 1.5 365 B,R 1 CH-46E A NS

Goal. Conduct NS CQ.

Requirement

Discuss:
- CRM during shipboard landings.
- Communications used during shipboard landings.
- LSE signals.
- Water landings/ditching.
- Aircraft lighting used during shipboard landings.
- Rotor engagement/disengagement.
- Launch/recovery wind envelopes.
- Transition from instrument to NS scan.
- Basic instrument scan.
- NS scan/fixation.

Introduce: NS CQ patterns, approaches, landings, and emergency procedures peculiar to NS shipboard operations.

Review: CQ-2902, CQ-2904.

Performance Standards. Pilots shall fly 300 feet/80 kt pattern within 25 feet and 10 kts, fly established CQ pattern demonstrating understanding of proper upwind, crosswind and interval parameters, maintain proper orientation to LSE, respond promptly and safely to altitude and drift calls from aircrew, remain oriented on assigned landing spot, land within 3 feet of intended point of landing, maintain effective instrument and NS scan, recognize proper closure with intended point of landing, demonstrate proper shipboard communications and aircraft lighting.

Prerequisite. CQ-2902, CQ-2903, NSQ for the appropriate light level, NS-2606 HLL, NS-2655 LLL.

External Support. NS capable ship deck.

## 2.14 MISSION SKILL PHASE (3000)

2.14.1 Purpose. To introduce and develop proficiency in tactical planning, briefing and execution of a Marine Medium Helicopter squadron's assigned Marine Corps Tasks. The Mission Skill Phase enables the squadron commander to assess his/her squadron's ability to perform its assigned missions in preparation for a deployment, during peacetime training, or while executing military operations. Additionally, the Mission Skill Phase allows higher headquarters to assist the squadron with obtaining the resources necessary to execute its assigned missions based on readiness and the squadron commander's assessment of his/her squadron's capabilities. This phase encompasses a combination of academic and flight events to assess the squadron's and/or individual pilot's proficiency in Mission Skills. The focus of this phase is on the following mission areas.

2.14.1.1 Aviation Operations from Expeditionary Sea-Based Sites (MCT 1.3.3.3.1).

2.14.1.2 Aviation Operations from Expeditionary Shore-Based Sites (MCT 1.3.3.3.2).

2.14.1.3 Combat Assault Transport (MCT 1.3.4.1).

2.14.1.4 Rapid Insertion/Extraction (MCT 1.3.4.1.1).

2.14.1.5 Aviation Support of Tactical Recovery of Aircraft and Personnel (TRAP) (MCT 6.2.2.1).

2.14.1.6 Air Evacuation (MCT 6.2.2).

2.14.2 General

2.14.2.1 Attainment of proficiency in Aviation Operations from Expeditionary Sea-Based Sites and Expeditionary Shore-Based Sites are not specific flight events.

2.14.2.2 Currency and proficiency in specific Core Skill flight and academic events by individual pilots over a certain threshold constitutes overall squadron currency and/or proficiency in these two Mission Skills. If the requisite number of squadron pilots attain and maintain currency/proficiency in the identified academic/flight Core Skill events, then the corresponding Mission Skill code will be manually logged for that individual pilot in M-SHARP. The following table outlines this process.

| MISSION SKILL | CORE SKILL CURRENCY/PROFICIENY T&R EVENTS | | | LOGGED MISSION SKILL CODE |
|---|---|---|---|---|
| | ACADEMIC EVENTS | FLIGHT EVENTS | | |
| SEA | ACAD-2007, ACAD-2024, ACAD-2029, ACAD-3004, ACPM 8300 ACAD-3005, ACPM-8350, | FAM-2101, FAM-2102, CAL-2203, FORM-2301, TERF-2305, NS-2606, NS-2655, CQ-2904 | = | 3101 |
| EXP | ACAD-2007, ACAD-2024, ACAD-2029, ACAD-3004, ACAD-3005 ACPM-8300, ACPM-8310, ACPM-8311 | FAM-2101, FAM-2102, CAL-2203, FORM-2301, TERF-2305, NS-2606, NS-2655 | = | 3102 |

2.14.2.3 Currency, proficiency and re-fly intervals for SEA-3101 and EXP-3102 do not exist. However, the proficiency in these Mission Skill events is a function of their associated Core Skill academic/flight events.

2.14.2.4 AT-3103 through AE-3108 constitute specific flight events.

2.14.2.5 Pilots shall discuss CRM as applicable to each event.

2.14.2.6 Each Mission Skill T&R code shall be individually logged for each pilot upon the completion of the respective event (except SEA-3101 and EXP-3102).

2.14.2.7 Mission Skill T&R codes can be combined in the same flight, and may be flown in any order.

2.14.2.8 Initial TAC-2501 can be flown in conjunction with any day Mission Skill event. Initial and/or refresher TAC-2502 can be flown in conjunction with any NS Mission Skill event.

2.14.2.9 Other applicable T&R events can be conducted in conjunction with the performance of a Mission Skill event.

2.14.2.10 A flight leader (section or above) flying within the Mission Skill flight event can complete an initial or refresher PUI for AT-3103 through AE-3108, regardless of whether or not the PUI is flying with the flight leader. The flight leader shall make the final assessment of whether the requirements and performance standards were met for the appropriate Mission Skill event(s).

2.14.2.11 An ATF is required to be completed by the flight leader, for all initial or refresher AT-3103 through AE-3108 Mission Skill flight events, provided the requirements and performance standards were met.

2.14.2.12 Proficiency in AT-3103 through AE-3108 Mission Skill events should be used as tool by the squadron commanding officer to assess his squadron's readiness to perform a specific Mission Skill. Loss of proficiency in these events does not preclude the squadron commanding officer from allowing his squadron aircrew to perform an assigned mission. Additionally, loss of proficiency in these events does not prevent any pilot from flying on a Mission Skill flight event with another non-proficient pilot.

2.14.3 Minimum Crew Requirement. Crew composition for SEA-3101 and EXP-3102 are in accordance with the specific Core Skill flight events that correspond with each respective Mission Skill. For AT-3103 through AE-3108, the following is the minimum crew: P/CP/CC/AGO.

2.14.4 Ground/Academic Training. Prior to commencement of the Mission Skill Phase, the commanding officer or his/her designated representative, should conduct a thorough review of the squadron's assigned MCTs, TEEP, and relevant PTP orders.

AT-3103 1.5 365 B 2+ CH-46E A D

Goal. Conduct day assault transport mission utilizing a tactical scenario in a low, medium or high threat environment. The complexity and profile of the tactical scenario is at the discretion of the commanding officer. Additionally, the composition of the flight package can be any combination of two additional aircraft (see External Syllabus Support requirements).

Requirement

Discuss:
- Tactical planning, briefing, and execution.
- Use of onboard ASE during the mission.
- CRM during the ingress, objective area, and egress phases of the mission.
- Rules of engagement/weapon conditions as they apply to the mission.
- Use of onboard navigation systems.
- External load operation considerations.
- Escort considerations.
- Marine Air Command and Control System.
- Threat planning and considerations.
- Low versus medium altitude tactics.
- Tactical considerations of HIE.
- Objective area mechanics.
- Aerial gunnery and aviation fires.
- Large flight formation considerations.
- Fire support and airspace control measures.
- Contingency planning and execution.
- Execution checklist.
- Rapid response planning process.

Introduce:
- Tactical planning, briefing, execution, and use of precision navigation systems.
- Large flight formation.
- Large flight confined area landings.
- Escort tactics.

External load operations (if applicable)
Objective area mechanics.
Contingencies.
Command and control.
Ground/aviation fires integration.

Performance Standards. Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 30 seconds of briefed plan, land at intended point of landing within 100 feet, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate situational awareness of other aircraft through all phases of flight, flight leadership control, demonstrate proper understanding of C4I utilization to facilitate execution and information flow, demonstrate appropriate respect for threat from planning through execution, demonstrate understanding of aircraft maneuver with regard to threat response in concert with proper aerial gunnery employment (if applicable), demonstrate proper understanding of escort considerations, demonstrate proper understanding of secure and active communications, demonstrate understanding of FSCM utilization, demonstrate understanding of contingency considerations.

Prerequisites

| EVENT TYPE | T&R CODE / QUAL PREREQUISITES |
|---|---|
| ACADEMIC | ACAD-2000, ACAD-2001, ACAD-2002, ACAD-2007, ACAD-2018, ACAD-2019, ACAD-2020, ACAD-2021, ACAD-2023, ACAD-2024, ACAD-2026, ACAD-2028, ACAD-2029, ACAD-2030, ACAD-2031, ACAD-2039, ACAD-3005, ACPM-8310, ACPM-8311, ACPM-8340 |
| FLIGHT | FAM-2101, FAM-2102, CAL-2203, FORM-2301, TERF-2305, AG-2401, TAC-2501, GTR-2801 |
| QUALIFICATION | TERFQ |

Ordnance. Optional.

Range Requirements. Appropriate aerial gunnery range equipped with multiple scored static/moving targets, ranging from personnel to APC size.

External Syllabus Support. (2) RW Escorts or (2) additional Assault Support aircraft. Authorized TERF area, CAL site, (special use airspace with live fire range preferred). HST (as applicable), operable ASE, cargo hook/pendant (as applicable).

AT-3104 1.5 365 B,R 2+ ACFT A NS

Goal. Conduct night systems assault transport mission utilizing a tactical scenario in a low, medium or high threat environment. The complexity and profile of the tactical scenario is at the discretion of the commanding officer. Additionally, the composition of the flight package can be any combination of two additional aircraft (see External Syllabus Support requirements). AT-3104 may be performed in either HLL or LLL conditions.

Requirement

Discuss:
- Tactical planning, briefing, and execution.
- Use of onboard ASE during the mission.
- CRM during the ingress, objective area, and egress phases of the mission.
- Rules of engagement/weapon conditions as they apply to the mission.
- Use of onboard navigation systems.
- External load operation considerations.
- Escort considerations.
- Marine Air Command and Control System.
- Threat planning and considerations.
- Tactical considerations of HIE.
- Objective area mechanics.
- Aerial gunnery and aviation fires.
- Large flight formation considerations.
- Fire support and airspace control measures.
- Contingency planning and execution.
- Execution checklist.
- Rapid response planning process.

Introduce:
- Tactical planning, briefing, execution, and use of precision navigation systems.
- Large flight formation.
- Large flight confined area landings.
- Escort tactics.
- External load operations (if applicable)
- Objective area mechanics.
- Contingencies.
- Command and control.
- Ground/aviation fires integration.

Performance Standards. Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 30 seconds of briefed plan, land at intended point of landing within 100 feet, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate situational awareness of other aircraft through all phases of flight, flight leadership control, demonstrate proper understanding of C4I utilization to facilitate execution and information flow, demonstrate appropriate respect for threat from planning through execution, demonstrate understanding of aircraft maneuver with regard to threat response in concert with proper aerial gunnery employment (if applicable), demonstrate proper understanding of escort considerations, demonstrate proper understanding of secure and active communications, demonstrate understanding of FSCM utilization, demonstrate understanding of contingency considerations.

Prerequisites

| EVENT TYPE | T&R CODE / QUAL PREREQUISITES |
|---|---|
| ACADEMIC | ACAD-2000, ACAD-2001, ACAD-2002, ACAD-2007, ACAD-2018, ACAD-2019, ACAD-2020, ACAD-2021, ACAD-2023, ACAD-2024, ACAD-2026, ACAD-2028, ACAD-2029, ACAD-2030, ACAD-2031, ACAD-2039, ACAD-3001, ACAD-3005, ACPM-8320 THROUGH ACPM-8326 |
| FLIGHT | FAM-2101,FAM-2102,CAL-2203,FORM-2301,TERF-2305, AG-2405,TAC-2502,NS-2606(IF FLOWN IN HLL), NS-2655 (IF FLOWN IN LLL), GTR-2801 |
| QUALIFICATION | TERFQ, NSQ FOR THE APPROPRIATE LIGHT LEVEL |

Ordnance. Optional.

Range Requirements. Appropriate aerial gunnery range equipped with multiple scored static/moving targets, ranging from personnel to APC size.

External Syllabus Support. (2) RW Escorts or (2) additional Assault Support aircraft. Authorized TERF area, CAL site, (special use airspace with live fire range preferred). HST (as applicable), operable ASE, cargo hook/pendant (as applicable).

RIE-3105 1.5 365 B 2+ ACFT A D

Goal. Conduct a day raid utilizing a tactical scenario in a low, medium or high threat environment. Actual escort aircraft (FW or RW) should be used to the maximum extent possible. However, absence of escort assets should not prevent completion of the flight event. The complexity and profile of the tactical scenario is at the discretion of the commanding officer.

Requirement

Discuss:
- Tactical planning, briefing, and execution.
- Use of onboard ASE during the mission.
- CRM during the ingress, objective area, and egress phases of the mission.
- Rules of engagement as they apply to the mission.
- Use of onboard navigation systems.
- Escort considerations.
- Marine Air Command and Control System.
- Threat planning and considerations.
- Objective area mechanics.
- Aerial gunnery and aviation fires.
- Fire support and airspace control measures.
- Contingency planning and execution.
- Execution checklist.
- Rapid response planning process.

Introduce:

Tactical planning, briefing, execution, and use of precision navigation systems.
Escort tactics.
Objective area mechanics.
Contingencies.
Command and control.
Ground/aviation fires integration.

Performance Standards. Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 30 seconds of briefed plan, land at intended point of landing within 100 feet, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate situational awareness of other aircraft through all phases of flight, flight leadership control, demonstrate proper understanding of C4I utilization to facilitate execution and information flow, demonstrate appropriate respect for threat from planning through execution, demonstrate understanding of aircraft maneuver with regard to threat response in concert with proper aerial gunnery employment (if applicable), demonstrate proper understanding of escort considerations, demonstrate proper understanding of secure and active communications, demonstrate understanding of FSCM utilization, demonstrate understanding of contingency considerations.

Prerequisites

| EVENT TYPE | T&R CODE / QUAL PREREQUISITES |
|---|---|
| ACADEMIC | ACAD-2000, ACAD-2001, ACAD-2014, ACAD-2021, ACAD-2022 ACAD-2024, ACAD-2026, ACAD-2028, ACAD-2029 ACAD-2030, ACAD-2031, ACAD-2032, ACAD-3001 ACAD-3004, ACAD-3005, ACAD 3006, ACAD-4016 |
| FLIGHT | FAM-2101,FAM-2102,CAL-2203,FORM-2301,TERF-2305, AG-2401,TAC-2501,GTR-2801 |
| QUALIFICATION | TERFQ |

Ordnance. Optional.

Range Requirements. Authorized TERF area, CAL site, (special use airspace with live fire range preferred). Appropriate aerial gunnery range equipped with multiple scored static/moving targets, ranging from personnel to APC size.

External Syllabus Support. Escort aircraft. Ground combat element Marines.

RIE-3106 1.5 365 B,R 2+ ACFT A (NS)

Goal. Conduct a night systems raid utilizing a tactical scenario in a low, medium or high threat environment. Actual escort aircraft (FW or RW) should be used to the maximum extent possible. However, absence of escort assets should not prevent completion of the flight event. RIE-3106 may be flown in either

HLL or LLL conditions. The complexity and profile of the tactical scenario is at the discretion of the commanding officer.

Requirement

Discuss:
- Tactical planning, briefing, and execution.
- Use of onboard ASE during the mission.
- CRM during the ingress, objective area, and egress phases of the mission.
- Rules of engagement as they apply to the mission.
- Use of onboard navigation systems.
- Escort considerations.
- Marine Air Command and Control System.
- Threat planning and considerations.
- Objective area mechanics.
- Aerial gunnery and aviation fires.
- Fire support and airspace control measures.
- Contingency planning and execution.
- Execution checklist.
- Rapid response planning process.

Introduce:
- Tactical planning, briefing, execution, and use of precision navigation systems.
- Escort tactics.
- Objective area mechanics.
- Contingencies.
- Command and control.
- Ground/aviation fires integration.

Performance Standards. Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 30 seconds of briefed plan, land at intended point of landing within 100 feet, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate situational awareness of other aircraft through all phases of flight, flight leadership control, demonstrate proper understanding of C4I utilization to facilitate execution and information flow, demonstrate appropriate respect for threat from planning through execution, demonstrate understanding of aircraft maneuver with regard to threat response in concert with proper aerial gunnery employment (if applicable), demonstrate proper understanding of escort considerations, demonstrate proper understanding of secure and active communications, demonstrate understanding of FSCM utilization, demonstrate understanding of contingency considerations.

Prerequisites

| EVENT TYPE | T&R CODE / QUAL PREREQUISITES |
|---|---|
| ACADEMIC | ACAD-2000, ACAD-2001, ACAD-2005, ACAD-2014, ACAD-2021 ACAD-2022, ACAD-2024, ACAD-2025, ACAD-2026 ACAD-2028, ACAD-2029, ACAD-2030, ACAD-2031 ACAD-2032, ACAD-3001, ACAD-3004, ACAD-3005, ACAD 3006, ACAD-4016 |
| FLIGHT | FAM-2101,FAM-2102,FORM-2301,AG-2405,TAC-2502, NS-2606 (IF FLOWN IN HLL), NS-2655 (IF FLOWN IN LLL)GTR-2801 |
| QUALIFICATION | TERFQ, NSQ HLL (IF FLOWN IN HLL), NSQ (IF FLOWN IN LLL) |

Ordnance. Optional.

Range Requirements. Authorized TERF area, CAL site, (special use airspace with live fire range preferred). Appropriate aerial gunnery range equipped with multiple scored static/moving targets, ranging from personnel to APC size.

External Syllabus Support. Escort aircraft. Ground combat element Marines.

TRAP-3107 1.5 365 B,R 2+ CH-46 A (NS)

Goal. Conduct day or night systems air support mission for the tactical recovery of aircraft or personnel utilizing a tactical scenario in a low, medium or high threat environment. The complexity and profile of the tactical scenario is at the discretion of the commanding officer. If TRAP-3106 is performed at night, it can be accomplished in either HLL or LLL conditions.

Requirement

Discuss:
- Tactical planning, briefing, and execution.
- Use of onboard ASE during the mission.
- CRM during the ingress, objective area, and egress phases of the mission.
- Rules of engagement/weapon conditions as they apply to the mission.
- Use of onboard navigation systems.
- Personnel recovery and theater TRAP procedures.
- CSAR considerations and SPINS.
- Marine Air Command and Control System.
- Threat planning and considerations.
- Objective area mechanics.
- Fire support and airspace control measures.
- Rescue mission commander responsibilities.
- Rescue vehicle responsibilities.
- Authentication and encryption.
- Hoist and rescue operations.
- TRAP template.
- Airspace coordination considerations.
- Execution checklist.
- Rapid response planning process.

Introduce:
- Tactical planning, briefing, execution, and use of precision navigation systems.
- Command and control.
- TRAP procedures.
- Rescue operations.
- Authentication and encryption.
- Escort considerations.
- Objective area mechanics.

Performance Standards. Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 30 seconds of briefed plan, land at intended point of landing within 100 feet, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate SA of other aircraft through all phases of flight, flight leadership control, demonstrate proper understanding of NS considerations with multiple aircraft aerial gunnery, demonstrate proper understanding of C4I utilization to facilitate execution and information flow, demonstrate appropriate respect for threat from planning through execution, demonstrate understanding of aircraft maneuver with regard to threat response in concert with proper aerial gunnery employment, demonstrate proper understanding of escort considerations, demonstrate proper understanding of secure and active communications, demonstrate understanding of FSCM utilization, demonstrate understanding of contingency operations.

Prerequisites

| EVENT TYPE | T&R CODE / QUAL PREREQUISITES |
|---|---|
| ACADEMIC | ACAD-2000, ACAD-2001, ACAD-2025, ACAD-2030, ACAD-3000, ACAD-3005 |
| FLIGHT | FAM-2101,FAM-2102,CAL-2203,FORM-2301,TERF-2305, TAC-2501,TAC-2502(IF FLOWN AT NIGHT), NS-2606(IF FLOWN IN HLL), NS-2655 (IF FLOWN IN LLL),GTR-2801 |
| QUAL | TERFQ, NSQ FOR THE APPRORIATE LIGHT LEVEL |

Ordnance. Optional.

Range Requirements. Appropriate aerial gunnery range equipped with multiple scored static/moving targets, ranging from personnel to APC size.

External Syllabus Support. Authorized TERF area, CAL site, (special use airspace with live fire range preferred).

AE-3108 1.5 365 B,R 2+ ACFT A (NS)

Goal. Conduct day or night systems air evacuation mission utilizing a tactical scenario in a low, medium or high threat environment. The complexity and profile of the tactical scenario is at the discretion of the commanding officer. The intent of this Mission Skill is to assess the squadron's capability to conduct a casualty evacuation or non-combatant evacuation

mission. Therefore, the tactical scenario used should account for either or both profiles. If AE-3107 is performed at night, it can be accomplished in either HLL or LLL conditions.

Requirement

Discuss:
- Tactical planning, briefing, and execution.
- Use of onboard ASE during the mission.
- CRM during the ingress, objective area, and egress phases of the mission.
- Rules of engagement/weapon conditons as they apply to the mission.
- Collateral damage.
- Permissive, restrictive and non-permissive operating environments.
- F-77 reports.
- Evacuation control center.
- Historical case studies of non-combatant evacuation operations.
- CASEVAC versus MEDEVAC.
- Aircraft configuration considerations for CASEVAC.
- Use of onboard navigation systems.
- Threat planning and considerations.
- Objective area mechanics.
- Fire support and airspace control measures.
- Execution checklist.
- Rapid response planning process.

Introduce:
- Tactical planning, briefing, execution, and use of precision navigation systems.
- Command and control.
- CASEVAC.
- Non-combatant evacuation operations.
- Escort considerations.
- Objective area mechanics.

Performance Standards. Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 30 seconds of briefed plan, land at intended point of landing within 100 feet, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate SA of other aircraft through all phases of flight, flight leadership control, demonstrate proper understanding of C4I utilization to facilitate execution and information flow, demonstrate appropriate respect for threat from planning through execution, demonstrate understanding of aircraft maneuver with regard to threat response in concert with proper aerial gunnery employment, demonstrate proper understanding of escort considerations, demonstrate proper understanding of secure and active communications, demonstrate understanding of FSCM utilization, demonstrate understanding of contingency operations.

Prerequisites

| EVENT TYPE | T&R CODE / QUAL PREREQUISITES |
|---|---|
| ACADEMIC | ACAD-2007, ACAD-2014, ACAD-2021, ACAD-2022, ACAD-2024, ACAD-2028, ACAD-2029, ACAD-2031, ACAD-3002, ACAD-3003, ACAD-3005 |
| FLIGHT | FAM-2101,FAM-2102,CAL-2203,FORM-2301,TERF-2305, TAC-2501, TAC-2502(IF FLOWN AT NIGHT), NS-2606(IF FLOWN IN HLL), NS-2655 (IF FLOWN IN LLL), GTR-2801 |
| QUAL | TERFQ, NSQ FOR THE APPROPRIATE LIGHT LEVEL |

Ordnance. Optional.

Range Requirements. Appropriate aerial gunnery range equipped with multiple scored static/moving targets, ranging from personnel to APC size.

External Syllabus Support. Authorized TERF area, CAL site, (special use airspace with live fire range preferred).

## 2.15 CORE PLUS SKILL PHASE (4000)

2.15.1 Purpose. To introduce and develop proficiency in the execution of the Core Plus skills required for advanced, theater specific, mission dependent or environmentally dependent requirements for an HMM. This phase encompasses a combination of academic and flight events to train that individual pilot to the level required to conduct the assigned flight and/or Mission Skills.

2.15.2 General

2.15.2.1 Squadron commanding officers shall give due consideration to the scheduling of experienced Helicopter Aircraft Commanders (HACs) who instruct Core Plus phase flight events.

2.15.2.2 Within the Core Plus Skill Phase (4000) there are (9) stages. These stages are as follows:

| STAGE | NAME |
|---|---|
| 1 | Mountainous Area Training (MAT) |
| 2 | Confined Area Landings (CAL) |
| 3 | Chemical, Biological, Radiological, Nuclear (CBRN) |
| 4 | External Cargo Operations (EXT) |
| 5 | Ground Threat Reaction (GTR) |
| 6 | Tactics (TAC) |
| 7 | Alternate Insertion/Extraction (AIE) |
| 8 | Defensive Measures (DM) |
| 9 | Carrier Qualification (CQ) |

2.15.2.3 Minimum Crew Requirement. Crew composition (P = Pilot, CP = Co-Pilot, CC = Crew Chief, AGO = Aerial Gunner/Observer) for the Core Plus skill phase will be delineated within each stage of training.

2.15.2.4 Ground/Academic Training. Prior to commencement of each stage within the Core Plus skill phase the required academic syllabus shall be completed in accordance with this manual and the MAWTS-1 CH-46E Course Catalog. The required academic classes will be logged and tracked in M-SHARP.

2.15.2.5 Core Plus Skill Event Requirements. In addition to all requirements and performance standards listed for each Core Plus skill event, each initial and refresher PUI shall be evaluated on the following:

a. Preparation:

(1) Load computation.

(2) Map preparation.

(3) Participation in flight/mission planning.

(4) Mission products.

(5) Time management.

(6) Teamwork and initiative.

b. Execution:

(1) Professionalism.

(2) Airwork.

(3) Crew Resource Management (CRM).

(4) NATOPS adherence.

(5) SOP's/Orders adherence.

## 2.16 CORE PLUS SKILL STAGES (4000)

### 2.16.1 Mountain Area Training (MAT)

2.16.1.1 Purpose. To develop proficiency in mountainous terrain operations.

2.16.1.2 General

a. Conduct training in mountainous terrain that emphasizes the unique challenges in a high altitude environment. This would include weather, wind, altitude, and slope/pinnacle landings.

b. CRM as applicable to MAT operations.

2.16.1.3 Minimum Crew Requirement. P/CP/CC/AGO.

2.16.1.4 Ground Training. The MAWTS-1 CH-46E Course Catalog contains the required readings, chalk talks, and lectures which shall be completed prior to starting the (MAT) stage.

2.16.1.5 Prerequisites

| EVENT TYPE | T&R CODE / DESIGNATION PREREQUISITES |
|---|---|
| ACADEMIC | NONE |
| FLIGHT | CAL-2202 |
| DESIGNATION | H2P |

SMAT-4200 2.0 B 1 CH-46E WST S D

Goal. Conduct single ship and section day and NS operations in mountainous terrain.

Requirement

Discuss:
- CRM in MAT.
- Emergencies in mountainous terrain.
- Wind and weather effects.
- High altitude operations.
- Sloped landings.
- Pinnacle landings.
- Mainmount landings.
- Use of taxi/forward cyclic trim position.
- Use of parking brake.

Introduce:
- Mountainous area operations.
- Pinnacle landings.
- Sloped landings.
- Mainmount landings.
- Landings and operations in valleys and canyons.
- Crosswind landings.
- Max gross operations.
- Waveoff.
- Use of taxi/forward cyclic trim position.
- Use of the parking brake.

Review: SCAL-2200.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 25 feet of intended point of landing, maintain aircraft control and use proper control inputs at landing point, account and appropriately compensate for wind/turbulence effects, demonstrate proper understanding of mountainous terrain and environmental considerations, demonstrate proper use of cyclic trim in landing phase, effective CRM, proper use of parking brake during landings and execute confined channelizing terrain as appropriate based on zone/landing conditions.

Prerequisite. SCAL-2200.

External Syllabus Support. Area that supports MAT.

MAT-4201 1.5 365 B,R 1 CH-46E A D

Goal. Conduct single ship day operations in mountainous terrain.

Requirement

Discuss:
- CRM in MAT.
- Emergencies in mountainous terrain.
- Wind and weather effects.
- High altitude operations.
- Slope landings.
- Pinnacle landings.
- Mainmount landings.
- Use of taxi/forward cyclic trim position.
- Use of parking brake.

Introduce:
- Mountainous area operations.
- Pinnacle landings.
- Slope landings.
- Landings and operations in valleys and canyons.
- Crosswind landings.
- Mainmount landings.
- Use of taxi/forward cyclic trim position.
- Use of the parking brake.

Review: CAL-2201 and SMAT-4200.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 25 feet of intended point of landing, account and appropriately compensate for wind/turbulence effects, demonstrate proper understanding of mountainous terrain and environmental considerations, demonstrate proper use of cyclic trim in landing phase, effective use of CRM, proper use of parking brake during landings and execute confined channelizing terrain as appropriate based on zone/landing conditions. Successful completion of MAT-4201 requires the PUI to complete a minimum of five landings.

Prerequisite. CAL-2201.

External Syllabus Support. Area that supports MAT.

MAT-4203 1.5 365 B,R 2 CH-46E A D

Goal. Introduce section aircraft day operations in mountainous terrain.

Requirement

Discuss:
- Section maneuvering during mountain area operations.
- CAL site selection in mountain areas.
- CAL techniques in mountain areas.

Introduce:
Section operations in mountainous terrain.
Section CALs in mountainous terrain.

Review: CAL-2202 and MAT-4201.

Performance Standards. Pilots shall maintain SA of wingman requirements, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 25 feet of intended point of landing, demonstrate proper understanding of mountainous terrain and environmental considerations, demonstrate proper use of cyclic trim in landing phase and effective CRM. Successful completion of MAT-4203 requires the PUI to complete a minimum of three landings in the lead position and three landings as dash two.

Prerequisite. CAL-2202 and MAT-4201.

External Syllabus Support. Operating area that supports MAT.

MAT-4204 1.5 365 B,R 1 CH-46E A NS

Goal. Introduce single ship NS operations in mountainous terrain.

Requirement

Discuss:
CRM during mountainous terrain NS operations.
Visual illusions on NS in mountainous terrain.

Introduce:
NS mountainous terrain operations.
NS CALs in mountainous areas.

Review: NS-2601.

Performance Standards. Pilots shall maintain effective NS scan, utilize solid instrument scan, recognize proper closure with intended point of landing, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on zone, land within 25 feet of intended point of landing, demonstrate proper understanding of mountainous terrain and environmental considerations, proper use of cyclic trim in landing phase and effective CRM. Successful completion of MAT-4204 requires the PUI to complete a minimum of five landings.

Prerequisites. MAT-4201 and NSQ for the appropriate light level, NS-2606 HLL, NS-2655 LLL.

External Syllabus Support. Operating area that supports MAT.

2.16.2 Confined Area Landings (CAL)

2.16.2.1 Purpose. To develop proficiency in takeoffs and landings in a confined area.

2.16.2.2 General. Pilots will find maneuver descriptions in the NATOPS Flight Manual. Pilots shall discuss CRM as applicable to each event.

2.16.2.3 Minimum Crew Requirements. P/CP/CC/AGO.

2.16.2.4 Ground Training. The MAWTS-1 CH-46E Course Catalog contains the required readings chalk talks and lectures which shall be completed prior to starting the (CAL) stage. The following matrix will be used to track academic and administrative training:

2.16.2.5 Prerequisites

| EVENT TYPE | T&R CODE / DESIGNATION PREREQUISITES |
|---|---|
| ACADEMIC | NONE |
| FLIGHT | FAM-2101, FAM-2102, CAL-2201 |
| DESIGNATION | H2P |

CAL-4202 1.5 365 R 1 CH-46E A N*

Goal. Introduce night unaided CALs.

Requirement

Discuss/Introduce:
- CRM during unaided CALs.
- Crew comfort level during unaided CAL operations.
- Unaided considerations.
- Night CAL takeoffs, approaches, and landings to various unlighted CAL zones.
- Use of landing and searchlights.
- LZ brief/evaluation.
- Far and near Initial Terminal Guidance (ITG).

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure rate to landing point, remain oriented in zone, demonstrate power management, maintain safe obstacle clearance, and land within 100 feet of intended point of landing. Successful completion of CAL-4202 requires the PUI to complete a minimum of five landings.

Prerequisite. FAM-2101, CAL-2201.

Range Requirements. Landing zones.

SAWT-4208 2.0 B 1 CH-46E WST S (N)

Goal. Introduce day or night helicopter operations in an arctic weather environment; flying in a snowy/icy, cold temperature, high density altitude arctic environment.

Requirement

Discuss:
- Cold dry conditions.
- Blowing snow/white-out conditions.
- Icing/aircraft anti-ice.
- Aircraft cold weather limitations.
- High density altitude.
- Cold temperature engine start and rotor engagement considerations.
- Aircraft pre-heating operations.

Introduce:
- Snow landing techniques.

Review: NATOPS Chapter 13.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 100 feet of intended point of landing, demonstrate ability to perform no-hover landings. Recognize and control closure and descent rates and perform vertical landing and takeoff.

Prerequisite. SCAL-2200.

AWT-4209 1.5 365 B,R 1 CH-46E A (N)

Goal. Introduce day or night helicopter operations in a cold weather environment.

Requirement

Discuss:
- Cold dry conditions.
- Blowing snow.
- White-out conditions.
- Aircraft cold weather limitations.
- Aircraft anti-ice.
- Icing.
- Aircraft pre-heating operations.
- Cold temperature engine start and rotor engagement considerations.

Introduce: Snow landing techniques.

Review: NATOPS Chapter 13.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established

pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 100 feet of intended point of landing and demonstrate the ability to perform no-hover landings. Successful completion of AWT-4209 requires the PUI to complete a minimum of five landings.

Prerequisite. CAL-2201.

External Syllabus Support. Snow on the ground in the landing zone.

SDES-4210 2.0 B 1 CH-46E WST S (N)

Goal. Introduce day or night helicopter operations in a desert environment.

Requirement

Discuss:
- High density altitude.
- Blowing sand.
- Brown-out conditions.
- Aircraft hot weather performance limitations.
- Desert landing techniques.
- Waveoffs in brown-out conditions.

Introduce: Desert landing techniques.

Review: NATOPS Chapter 13.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 100 feet of intended point of landing, demonstrate ability to perform no-hover landings. Recognize and control closure and descent rates and perform vertical landing and takeoff.

Prerequisite. SCAL-2200.

DES-4211 1.5 365 B,R 1 CH-46E A (N)

Goal. Introduce day or night helicopter operations in a desert environment.

Requirement

Discuss:
- High density altitude.
- Blowing sand.
- Brown-out conditions.
- Aircraft hot weather performance limitations.
- Desert landing techniques.
- Waveoffs in brown-out conditions.

Introduce: Desert landing techniques.

Review: NATOPS Chapter 13.

Performance Standards. Pilots shall fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, fly a shallow powered-on approach, recognize closure to landing point, remain oriented on zone, land within 100 feet of intended point of landing and demonstrate the ability to perform no-hover landings. Successful completion of DES-4211 requires the PUI to complete a minimum of five landings.

Prerequisites. CAL-2201.

External Syllabus Support. Desert environment.

2.16.3 Chemical, Biological, Radiological and Nuclear (CBRN)

2.16.3.1 Purpose. To develop proficiency with the NAVAIR approved CBRN mask protective assembly during normal and tactical flight operations to include while wearing NS.

2.16.3.2 General

a. When the event is conducted in the simulator both pilots should be masked. For the safe execution of initial CBRN flights, 1 pilot and 1 aircrewman shall remain unmasked when conducted in the aircraft. On subsequent flights all aircrew may remain masked. When using the NAVAIR approved CBRN mask during NS training flights, 1 pilot and 1 aircrewman shall remain unmasked due to the restricted field of view when using NS with the NAVAIR approved CBRN mask.

b. Initial CBRN-4207 training flight will be flown in HLL conditions. Proficiency flights may be flown in LLL.

c. NSI required for all initial NS instructional flights.

d. Aircrew shall be NSQ for the appropriate light level for proficiency flights.

2.16.3.3 Minimum Crew Requirements. P/CP/CC/AGO.

2.16.3.4 Ground Training. The MAWTS-1 CH-46E Course Catalog contains the required readings, chalk talks, and lectures which shall be completed prior to starting the (CBRN) stage.

2.16.3.5 Prerequisites

| EVENT TYPE | T&R CODE / DESIGNATION PREREQUISITES |
|---|---|
| ACADEMIC | NONE |
| FLIGHT | SCAL-2200, CAL-2201 |
| DESIGNATION | H2P |

SCBRN-4205 2.0 B 1 CH-46E WST S (NS)

Goal. Develop flight skills in a simulated CBRN environment.

Conduct NS flight operations in a simulated CBRN environment.

Requirement

Discuss:
- Aircrew protective ensemble.
- Nuclear effects to aircraft and aircrew.
- Chemical and Biological agents, their effects and aircrew protective measures.
- Decontamination considerations.
- CRM in an CBRN environment, to include emergency procedures.
- Operational capabilities and limitations of protective masks.
- Physiological limitations and fatigue factors imposed by CBRN protective equipment.
- Heliborne operations in a CBRN environment.
- NS operations in a CBRN environment.
- NS failures.
- Operational capabilities, limitations and compatibility of the NAVAIR approved CBRN mask and NS.
- Emergency egress and ditching considerations.

Demonstrate:
- Donning, adjustments, and doffing of the NAVAIR approved CBRN mask.
- Donning, adjustments and doffing of the NAVAIR approved CBRN mask with NS (as applicable).

Introduce:
- Ground operations.
- Airfield pattern operations.
- CALs.

Performance Standards. Pilots shall demonstrate ability to perform all ground operations with NAVAIR approved CBRN mask, demonstrate ability to safely perform flight maneuvers with NAVAIR approved CBRN mask, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on landing zone, land within 100 feet of intended point of landing, maintain effective NS scan, and utilize solid instrument scan.

Prerequisite. SCAL-2200.

CBRN-4206 1.0 365 B,R 1 CH-46E A D

Goal. Conduct day normal flight operations in a simulated CBRN environment.

Requirement

Discuss:
- Aircrew protective ensemble.
- Nuclear effects to aircraft and aircrew.
- Chemical and Biological agents, their effects and aircrew protective measures.
- Decontamination considerations.

CRM in an CBRN environment to include emergency procedures.
Operation capabilities and limitations of protective masks.
Physiological limitations and fatigue factors imposed by CBRN protective equipment.
Heliborne operations in a CBRN environment.

Demonstrate: Donning, adjustments and doffing of the NAVAIR approved CBRN mask.

Introduce: (with NAVAIR approved CBRN mask donned)
Ground operations.
Airfield pattern operations.
CALs.

Performance Standards. Pilots shall demonstrate ability to perform all ground operations with NAVAIR approved CBRN mask, ability to safely perform flight maneuvers with NAVAIR approved CBRN mask, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on landing zone, and land within 100 feet of intended point of landing. Successful completion of CBRN-4206 requires the PUI to complete a minimum of five landings.

Prerequisites. CAL-2201 and SCBRN-4205.

External Syllabus Support. CAL zone.

CBRN-4207 1.0 365 B,R 1 CH-46E A NS

Goal. Conduct NS flight operations in a simulated CBRN environment.

Requirement

Discuss:
Heliborne operations at night in a CBRN environment.
NVG Malfunctions/Failures.
Operational capabilities, limitations and compatibility of the NAVAIR approved CBRN mask and NS.
CRM in a CBRN environment to include emergency procedures.

Demonstrate: Donning, adjustments, and doffing of the NAVAIR approved CBRN mask with NS.

Introduce: (with NAVAIR approved CBRN mask and NS donned)
Ground operations.
Airfield pattern operations.
CALs.

Performance Standards. Pilot shall maintain effective NS scan, utilize solid instrument scan, demonstrate ability to safely perform flight maneuvers with NAVAIR approved CBRN mask, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on landing zone and land within 100 feet of intended point of landing. Successful completion of

CBRN-4207 requires the PUI to complete a minimum of five landings.

Prerequisites. CBRN-4206 and NSQ for the appropriate light level, NS-2606 HLL, NS-2655 LLL.

External Syllabus Support. NS compatible CAL zone.

2.16.4 External Cargo Operations (EXT)

2.16.4.1 Purpose. To conduct TERF external cargo operations.

2.16.4.2 General

a. CRM applicable to external cargo operations.

b. TERFI required for initial EXT-4301.

c. Fire Bucket training may be conducted in conjunction with TERF Externals. See local and command SOP for specific Fire Bucket training requirements.

2.16.4.3 Minimum Crew Requirements. P/CP/CC/AGO.

2.16.4.4 Ground/Academic Training. The MAWTS-1 CH-46E Course Catalog contains the required readings, chalk talks, and lectures which shall be completed prior to starting the (EXT) stage.

2.16.4.5 Prerequisites

| EVENT TYPE | T&R CODE / QUAL PREREQUISITES |
|---|---|
| ACADEMIC | NONE |
| FLIGHT | TERF-2304, EXT-2701, SEXT-2702 |
| QUALIFICATION | H2P |

EXT-4301 1.5 365 B,R 1 CH-46E A D

Goal. Conduct TERF external cargo operations to a confined area. Fire Bucket training may be conducted in conjunction with this flight event.

Requirement

Discuss:
CRM during TERF external evolutions.
Tactical considerations during TERF external operations.
Load aerodynamics and characteristics in the TERF environment.
Load clearance considerations in the TERF environment.
Airspeed, altitude and maneuvering limitations during TERF external operations.
Tactical crew coordination.
Weight and power/ambient conditions.
Emergency procedures within external load in the TERF environment.

Additional Discuss Items (for Fire Bucket Training):
- Local and Command SOP's for firefighting.
- Weight and power/ambient conditions.
- Fire behavior/geometry/wind effects.
- Reduced visibility conditions and smoky environments.
- Operations in high DA and mountainous regions.
- Incident Command System (as applicable).
- Coordination with external agencies.
- Crew Coordination.
- Fire Bucket system operation and troubleshooting.
- Bucket filling procedures.
- Water drop techniques and procedures.
- High-density traffic areas.
- Emergency procedures for fire bucket and external operations.
- Jettisoning of loaded fire bucket.

Introduce: External load operations to a confined area in a TERF environment.

Additional Introduction Items (for Fire Bucket Training):
- Dipping operations utilizing Fire Bucket system.
- Intra-flight communications (as applicable).
- Precision delivery of water on a target area.

Review: SEXT-2702.

Performance Standards. Pilots shall properly respond to crew positioning calls, place load within 15 feet of intended point, recognize closure/ descent rates, fly route within TERF profiles and 10 kts of briefed altitude and airspeed, utilize proper CRM, maintain SA of obstacle clearance, demonstrate ability to hold extended hover, demonstrate understanding of load computation and HIGE/ HOGE requirements, remain oriented on route within 200 meters, ensure effective CRM for navigation and obstacle clearance, demonstrate aircraft control in all phases of TERF regime, demonstrate effective cockpit management for precision navigation, utilize proper terminology and voice commands. If conducting fire bucket operations water shall be dropped within 10 feet of intended point of drop. If utilizing the fire bucket system, successful completion of EXT-4301 requires a minimum of five fillups/water drops.

Prerequisite. EXT-2701, SEXT-2702, and TERF-2304.

External Syllabus Support. Load (1,000-4,000 pounds preferred), appropriate fire bucket equipment, HST, authorized TERF route.

2.16.5 Ground Threat Reaction (GTR)

2.16.5.1 Purpose. To introduce and develop proficiency in using Aircraft Survivability Equipment (ASE), tactics, and on-board defensive weapon systems to evade radar ground-to-air threats.

2.16.5.2 General

a. Conduct GTR-4401 against threat emitters (e.g. SA-8, ZSU 23-4, etc.) and use ground based threat simulation.

b. Refer to the ANTTP series publications for ASE operating procedures. Refer to GTR Program Guide for GTR training standards.

c. .50 cal machine guns shall be mounted for GTR-4401. M240 Ramp Mounted Weapon System (RMWS) may also be employed.

d. Minimum altitude for GTR flights is 50 feet.

e. Enlisted Aircrew instructors shall not have lookout duties during initial training events.

f. All initial flights shall be conducted during the daytime and require a GTR-proficient WTI or DMI.

g. All event participants shall attend the academic training and flight brief. A walkthrough should be conducted.

h. Prerequisites

(1) TERF qualified (STERF-2302 for SGTR-2800).

(2) FORM-2301.

(3) When conducted at night, all aircrew shall be NSQ (for the appropriate light level).

2.16.5.3 Minimum Crew Requirements. P/CP/CC/AGO.

2.16.5.4 Ground Training. The MAWTS-1 CH-46E Course Catalog contains the required readings, chalk talks, and lectures which shall be completed prior to starting the (GTR) stage. Additional ground training should consist of:

a. Current theater specific ROE training from a Staff Judge Advocate.

b. Enemy situation to include threat systems and related tactics.

2.16.5.5 Prerequisites

| EVENT TYPE | T&R CODE / DESIGNATION PREREQUISITES |
|---|---|
| ACADEMIC | ACAD-2002, ACAD-2010, ACAD-2013<br>ACAD-2014, ACAD-2015, ACAD-2016, ACAD-2017<br>ACAD-2018, ACAD-2019, ACAD-2020, ACAD-2021<br>ACAD-3004, ACAD-4014, ACAD-4015, ACAD-2032 |
| FLIGHT | FORM-2301, SGTR-2800 |
| DESIGNATION | H2P |

GTR-4401 1.5 365 B,R 2 CH-46E A (NS)

Goal. Introduce ground threat reactions in a radar environment.

Requirement

Discuss:
CRM/crew comfort level.
Five axioms of survival.
Intra/ inter-plane communication.
ASE considerations (emphasis on APR-39).
RADAR resolution cell.
Use of terrain masking, background clutter, maneuver and chaff to defeat threat radar systems.
Tactical expendables.
Various threat signatures with emphasis on threat recognition.
Tactical employment of .50 cal weapon systems/RFW against ground threats.
Aerial gunnery, POO, ROE, PID, and engagement criteria.
Tactical formation maneuvering.

Introduce:
GTR against RADAR threat systems emphasizing use of all onboard ASE and defensive weapon systems.
Threat avoidance maneuvers and tactics to counter threat systems.
Appropriate evasive maneuvers when engaged by a ground based threat in a radar environment.

Review: FORM-2301 and SGTR-2800.

Performance Standards. All aircrew shall demonstrate proper operation of ASE, understanding and interpretation of APR indications, ability to break lock when tracked, effective maneuvering in response to threat, and proper ASE employment with regard to threat.

Prerequisite. FORM-2301 and SGTR-2800.

Ordnance. 80 chaff, 40 flares, 2 x .50 cal weapon systems, (RMWS optional).

Range Requirements. EW range with functional EW emitter and threat simulation devices (e.g. SA-8, ZSU 23-4, smoke grenades or pyrotechnics, etc.) with sufficient range space to employ and maneuver at least a section of aircraft.

2.16.6 Tactics (High Threat Environment) (TAC)

2.16.6.1 Purpose. To develop proficiency in tactical planning, briefing and execution of assault support operations in the following mission areas in a high threat environment.

a. Aviation Operations From Expeditionary Sea-Based Sites (MCT 1.3.3.3.1).

b. Aviation Operations From Expeditionary Shore-Based Sites (MCT 1.3.3.3.2).

c. Combat Assault Transport (MCT 1.3.4.1).

d. Air Delivery (MCT 4.3.4).

e. Aviation Support of Tactical Recovery of Aircraft and Personnel (TRAP) (MCT 6.2.2.1).

f. Air Evacuation (MCT 6.2.2).

2.16.6.2 General

a. Utilizing a high threat scenario, the PUI should assist in planning and briefing the mission. The AMC/flight leader should delegate planning and briefing responsibilities to PUIs.

b. Squadron ordnance shall mount .50 caliber machine guns for all tactical flights. Consideration should be given to utilizing the Ramp Mounted Weapon System (RMWS).

2.16.6.3 Minimum Crew Requirement

a. STAC-4500, TAC-4501/4502. A flight leader should instruct PUI.

b. P/CP/CC/AGO.

2.16.6.4 Ground Training. The MAWTS-1 CH-46E Course Catalog contains the required readings, chalk talks, and lectures which shall be completed prior to starting the (TAC) stage.

2.16.6.5 Prerequisites

| EVENT TYPE | T&R CODE / QUAL PREREQUISITES |
|---|---|
| ACADEMIC | ACAD-2008, ACAD-2009, ACAD-2010, ACAD-2015 ACAD-2016, ACAD-2017, ACAD-2018, ACAD-2019, ACAD-2020, ACAD-2032, ACAD-4002 ACAD-4003, ACAD-4004, ACAD-4007, ACAD-4008 ACAD-4014, ACAD-4015 |
| FLIGHT | TAC-2502, AG-2401, AG-2405, GTR-4401 |
| QUALIFICATION | TERFQ, NSQ HLL/LLL |

STAC-4500 2.0 B 1 CH-46E WST S (N)

Goal. Conduct a day or NS assault support mission in a high threat environment; incorporate AG and GTR concepts and skills.

Requirement

Discuss:
CRM/crew comfort level.
ASE operations and secure/active comms capability.
CBRN considerations.
Planning based on METT-TSL.

Aerial gunnery procedures.
NS considerations if flown at night.
TERF considerations.

PUI will plan and execute an assault support mission from a mission statement in a high threat environment. The PUI will fly the mission at TERF altitudes. Use escort aircraft (fixed-wing and/or helicopter) if available. Use aggressor aircraft if available. Incorporate the firing of onboard weapon systems.

Review:
ASE and secure voice.
Navigation, timing, formation, defensive weaponry, communication discipline, authentication procedures, escort utilization, and weapons control procedures.

Review: STAC-2502.

Performance Standards. Pilots shall perform per the ANTTP series publications as appropriate. Reference appropriate mission task within HMM and MEU(SOC) MPS (these standards are located on USMC doctrinal web page), remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 30 seconds of briefed plan, land at intended point of landing within 100 feet, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate SA through all phases of flight of other aircraft within flight, flight leadership control, demonstrate proper understanding of C4I utilization to facilitate execution and information flow, demonstrate appropriate respect for threat from planning through execution, demonstrate understanding of aircraft maneuver WRT threat response in concert with proper aerial gunnery employment, demonstrate proper understanding of escort considerations, proper understanding of secure and active communications, demonstrate proper understanding of NS considerations with multiple aircraft aerial gunnery, understanding of FSCM utilization, demonstrate understanding of contingency considerations.

Prerequisites. STAC-2502.

External Syllabus Support. FMC WST/APT/TEN/ASE/Systems.

TAC-4501 1.5 365 B 2+ ACFT A D

Goal. Conduct a day assault support mission in a high threat environment; incorporate, TERF, AG and GTR concepts and skills.

Requirement

Discuss:
CRM/crew comfort level.
ASE operations and secure voice capability.
CBRN considerations.
Planning based on METT.
Aerial gunnery procedures.
TERF considerations.

PUI will assist in planning and execute an assault support mission from a mission statement in a high threat environment. The PUI will fly the mission at TERF altitudes. Use escort aircraft (fixed-wing and/or helicopter) if available. Use aggressor aircraft if available. Incorporate the firing of onboard weapon systems.

Review:
ASE and secure/active comms.
Navigation, timing, formation, defensive weaponry, communication discipline, authentication procedures, escort utilization, and weapons control procedures.

Review: TAC-2501.

Performance Standards. Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 1 minute of briefed plan, land at intended point of landing within 100 feet, demonstrate proper employment of ASE, demonstrate proper use of tactical formations and SA through all phases of flight of other aircraft within flight, flight leadership control, demonstrate appropriate respect for threat from planning through execution, understanding of aircraft maneuver WRT threat response in concert with proper aerial gunnery employment, demonstrate proper understanding of event-driven versus time-driven mission execution, proper understanding of C4I utilization to facilitate execution and information flow, demonstrate proper understanding of escort considerations, proper understanding of secure and active communications, laser employment, proper understanding of contingency requirements, understanding of FSCM utilization and contingency considerations and demonstrate proper FARP/FOB procedures.

Prerequisites. AG-2401, TAC-2501, GTR-2801, GTR-4401, and STAC-4500.

Ordnance. 40 chaff and 80 flares, 500 rounds .50 cal and/or 7.63 if conducting aerial gunnery.

Range Requirements. TERF area, CAL site, (special use airspace with live fire and ground emitter capable range preferred).

Appropriate aerial gunnery range equipped with multiple scored static/moving targets, ranging from personnel to APC size.

External Syllabus Support. (As available), FW/RW escort/CAS assets, FW/RW adversaries.

TAC-4502 1.5 365 B,R 2+ ACFT A (NS)

Goal. Conduct an NS assault support mission in a high threat environment.

Requirement

In addition to the TAC-4501 discussion items, discuss NVG operational considerations.

Execute a NS mission similar to TAC-4501. The PUI will fly the mission at TERF altitudes.

Emphasize navigation, timing, formation, communication discipline, authentication procedures, escort utilization, and weapons control procedures.

Performance Standards. Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 1 minute of briefed plan, land at intended point of landing within 100 feet, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate SA through all phases of flight of other aircraft within flight, flight leadership control, demonstrate appropriate respect for threat from planning through execution, understanding of aircraft maneuver WRT threat response in concert with proper aerial gunnery employment, demonstrate proper understanding of event-driven versus time-driven mission execution, proper understanding of C4I utilization to facilitate execution and information flow, proper understanding of escort considerations, proper understanding of secure and active communications, demonstrate proper understanding of NS considerations with multiple aircraft aerial gunnery, proper understanding of laser employment and contingency requirements, demonstrate understanding of FSCM utilization, contingency considerations and proper FARP/FOB procedures.

Prerequisites. AG-2405, TAC-2502, STAC-4500, TAC-4501 and NSQ for appropriate light level.

Ordnance. 40 chaff and 80 flares, 500 rounds .50 cal and/or 7.62 if conducting aerial gunnery.

Range Requirements. TERF area, CAL site, (special use airspace with live fire and ground emitter capable range preferred). Appropriate aerial gunnery range equipped with multiple scored static/moving targets, ranging from personnel to APC size.

External Syllabus Support. (As available) FW/RW escort/CAS assets, FW/RW adversaries, C4I integration.

2.16.7 Alternate Insertion/Extraction Techniques (AIE)

2.16.7.1 Purpose. To conduct and develop proficiency in AIE procedures.

2.16.7.2 General

a. Pilot, copilot, crew chief, aerial gunner/observer, HRST Master, and HRST Safety Observer shall brief together prior to commencing fastrope, rappelling, and SPIE.

b. The Jump Master is responsible for the safe and proper rigging of the aircraft for conduct of Aerial Delivery (paraops and cargo drops). The HRST/Cast Master is responsible for the safe and proper rigging of the aircraft for conduct of HIE operations. Pilots shall preflight aircraft rigging.

c. ICS cranials and gunner's belts are required for HRST Master/Cast Master/Jump Master.

d. All initial/refresher events should be conducted as a day evolution. An NSI is required for initial/refresher night evolutions.

e. BIP required for initial HIE-4701, 4702, 4703, and 4704.

f. AIE-4703 hoist operations in training shall not use live personnel. Night over water hoist operations in a SAR capacity are not authorized unless the aircraft is equipped with an operable Doppler system.

2.16.7.3 Minimum Crew Requirements

a. AIE-4701/4702/4703/4704(day). P/CP/CC.

b. AIE-4701/4702/4703/4704(NS). P/CP/CC/AGO.

2.16.7.4 Ground Training. The MAWTS-1 CH-46E Course Catalog contains the required readings, chalk talks, and lectures which shall be completed prior to starting the (HIE) stage.

2.16.7.5 Prerequisites

| EVENT TYPE | T&R CODE / QUAL PREREQUISITES |
|---|---|
| ACADEMIC | ACAD-2039 |
| FLIGHT | EXT-2701, EXT-2703 (IF FLOWN UTILIZING NS) |
| QUALIFICATION | NSQ FOR THE APPROPRIATE LIGHT LEVEL |

AIE-4701 1.0 365 B,R 1 CH-46E A (NS)

Goal. Introduce SPIE rig operations.

Requirement

Discuss:
- HIGE/HOGE requirements.
- CRM. Pilots, crew chief, HRST Master and HRST Safety Observer brief together.
- Voice communication/standard terminology.
- ICS failures/hand and arm signals.
- Current Force Order/Wing SOP.
- Obstacle clearance.
- Emergency procedures.
- Tactical considerations for SPIE operations.
- SPIE extraction from water.

Introduce:
- Inspection of SPIE Rig.
- Skills involved for holding extended hover.
- Troop insertion/extraction via SPIE Rig.

Performance Standards. Pilots shall demonstrate ability to properly inspect aircraft rigging, ability to insert ropers

within 10 feet of intended point of insertion, execute AIE per local SOPs, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize proper closure to insertion point, remain oriented on insertion point, demonstrate understanding of emergency procedures requirements, utilize solid instrument scan, demonstrate proper CRM and voice commands, maintain SA of obstacle clearance, demonstrate ability to hold extended hover and understanding of HOGE requirements.

Prerequisite. EXT-2701 (EXT-2703 for events conducted on NS).

External Syllabus Support. HRST and Safety Observers.

AIE-4702 1.0 365 B,R 1 CH-46E A (NS)

Goal. Introduce helocast/soft duck procedures.

Requirement

Discuss:
- CRM while performing helocast or soft duck over water.
- Proper rigging and preflight of equipment to be inserted via helocast and soft duck.
- Low altitude aircraft emergencies over water.
- Ditching/water landing.
- Salt encrustation/compressor stall.
- Helocast/soft duck delivery altitudes and airspeeds.
- Voice communications/standard terminology.
- Tactical considerations for helocast/soft duck operations.

Introduce:
- Insertion of troops and equipment by helocast or soft duck.
- Preflight of aircraft, troops and equipment for helocast or soft duck.

Performance Standards. Pilots shall demonstrate ability to properly inspect rigging, execute AIE per local SOPs, fly pattern within 5 feet and 5 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on insertion point, demonstrate proper CRM and voice commands, maintain SA of water and other obstacles.

Prerequisite. NSQ for the appropriate light level for events conducted on NS.

External Syllabus Support. Cast Master and Safety Observers.

AIE-4703 1.0 365 B,R 1 CH-46E A (NS)

Goal. Introduce hoist procedures for overland/over water operations [See 2.16.7 b. (6)above].

Requirement

Discuss:
- CRM during rescue operations.

Considerations during rescue operations.
Emergency procedures during rescue operations.

Review:
Preflight of appropriate HIE equipment.
Internal/external hoisting operations.

Performance Standards. Pilots shall properly respond to crew positioning calls, exercise hoist operations within 10 feet of intended point, recognize closure/descent rates, maintain briefed clearance below load, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, utilize proper CRM, demonstrate proper voice commands, maintain SA of obstacle clearance, demonstrate ability to hold extended hover and understanding of load computation and HIGE/HOGE requirements.

Prerequisite. EXT-2701 (NSQ for the appropriate light level for events conducted on NS).

External Syllabus Support. Operational jungle penetrator or SAR basket (as available).

AIE-4704 1.5 365 B,R 1 CH-46E A (NS)

Goal. Introduce and develop proficiency in day or NS aerial delivery operations.

Requirement

Discuss:
CRM during aerial deliveries.
Voice communication/standard terminology during aerial deliveries.
Tactical considerations for aerial delivery of troops/cargo.
Proper rigging and preflight of equipment to be inserted by aerial delivery.
Paradrop procedures.
Sensor drop procedures.
ICS procedures.
Airspace coordination considerations.

Introduce: Insertion of troops/cargo or sensors by aerial delivery.

Performance Standards. Pilots shall demonstrate ability to properly inspect aircraft rigging, execute AIE per local SOPs, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on insertion point, maintain effective instrument and NS scan, demonstrate proper CRM and voice commands, maintain SA of obstacles.

Prerequisite. NSQ for the appropriate light level for events conducted on NS, NS-2606 if HLL, NS-2655 if LLL.

External Syllabus Support. Certified DZ, Jumpmaster and Safety Observers.

2.16.8 Defensive Measures (DM)

2.16.8.1 Purpose. To develop proficiency in tactics and aerial DM used to counter enemy air-to-air threats.

2.16.8.2 General

a. After successful completion of DM-4801 and DM-4802 a PUI is DM qualified. A qualification letter signed by the commanding officer stating the pilot is DMQ is required to be placed in the pilot's APR and NATOPS jacket with an appropriate logbook entry.

b. Aircrew shall not conduct DM training unless the following requirements are met:

(1) A proficient DMI is present in the cockpit for all initial and refresher flights.

(2) The flight lead must be DM qualified and specifically brief all applicable DM training rules per the CH-46E DM Guide.

(3) The flight lead briefs any aggressor aircrew per the T&R Program Manual, and covers training rules prior to each flight.

c. For helicopter versus helicopter DM, the aggressor aircraft shall be a non-assault helicopter.

d. .50 cal machine guns shall be mounted for all DM flights. Consideration should be given to utilizing the RMWS.

2.16.8.3 Minimum Crew Requirement. P/CP/CC/AGO.

2.16.8.4 Ground Training. The MAWTS-1 CH-46E Course Catalog contains the required readings, chalk talks, and lectures which shall be completed prior to starting the (DM) stage.

2.16.8.5 Prerequisites

| EVENT TYPE | T&R CODE / QUAL PREREQUISITES |
|---|---|
| ACADEMIC | ACAD-2032, ACAD-4005, ACAD-4006, ACAD-4007, ACAD-4008 |
| FLIGHT | FORM-2301, TERF-2305 |
| QUALIFICATION | TERFQ |

SDM-4800 2.0 B 1 CH-46E WST S D

Goal. Introduce section DM against a RW/FW aggressor.

Requirement

Discuss:
CRM.

Crew comfort level.
Five axioms of survival/ lookout doctrine.
Standard terminology.
Situational Awareness.
DM training rules.
Closure rate, radius of turn, and energy state.
Use of ALE-47, APR-39, ALQ-157, and AAR-47.
Use of onboard weapons systems.
DM against RW/FW aggressor.
Inter/intra aircraft communication.

Introduce: DM with a RW/FW aggressor per the CH-46E Defensive Measures (DM) Guide.

Review: Helicopter performance characteristics and NATOPS limitations.

Performance Standards. Pilots shall meet learning objectives as established by the CH-46E DM Guide, demonstrate effective flight leadership and maneuvering in response to threat, maintain SA of wingman prior to and through evasive maneuvering, demonstrate proper ASE employment WRT threat, execute per DM training rules and NATOPS limits, demonstrate effective threat evaluation, appropriate threat response, effective inter and intra cockpit communication, understanding of mutual supportability, recognize closure rate, effectively utilize radius of turn, maintain energy state, utilize proper terminology, effective 360 degree lookout doctrine, demonstrate proper response to aircrew threat calls, proper utilization of onboard defensive systems, understanding of threat weapons capabilities and appropriate flight response.

Prerequisite. See Stage prerequisite matrix.

External Syllabus Support. FMC WST/APT/TEN/ASE/Systems.

DM-4801 1.5 365 B,R 2 CH-46E A VS 1 RW AGGRESSOR A D

Goal. Introduce DM against a RW aggressor.

Requirement

Discuss:
CRM.
Crew comfort level.
Five axioms of survival/ lookout doctrine.
Standard terminology.
Situational Awareness.
DM training rules.
Closure rate, radius of turn, and energy state.
RW weapons parameters, systems and considerations.
Use of ALE-47, APR-39, ALQ-157, and AAR-47.
Use of onboard weapon systems.
DM against RW aggressor.
Inter/intra aircraft communication.

Introduce: Helicopter versus helicopter DM with an aggressor helicopter per the CH-46E DM Guide.

Review: Helicopter performance characteristics and NATOPS limitations.

Performance Standards. Pilots shall meet learning objectives as established by the CH-46E DM Guide, demonstrate effective flight leadership and maneuvering in response to threat, maintain SA of wingman prior to and through evasive maneuvering, proper ASE employment WRT threat, execute per DM training rules and NATOPS limits, demonstrate effective threat evaluation, appropriate threat response, effective inter and intra cockpit communication, understanding of mutual supportability, recognize closure rate, effectively utilize radius of turn, maintain energy state, utilize proper terminology, utilize effective 360 degree lookout doctrine, demonstrate proper response to aircrew threat calls, proper utilization of onboard defensive systems, understanding of threat weapons capabilities and appropriate flight response.

Prerequisite. FORM-2301, TERFQ - TERF-2305

Ordnance. 40 chaff and 80 flares.

Range Requirements. Training area that supports use of expendables and TERF (if available).

External Syllabus Support. Special use airspace preferred, RW adversary (RW platform capable of fwd firing ordnance).

DM-4802 1.5 365 B,R 2 CH-46E A VS 1 FW AGGRESSOR A D

Goal. Introduce DM against a FW aggressor.

Requirement

Discuss:
- CRM.
- Crew comfort level.
- Five axioms of survival/ lookout doctrine.
- Standard terminology.
- Situational Awareness.
- Closure rate, radius of turn, and energy state.
- FW weapons parameters, systems and considerations.
- Use of ALE-47, APR-39, ALQ-157, AAR-47.
- DM training rules.
- Use of onboard weapon systems.
- DM against FW aggressor.
- Inter/intra cockpit communication.

Introduce: Helicopter versus FW DM per the CH-46E DM Guide.

Performance Standards. Pilots shall meet learning objectives as established by CH-46E DM Guide, demonstrate effective flight leadership and maneuvering in response to threat, maintain SA of wingman prior to and through evasive maneuvering, demonstrate proper ASE employment WRT threat, execute per DM training rules and NATOPS limits, demonstrate effective threat evaluation, appropriate threat response, effective inter and intra cockpit communication, understanding of mutual supportability, recognize

closure rate, effectively utilize radius of turn, maintain energy state, utilize proper terminology, effective 360 degree lookout doctrine, demonstrate proper response to aircrew threat calls, proper utilization of onboard defensive systems, understanding of threat weapons capabilities and appropriate flight response.

Prerequisite. FORM-2301, TERFQ - TERF-2305.

Ordnance. 40 chaff and 80 flares.

Range Requirements. Training area that supports use of expendables and TERF (if available).

External Syllabus Support. Special use airspace preferred, FW adversary.

SACM-4803 2.0 B 1 CH-46E WST S D

Goal. Introduce helicopter ACM.

Requirement

Discuss:
- CRM.
- Crew comfort levels.
- Five axioms of survival/ lookout doctrine.
- Standard terminology.
- Closure rate/radius of turn/energy state.
- Use of onboard ASE.
- Use of onboard defensive weapons.

Introduce: Helicopter ACM in a section versus RW/FW bandits per the ANTTP series publications.

Review: Helicopter performance characteristics and NATOPS limitations.

Performance Standards. Pilots shall demonstrate effective flight leadership and maneuvering in response to threat, maintain SA of wingman prior to and through evasive maneuvering, demonstrate proper ASE employment WRT threat, execute within NATOPS limits, demonstrate effective threat evaluation, appropriate threat response, effective inter and intra cockpit communication, meet learning objectives as established by the CH-46E DM guide, demonstrate understanding of mutual supportability, recognize closure rate, effectively utilize radius of turn, maintain energy state, utilize proper terminology, effective 360 degree lookout doctrine, demonstrate proper response to aircrew threat calls, proper utilization of onboard defensive systems, understanding of threat weapons capabilities and appropriate flight response.

Prerequisite. DMQ.

External Syllabus Support. ACM capable WST/APT.

2.16.9 Carrier Qualification (CQ)

2.16.9.1 Purpose. To train/refresh the PUI in night unaided shipboard landings.

2.16.9.2 General

a. Refer to LHA/LPH/LHD NATOPS Manuals and NWP-42 for air capable ship operations. BIP required for initial qualification CQ-4901 and 4902.

b. CQ Requirements

c. Requirements for initial/refresher/delinquent night unaided CQ events are:

(1) Five day CQs.

(2) Five night unaided CQs.

d. Pilots CQ-4902 proficient per paragraph 2(a) shall complete the following to maintain proficiency:

(1) Two day CQs.

(2) Two night unaided CQs.

e. Pilots are authorized to carry passengers under all conditions when proficient in CQ-2902 and CQ-2904, NSQ for the appropriate light level, and IAW NAVMC 3500.14.

f. Pilots shall discuss CRM as applicable to each event.

2.16.9.3 Minimum Crew Requirements. P/CP/CC.

2.16.9.4 Ground Training. The MAWTS-1 CH-46E Course Catalog contains the required readings, chalk talks, and lectures which shall be completed prior to starting the (CQ) stage.

2.16.9.5 Prerequisites

| EVENT TYPE | T&R CODE / QUAL PREREQUISITES |
|---|---|
| ACADEMIC | NONE |
| FLIGHT | CQ-2901 |
| QUAL | NONE |

a. Review appropriate chapters of NWP-42 and the LPH/LHA/LHD NATOPS Manual.

b. Review Ship's Facilities Resume.

CQ-4901 1.0 365 B,1 CH-46E A N*

Goal. Conduct night unaided FCLPs.

Requirement

Discuss:
CRM during night shipboard landings.
Crew comfort levels during night shipboard landings.
Situational awareness during night shipboard landings.
Aircraft lighting used during night shipboard landings.
Basic instrument scan.
Emergency procedures at night over water.

Introduce: Night FCLP patterns, approaches, landings, and emergency procedures peculiar to shipboard operations.

Review: CQ-2901.

Performance Standards. Pilots shall demonstrate proper shipboard communications and aircraft lighting procedures, maintain effective instrument scan, execute proper cockpit switchology, fly established CQ pattern demonstrating understanding of proper upwind, crosswind and interval parameters, fly 300 feet/80 kt pattern within 50 feet and 10 kts, maintain proper closure and bearing with intended point of landing, respond promptly and safely to altitude and drift calls from aircrew, remain oriented on assigned landing spot, and land within 3 feet of intended point of landing. Successful completion of CQ-4901 requires the PUI to complete a minimum of five landings.

Prerequisite. CQ-2901.

External Syllabus Support. Approved FCLP pad.

CQ-4902 1.0 365 B,R 1 CH-46E A N*

Goal. Conduct night unaided CQ.

Requirement

Discuss:
CRM during shipboard landings.
Communications used during shipboard landings.
LSE signals.
Water landings/ditching.
Aircraft lighting used during shipboard landings.
Rotor engagement/disengagement.
Launch/Recovery wind envelopes.
Instrument scan.

Performance Standards. Pilots shall fly 300 feet/80 kt pattern within 25 feet and 10 kts, fly established CQ pattern demonstrating understanding of proper upwind, crosswind and interval parameters, maintain proper orientation to LSE, respond promptly and safely to altitude and drift calls from aircrew, remain oriented on assigned landing spot, land within 3 feet of intended point of landing, utilize solid instrument scan, recognize proper closure with intended point of landing, demonstrate proper shipboard communications and aircraft

lighting. Successful completion of CQ-4902 requires the PUI to complete a minimum of five landings

Prerequisite. CQ-2903 and CQ-4901.

External Syllabus Support. CQ capable ship.

## 2.17 MISSION PLUS SKILL PHASE (4000)

2.17.1 Purpose. To introduce and develop proficiency in tactical planning, briefing and execution of a Marine Medium Helicopter squadron's assigned Marine Corps Tasks that involve Core Plus skills. The Mission Plus Skill Phase enables the squadron commander to assess his/her squadron's ability to perform Core Plus missions in preparation for a deployment, during peacetime training, or while executing military operations. The squadron commander's decision to train to Mission Plus skills is at his discretion and/or based on the guidance from higher headquarters. This phase encompasses a combination of academic and flight events to assess the squadron's and/or individual pilot's proficiency in Mission Plus skills. The focus of this phase is on the following mission area:

Aerial Delivery (MCT 4.3.4).

2.17.2 General

2.17.2.1 Pilots shall discuss CRM as applicable to each event.

2.17.2.2 The Mission Plus Skill AD 4503 shall be individually logged for each pilot upon the completion of the event.

2.17.2.3 Other applicable T&R events can be conducted in conjunction with the performance of a Mission Skill event.

2.17.2.4 A flight leader (section or above) flying within the Mission Plus skill flight event can complete an initial or refresher PUI AD 4503, regardless of whether or not the PUI is flying with the flight leader. The flight leader shall make the final assessment of whether the requirements and performance standards were met for the appropriate Mission Skill event(s).

2.17.2.5 An ATF is required for the initial or full refresher AD 4503 Mission Plus Skill flight event, provided the requirements and performance standards were met.

2.17.3. Minimum Crew Requirement. P/CP/CC/AGO.

2.17.4. Ground/Academic Training. Prior to commencement of the Mission Plus skill phase, the commanding officer or his/her designated representative, should conduct a thorough review of the squadron's assigned MCTs, TEEP, and relevant PTP orders in order to develop a suitable ground/academic syllabus.

AD-4503 1.5 365 B,R 2+ ACFT A (NS)

Goal. Conduct day or night systems aerial delivery mission (e.g. paraops, cargo/sensor/leaflet drops) utilizing a tactical scenario in a low, medium or high threat environment. The complexity and profile of the tactical scenario is at the

discretion of the commanding officer. If AD-4503 is performed at night, it can be accomplished in either HLL or LLL conditions.

Requirement

Discuss:
- Tactical planning, briefing, and execution.
- Use of onboard ASE during the mission.
- CRM during the ingress, objective area, and egress phases of the mission.
- Rules of engagement/weapon conditions as they apply to the mission.
- Use of onboard navigation systems.
- Power required versus power available.
- High altitude operations.
- Marine Air Command and Control System.
- Threat planning and considerations.
- Objective area mechanics.
- Fire support and airspace control measures.
- CRM during aerial deliveries.
- Sensor drop procedures.
- Airspace coordination considerations.
- Execution checklist.
- Rapid response planning process.

Introduce:
- Tactical planning, briefing, execution, and use of precision navigation systems.
- Command and control.
- Aerial delivery in a tactical scenario/profile.
- Objective area mechanics.

Performance Standards. Pilots shall fly aerial delivery profile by flying pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize proper closure to insertion point, remain oriented on insertion point/drop zone, utilize solid instrument scan, demonstrate proper crew resource management/voice commands, and maintain SA of obstacle clearance.

Prerequisites: 2101

External Syllabus Support. Authorized CAL site or drop zone, as applicable, (special use airspace preferred). Jump/Load Master.

## 2.18 INSTRUCTOR TRAINING PHASE (5000)

### 2.18.1 FRS Instructor Under Training POI (IUT)

2.18.1.1 Purpose. The CH-46E Fleet Replacement Squadron (FRS) shall develop qualified instructor pilots, classroom materials, and procedures for instructor training and maintain the Instructor Under Training (IUT) syllabus for the CH-46E T&R.

2.18.1.2 General

a. The IUT should fly all sorties with an experienced IP, who will discuss common student tendencies for each flight. The IP for NS-5112 shall be an NSI.

b. The IUT may fly a CAL-5108 and receive a FRS TERFQ. This qualification will allow an IUT to receive the IP designation and can only instruct a Pilot Under Instruction (PUI) during a TERF-1701.

c. The IUT may fly a NS-5112 and receive a FRS NSQ. This qualification will allow an IUT to receive the IP designation and be qualified to train in the Night Systems Familiarization Instructor (NSFI) Certification Course. Once the IP is an NSFI he can instruct a PUI during NS-1801, NS-1802, and NS-1803.

d. The IUT may find all maneuver descriptions in the FRS Standardization Manual, NATOPS Flight Manual, and Air NTTP series publications.

e. Pilots shall discuss CRM as applicable to each event.

2.18.2 Minimum Crew Requirements. IP/IUT/CC (AGO if conducting TERF or NS are used).

2.18.3 Ground/Academic Training

2.18.3.1 All IUTs shall complete all assigned CBT lessons prior to FAM-5101.

2.18.3.2 All IUTs shall complete the Course Rules Class (ACAD-005), Load Computation Class (ACAD-0006), Crew Resource Management Class (ACAD-6007), CNCS/PFPS Introduction Class (ACAD-0007), and ECCS Class (ACAD-0008) prior to FAM-5101.

2.18.3.3 All IUTs shall complete the NATOPS Open Book Exam (NTPS-6001), Course Rules Exam (ACAD-0011), and SOP Exam (ACAD-0012) prior to FAM-5101.

2.18.3.4 All IUTs shall complete the Navigation Class (ACAD-0021) prior to NAV-5106.

2.18.3.5 All IUTs shall complete the TERF Class (ACAD-0022) prior to CAL-5108.

2.18.3.6 All IUTs shall complete the NATOPS Closed Book Exam (NTPS-6002) prior to IUT-5111.

2.18.3.7 All IUTs shall complete the NS Class (ACAD-0031) and NS Lab (ACAD-0042) prior to NS-5112.

FAM-5101 1.5 E 1 CH-46E A D

Goal. Introduce techniques of instruction.

Requirement

Discuss:
CRM.

Course rules.

Introduce:
Course rules.
Techniques of instruction.
All FAM stage maneuvers.

Performance Standards. Pilot will conform to instructional techniques set forth by the FRS for all FAM Maneuvers per the FRS Standardization Manual and NATOPS Manual.

Prerequisite. ACAD-0005 through ACAD-0012.

FAM-5102 1.5 E 1 CH-46E/WST A/S D

Goal. Introduce techniques of instruction.

Requirement

Discuss:
CRM.
Course rules.

Introduce:
Course rules.
Techniques of instruction.
All familiarization stage maneuvers.

Performance Standards. Pilot will conform to instructional techniques set forth by the FRS for all FAM Maneuvers per the FRS Standardization Manual and NATOPS Manual.

Prerequisite. FAM-5101.

FAM-5103 1.5 E 1 CH-46E/WST A/S N*

Goal. Night unaided instructional techniques introduction.

Requirement

Discuss: CRM.

Introduce:
Local area orientation.
Night unaided FAM stage maneuvers.

Review:
All previously introduced maneuvers as necessary.
Instructional techniques.
Single engine landings.

Performance Standards. Pilot will conform to instructional techniques set forth by the FRS for all Night FAM Maneuvers per the FRS Standardization Manual and NATOPS Manual.

Prerequisite. FAM-5102.

INST-5104 1.5 E 1 CH-46E/WST A/S D

Goal. Introduce instrument instructional techniques.

Requirement

Discuss: CRM.

Introduce:
Basic instrument procedures.
Basic instrument patterns (vertical S-1 and Oscar patterns).

Review: Any previously introduced maneuvers as necessary. Terminate flight with an instrument approach.

Performance Standards. Pilot will conform to instructional techniques set forth by the FRS for all INST Maneuvers per the FRS Standardization Manual and NATOPS Instrument Flight Manual.

INST-5105 1.5 E 1 CH-46E/WST A/S D

Goal. Continue instrument instructional techniques.

Requirement

Discuss: CRM.

Review:
IFR flight planning.
Filing DD-175 and DD-175-1.
Airway procedures.
Precision and non-precision instrument approaches.

Performance Standards. Pilot will conform to instructional techniques set forth by the FRS for all INST Maneuvers per the FRS Standardization Manual and NATOPS Instrument Flight Manual.

Prerequisite. INST-5104.

NAV-5106 1.5 E 1 CH-46E A D

Goal. Introduce navigation procedures instructional techniques.

Requirement

Discuss: Navigation and identifying positions using charts and maps.

Review:
CRM.
Lost plane procedures.
Time/distance checks.
Distance information and map legend information.
Use of jet logs and enroute navigational computer.
Mountainous area landings.
CALs.
Power available.

Techniques of instruction.

Performance Standards. Pilot will conform to instructional techniques set forth by the FRS for all NAV Procedures per the FRS Standardization Manual and ANTTP series publications.

Prerequisite. ACAD-0021.

EXT-5107 1.5 E 1 CH-46E A D

Goal. Introduce external cargo procedures instructional techniques.

Requirement

Discuss: CRM.

Review:
External operations.
Cargo hook procedures.
Techniques of instruction.

Performance Standards. Pilot will conform to instructional techniques set forth by the FRS for all EXT Procedures per the FRS Standardization Manual and ANTTP series publications.

External Syllabus Support. HST, external load, pendant and hook.

CAL-5108 1.5 E 1 CH-46E/WST A/S D

Goal. Introduce CAL/TERF instructional techniques.

Requirement

Discuss:
CRM.
Zone brief.

Review:
CALs.
Power checks.
Techniques of instruction.
Masking/unmasking.
Bunts/Rolls.
Quick stop.

Performance Standards. Pilot will conform to instructional techniques set forth by the FRS for all CAL/TERF procedures per the FRS Standardization Manual and ANTTP series publications.

Prerequisite. ACAD-0022.

External Syllabus Support. TERF area.

FAM-5109 1.5 E 1 CH-46E/WST A/S

Goal. Introduce/evaluate techniques of instruction for simulating Emergency Procedures.

Requirement

Discuss: (ref: CH-46E NATOPS Manual/CH-46E Flight Standardization Manual)
- CRM while simulating Emergency Procedures.
- Emergencies (instructional technique).
  - Single engine failure takeoff.
  - Single engine failure in HOGE.
  - Single engine failure in flight.
  - Compressor stall.
  - ECCS failure in flight.
  - Flex shaft failure in flight.
  - Sprag clutch slippage.
  - Practice autorotations.

Introduce/Evaluate:
- Normal Engine Start.
- Normal shutdown.

Emergencies (instructional technique):
- Single engine failure takeoff.
- Single engine failure in HOGE.
- Single engine failure in flight.
- Compressor stall.
- ECCS failure in flight.
- Flex shaft failure in flight.
- Sprag clutch slippage.
- Practice autorotations.

Performance Standards. Pilot shall demonstrate knowledge of Emergency Procedures, NATOPS checklists, and instructional technique while simulating Emergency Procedures.

Prerequisite. ACAD-0008.

FORM-5110 1.5 E 2 CH-46E A D

Goal. Introduce formation flight instructional techniques.
Requirement

Discuss:
- CRM.
- Safety parameters.

Review:
- All formation maneuvers.
- Techniques of instruction.

Performance Standards. Pilot will conform to instructional techniques set forth by the FRS for all FORM Procedures per the FRS Standardization Manual and the ANTTP series publications.

IUT-5111 3.0 E 1 CH-46E A D

Goal. Instructor standardization check.

Requirement

Discuss:
CRM.
Safety parameters.

Evaluate: All phases of instruction and techniques of instruction.

Performance Standards. Pilot will conform to instructional techniques set forth by the FRS for all procedures per the FRS Standardization Manual, ANTTP series publications and NATOPS Manual.

Prerequisite. ACAD-0041.

NS-5112 1.5 E 1 CH-46E A NS

Goal. Introduce initial NS instructional techniques.

Requirement

Discuss:
CRM.
Crew comfort levels.
NS failures.
Depth perception.
Cockpit lighting.
Emergency procedures.

Evaluate: All phases and techniques of instruction to include the following:
Taxi.
Vertical takeoff.
Vertical landing.
Square patterns.
Touch and go patterns.

Performance Standards. Pilot will conform to instructional techniques set forth by the FRS for all NS procedures per the FRS Standardization Manual, MAWTS-1 NVD Manual and ANTTP series publications.

Prerequisite. ACAD-0031 and 0042.

2.18.4 Contract Instructor Under Training (CIUT)

2.18.4.1 Purpose. The CH-46E Fleet Replacement Squadron (FRS) shall develop procedures for Contract Instructor training and maintain the Contract Instructor Under Training (CIUT) Syllabus for the CH-46 T&R. Upon completion of the CIUT Syllabus and subsequent evaluation simulator events, Contract Instructors should be capable of performing NATOPS, Instrument, and CRM Evaluations in the simulator.

2.18.4.2 General

a. The CIUT should fly all sorties with an experienced Contract Instructor or FRS Instructor Pilot.

b. The CIUT may find all maneuver descriptions in the FRS Standardization Manual or NATOPS Flight Manual.

c. The CIUT shall discuss CRM as applicable to each event.

d. After completing the CIUT Syllabus, all CIUTs shall pass a NATOPS, Instrument, and CRM Evaluation before being designated a Contract Instructor.

2.18.4.3 Minimum Crew Requirements. CI or IP/CUIT.

2.18.4.4 Ground/Academic Training

a. All CIUTs shall complete all assigned CBT lessons prior to SFAM-5200.

b. All CIUTs shall complete the Instructional Techniques class (ACAD-5000) prior to SFAM-5200.

c. All CIUTs shall complete the NATOPS Open Book Exam (NTPS-6001), Closed Book Exam (NTPS-6002), and Oral Exam (NTPS-6003) prior to NTPS-6101.

d. All CIUTs shall complete Instrument Ground School (INST-6004), Instrument Written Exam (INST-6005), and Instrument Oral Exam (INST-6006) prior to INST-6102.

e. All CIUTs shall complete the CRM Facilitator Course to include the CRM academic (CRM-6007) prior to CRM-6103.

SFAM-5200 2.0 CI E WST S

Goal. Introduce cockpit preflight inspection, checklists, and engine start procedures with a focus on instructing in the simulator.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
- The Engine and related sub-systems.
- Scan during Start-up/Shutdown
- CRM during Start-up/Shutdown
- Start/shutdown limitations.

Introduce/Evaluate:
- Interior inspection/pre-start checklist.
- Normal engine start.
- Single engine start/engagement.
  - Rotor brake slippage on engine start.
- Pre-taxi checklist.

Radios and communication.
ICS operation.
UHF & VHF operation.
Normal shutdown.

Emergencies:
Engine start malfunctions.
Hot start/cold hang-up.
Starter hang-up.

Performance Standards. CIUT shall demonstrate knowledge of engine systems, NATOPS Checklists, and communication systems.

Prerequisite. Appropriate FRS CBT Lessons.

SFAM-5201 2.0 CI E WST S

Goal. Introduce hover work and ground emergencies with a focus on instructing in the simulator.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
Aircraft Electrical Systems (A/C, D/C, and APU)
VFR Scan for Hover.

Introduce/Evaluate:
Ground taxi.
Takeoff checklist.
Vertical takeoff.
Hover patterns.
Vertical landing.

Review:
Engine start/shutdown.
Rotor engagement.
Communication procedures.

Emergencies:
APP/APU malfunctions.
APU fire.
Engine condition actuator malfunctions.
ECA failure rotor brake on.
ECA failure on shutdown (FREEZE/MAX/MIN).
Transformer rectifier failure.
Cross-tie failure (APU running).
Engine compartment fire (on deck).
Flexible driveshaft failure (on deck).
Rotor brake failure on rotor engagement.

Performance Standards. CIUT shall demonstrate knowledge of APU and start emergencies, conduct engine start and shutdown IAW NATOPS pocket checklist and basic FAM maneuvers IAW FRS Standardization Manual.

Prerequisites. SFAM-5200, appropriate FRS CBT program lessons.

SFAM-5202 2.0 CI E WST S

Goal. Introduce engine related problems in the transition stage and practice basic FAM maneuvers with a focus on instructing in the simulator.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
- AFCS.
  - Single and dual AFCS malfunctions.
  - Uncommanded control imputs.

Introduce/Evaluate:
- Communications procedures.
- Transition to forward flight.
- Introduce trim techniques.
- Normal Pattern / VFR Scan.
- Landing checklist.
- Normal approach to a hover/no hover.

Review: Start and shutdown checklist and all previously introduced maneuvers.

Emergencies:
- Single engine emergencies.
  - HIGE.
  - HOGE.
  - Takeoff.
- Single AFCS malfunctions.
- Uncommanded altitude hold engagement.

Performance Standards. CIUT shall demonstrate knowledge of the automatic flight control system, and single engine operations while hovering in/out of ground effect, and during take-off.

Prerequisites. SFAM-5201, appropriate FRS CBT program lessons.

SFAM-5203 2.0 CI E WST S

Goal. Introduce running takeoffs and landings and Max Gross Wt (minimum power) takeoffs and landings with a focus on instructing in the simulator.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
- The Engine Condition Control System.
  - Theory of Operation.
  - Normal mode operation.
  - Manual mode operation.
  - Fail freeze circuitry.

Introduce/Evaluate:
Max Gross Wt (minimum power) takeoffs and landings.
Running takeoff.
Running landing.
Trim and trim techniques.

Review: All previously introduced malfunctions and procedures.

Emergencies:
LCT failures.
ECA Failures in flight.
Maximum.
Minimum.
Intermittent.

Performance Standards. CIUT shall demonstrate knowledge of the automatic flight control system, maximum gross weight operations, steep approaches, and running takeoffs and landings.

Prerequisites. SFAM-5202, appropriate FRS CBT program lessons.

SFAM-5204 2.0 CI E WST S

Goal. Review previous pattern work and introduce single engine flight/approach/landings and autorotations with a focus on instructing in the simulator.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
Single engine procedures.

Introduce/Evaluate:
Single engine Landings/waveoffs.
Straight in 80 kt autorotation.

Review: All previously introduced malfunctions and procedures.

Emergencies:
Single engine emergencies.
Lube pump drive shaft failure.
Compressor stall.

Performance Standards. CIUT shall demonstrate knowledge of single engine operation, and autorotations.

Prerequisites. SFAM-5203, appropriate FRS CBT program lessons.

SFAM-5205 2.0 CI E WST S

Goal. Introduce 90-degree power recovery autorotation, steep approaches, and review previous maneuvers with a focus on instructing in the simulator.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
Transmission drive system / transmission oil system

Introduce/Evaluate:
Steep approaches.
Hover landing.
No hover landing.
Obstacle takeoff.

Review: All previously introduced procedures.

Emergencies:
Single engine emergencies.
Power turbine speed signal interruption (Flex shaft failure).
Sprag clutch slippage.
PRV diaphragm failure.

Performance Standards. CIUT shall demonstrate knowledge of the transmission drive/oil systems, steep approach, and obstacle takeoff.

Prerequisites. SFAM-5204, appropriate FRS CBT program lessons.

SFAM-5206 2.0 CI E WST S

Goal. Review/evaluate all previously introduced maneuvers and emergencies with a focus on instructing in the simulator.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
Flight control hydraulic boost systems.

Introduce/Demonstrate:
AFCS off during portions of flight.
Straight in 80 kt autorotation.

Review: All previously introduced maneuvers and emergencies.

Emergencies:
Dual AFCS malfunctions.
Uncommanded control imputs.
Control boost malfunctions.
Transmission malfunctions.
Gauge malfunctions.
Imminent failure.

Performance Standards. CIUT shall demonstrate knowledge of the flight control hydraulic boost systems, autorotations, and all previously introduced maneuvers and emergencies.

Prerequisites. SFAM-5205, appropriate FRS CBT program lessons.

SFAM-5207 2.0 CI E WST S

Goal. Review all FAM stage maneuvers with a focus on instructing in the simulator.

Requirement.

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
Fuel system & fuel control

Introduce/Evaluate:
110 knot and 90-degree autorotation.

Review: Straight in 80 kt autorotation and AFCS-off flight, as well as, all previously introduced maneuvers.

Emergencies:
Fuel contamination.
Fuel boost malfunctions.
Engine driven fuel pump failure.
Engine fire in flight.

Performance Standards. CIUT shall demonstrate knowledge of the fuel system, autorotations, AFCS-off flight,and all previously introduced maneuvers and emergencies.

Prerequisites. SFAM-5206, appropriate FRS CBT program lessons.

SFAM-5208 2.0 CI E WST S

Goal. Demonstrate an understanding of all FAM maneuvers, in-flight systems failures, in-flight emergency procedures, and single engine procedures with a focus on instructing in the simulator.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)
Utility hydraulic system & sub-systems

Review/Evaluate:
Fam maneuvers, max gross wt take-offs/landings, running take-offs/landings, steep approaches, Auto-rotations, and AFCS-off flight.

Emergencies:
AC Essential Bus failures.
Electrical fire/smoke.
Rotor brake failure in flight.
All previously introduced in-flight emergencies, and systems failures.

Performance Standards. CIUT shall demonstrate knowledge of start, shutdown and in flight emergencies and demonstrate proficiency in checklists and cockpit layout.

Prerequisites. SFAM-5207, appropriate FRS CBT Lessons.

SFAM-5209 2.0 CI E WST S

Goal. Review/Evaluate checklist and all ground operations/emergencies with a focus on instructing in the simulator.

Requirement

Review: Start and shutdown checklist and previously introduced emergencies.

Emergencies:
- Hot start/cold hang-up.
- Starter hang-up.
- ECA failure with rotor brake engaged
- Flex shaft failure on deck.
- Sprag clutch slippage on deck.
- Transformer rectifier failure.
- A/C, D/C crosstie failures.
- Rotor brake failure on rotor engagement.
- Engine compartment fire on the ground.
- APU fire.
- Rotor brake slippage on engine start.

Performance Standards. Pilot shall demonstrate knowledge of start, shutdown and ground emergencies and demonstrate proficiency in checklists and cockpit layout.

Prerequisites. SFAM-5208, appropriate FRS CBT Lessons.

SINST-5210 2.0 CI E WST S

Goal. Introduce Communication and Navigation Control System (CNCS) Procedures with a focus on instructing in the simulator with a focus on instructing in the simulator.

Requirement

Discuss:
- CNCS System Architecture.
- CNCS Components.
- AIMS (Basic Operation and Alarms).

Demonstrate/Introduce:
- Function Keys.
- Line Select Keys (LSK)
- Dedicated Keys.
- HHSI Modes.
- Apply/Check Power.
- Check System Status.
- Loading/Creating a Flight Plan.

Changing Radios/Scan/Presets.
Changing TACAN.
Changing IFF/Mode 3/Mode C.
Direct-to a Waypoint.
Holding Pattern.
Bearing/Distance Waypoint from know Position.
AIMS Operation.

Emergencies: System Failures and Trouble Shooting CNCS.

Performance Standards. CIUT shall demonstrate all basic knowledge of the CNCS IAW CH-46E NATOPS.

Prerequisites. SFAM-5209.

SINST-5211 2.0 CI E WST S

Goal. Introduce radio, TACAN and radar altimeter procedures with a focus on instructing in the simulator.

Requirement

Review:
Instrument checklist.
ITO.
Altitude hold procedures.
Level speed change.
Timed turns.
S-1 patterns.
Full/partial panel unusual attitude recoveries.
Partial panel.
Oscar pattern.
Instrument autorotation.

Introduce/Evaluate:
TACAN procedures.
UHF DF procedures.
GCA procedures.
In flight emergencies.

Performance Standards. CIUT shall perform all basic instrument maneuvers IAW FRS Standardization Manual as well as conduct a TACAN approach within the parameters set forth in the Instrument Manual.

Prerequisite. SINST-5210.

SINST-5212 2.0 CI E WST S

Goal. Practice basic instrument flight and coordination maneuvers with a focus on instructing in the simulator.

Requirement

Discuss:
Maneuver limitations.
Compass system control panel.

Instrument scan.

Introduce/Evaluate:
Instrument checklist.
Level speed change.
Timed turns (standard and one-half standard rate).
Climbs and descents.
Unusual attitudes.
Partial panel at cruise altitude.
Oscar pattern.
Vertical S-1 pattern.

Emergencies: Perform as required.

Performance Standards. CIUT shall perform all basic instrument maneuvers IAW FRS Standardization Manual as well as conduct a TACAN approach within the parameters set forth in the Instrument manual.

Prerequisites. SINST-5211.

SCAL-5213 2.0 CI E WST S

Goal. Introduce confined area work with a focus on instructing in the simulator.

Requirement

Discuss: (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, ANTTP series publications.)
CRM.
Aircraft clearance.
Zone brief.

Introduce/evaluate:
Confined area approach.
Confined area landing.
Masking/unmasking.
Low level quick stops.
Bunts/rolls.
Low level flight.

Emergencies:
Emergency landing in trees.
Others as required.

Performance Standards. CIUT shall perform landing to a confined area emphasizing obstacle clearance and TERF Maneuvers IAW the ANTTP series publications.

Prerequisite. SINST-5212.

SFORM-5214 2.0 CI E WST S

Goal. Introduce day formation procedures with a focus on instructing in the simulator.

Requirement

Discuss:
- Aircraft lighting and use.
- Radar altimeter use.
- CRM.
- Day scan.
- Visual cues for day formation.
- Depth perception/relative motion.
- Hazards peculiar to formation.

Introduce/Evaluate:
- Section takeoff.
- Cruise formation.
- Parade formation.
- Breakup and Rendezvous.
  - Running rendezvous.
  - Carrier rendezvous.
- Crossovers.
  - Cruise crossovers.
  - Parade crossovers.
- Turns.
  - Cruise turns.
  - Parade turns.
- Lead Changes.
  - Cruise lead changes.
  - Parade lead changes.
- Section landings.

Emergencies: Electrical system malfunctions or as required.

Performance Standards. CIUT shall perform confined area landings to an unprepared surface.

Prerequisite. SCAL-5213.

SEXT-5215 2.0 CI E WST S

Goal. Introduce day external cargo operations with a focus on instructing in the simulator.

Requirement

Discuss:
- HST signals.
- Power available versus power required limitations.
- CRM.
- Crew comfort level.
- Obstacle clearance.
- Load and pendant.

Introduce/Evaluate:
- Configure aircraft for external cargo.
- Approach to pickup zone.
- Cargo hookup.
- Departure from pickup zone.

Enroute phase.
Cargo delivery.
Simulated hoist operations.
External cargo operations to a confined area.
Obstacle takeoff with external cargo.
Confined area landings.
Steep approach to a confined area.

Emergencies: Perform as required.
Failure of one engine with an external load.
Loss of ICS.
Aerodynamically unstable/oscillating loads.
Cargo jettison.

Performance Standards. Pilot shall perform 5 pickups and dropoffs to a confined zone.

Prerequisite. SFORM-5214.

SNS-5216 2.0 CI E WST S NS

Goal. Introduce NS procedures with a focus on instructing in the simulator.

Requirement

Introduce/Evaluate:
Goggle/Degoggle.
NS eyelane/goggle preflight.
Aircraft lighting procedures.
Scan techniques.
Vertical takeoffs/landings.
Hover patterns.
Normal approaches.

Emergencies: Any previously introduced emergency as appropriate.

Performance Standards. CIUT shall practice NS procedures and scan technique to prepare for aircraft events.

Prerequisite. SEXT-5215.

SREV-5217 2.0 CI E WST S

Goal. Review previous maneuvers and emergencies in preparation for Instrument and NATOPS Evaluations.

Requirement

Review/Evaluate:
FAM stage maneuvers.
Instrument stage maneuvers.
Confined area landings.

Emergencies: Perform all previously introduced emergencies.

Performance Standards. CIUT shall perform all FAM maneuvers and emergencies IAW CH-46E NATOPS and FRS Standardization Manuals.

Prerequisite. SNS-5216.

2.18.5 Basic Instructor Pilot (BIP)

2.18.5.1 Purpose. To qualify the PUI in the methods and techniques necessary to instruct squadron pilots in selected Core and Core Plus Skill events.

2.18.5.2 General

a. A prospective BIP must be a designated HAC, and demonstrate the maturity, judgment, and discipline required of a pilot serving in an instructor role.

b. SBIP-5300 through BIP-5303 instructional flights require an existing BIP. The BIP-5304 instructional flight shall be evaluated by a TERF-I or higher. Upon successful completion of BIP-5304, the squadron commanding officer may designate the PUI a BIP. A designation letter signed by the commanding officer stating the pilot is a qualified BIP shall be placed in the pilot's NATOPS jacket and a copy in the APR with a corresponding logbook entry.

c. Previously designated BIPs may attain re-designation by the squadron commanding officer, at his/her discretion, upon successful completion of one standardization flight, BIP-5304.

d. Upon signature of this manual, existing NSIs, TERF-Is, DMIs, ANIs, NIs, and/or WTIs may be designated a BIP, at the discretion of the squadron commanding officer. Any subsequent prospective BIPs must complete either the initial, or refresher BIP(UI) syllabus as appropriate.

e. If a designated BIP loses proficiency in any of the prerequisite events listed in paragraph (f), he/she may not instruct in that event until he/she regains proficiency.

f. Multiple BIP flights may be combined in order to facilitate timely accomplishment of the syllabus. Additionally, BIP flights may be conducted in conjunction with other CH-46E T&R syllabus events. SBIP-5300 shall be flown as the first event in the stage. BIP-5304 shall be flown as the last event in the stage. BIP-5301 through BIP-5303 may be flown in any order.

2.18.5.3 Minimum Crew Requirements

a. SBIP-5300 P/CP/CC*
b. BIP-5301 P/CP/CC/AGO
c. BIP-5302 P/CP/CC/AGO
d. BIP-5303 P/CP/CC
e. BIP-5304 P/CP/CC/AGO

* CC required if event performed in the aircraft.

2.18.5.4 Ground Training. Prior to commencement of the BIP syllabus, the BIP(UI), whether an initial or refresher prospective BIP, shall complete the following:

a. A standardization discussion with the squadron stan board.

b. BIP PUIs will be prepared to discuss the seven critical skills of CRM as applicable to each event.

2.18.5.5 BIP Event Requirements. In addition to all requirements and performance standards listed for each BIP event, each IUT shall be evaluated on the following:

a. Plan:

(1) Learning objective accomplishment.

(2) Training area selection.

(3) External support coordination.

(4) Mission products.

b. Execution:

(1) Professionalism.

(2) Airwork.

(3) Crew Resource Management (CRM).

(4) NATOPS adherence.

(5) SOP's/Orders adherence.

2.18.5.6 Prerequisites. The BIP (UI) shall be current and proficient in the following events, prior to commencement of the BIP syllabus.

| EVENT TYPE | T&R CODE / DESIGNATION PREREQUISITES |
|---|---|
| ACADEMIC | ACAD-5000, |
| FLIGHT | FAM-2101,FAM-2102,CAL-2202,FORM-2301,EXT-2701, CQ-2901,AIE-2705 |
| DESIGNATION | HAC |

SBIP-5300 2.0 E 1 CH-46E WST S/A D

Goal. Introduce general techniques of instruction.

Requirement

Discuss:
CRM during T&R syllabus events.
Crew comfort level.
Emergency procedures.
Local course rules.
Squadron, Group, Wing, and/or MEU SOPs
Techniques of instruction.

Introduce:
Course rules.
Techniques of instruction.

Performance Standards. BIP (UI) will adhere to instructional techniques set forth by the squadron stan board and/or applicable SOPs.

Prerequisite. See stage prerequisite matrix.

BIP-5301 1.5 E 2+ CH-46E A D

Goal. Introduce techniques of instruction for single ship and section CALs, FORM/TACFORM and navigation. The focus of CAL instructional techniques should be on single ship and multi-aircraft CALs. The focus of FORM techniques of instruction should be on basic day formation procedures and techniques. The focus of NAV instructional techniques should be on navigation as a single ship, or as the lead aircraft in a multi-aircraft element.

Requirement

Discuss:
Navigation and identifying positions using charts/maps.
Low threat approaches/departures.
Map preparation.
CNCS employment and precision navigation.
CAL pattern, radius of turn and power requirements
TACFORM maneuvers and techniques of instruction.
FORM and CALs with other T/M/S.
FORM standardization and techniques of instruction.
Crew comfort level.

Introduce: Techniques of instruction for single ship and multi-aircraft CALs, formation flight and navigation.

Review: CAL-2101, CAL-2102.

Performance Standards. Ensure effective CRM for navigation and obstacle clearance, retain positive aircraft control, and utilize proper terminology. Demonstrate proper instructional techniques for FAM, CAL, FORM and navigation phases of the flight.

Prerequisite. SBIP-5300.

BIP-5302 1.5 E 1+ CH-46E A D

Goal. Introduce techniques of instruction for day external cargo operations, day FCLPs, and day HIE operations. The focus of this flight is on the techniques of instruction for these skill events. If actual HST/HRST masters are not available, the profiles for conducting external cargo and HIE operations should be flown to facilitate evaluating the BIP (UI)'s techniques of instruction in these skills.

Requirement

Discuss:
CRM during external, HIE, and FCLP operations.
HRST master and HRST safety observer brief.
Hoist and winch operations.
Emergency procedures during external operations.
Command jettisoning procedures.
HST brief.
Techniques of instruction for external operations.
Voice communication/standard terminology.
ICS failure/hand and arm signals.
Current Force Order/Wing SOP.
Obstacle clearance/waveoff.
Rope specific emergency procedures.
CRM during aerial deliveries.
Voice communication/standard terminology during aerial deliveries.
Proper rigging and preflight of equipment to be inserted by aerial delivery.
Sensor drop procedures.
Airspace coordination considerations.
Techniques of instruction for day HIE operations.
CRM during shipboard landings.
Communications used in shipboard environment.
LSE signals.
Emergency procedures over water (water landings/ ditching).
Aircraft lighting used during shipboard operations.
Aviation Capable/Air Capable class ships.
Techniques of instruction for shipboard operations.

Introduce: Techniques of instruction for day external operations, FCLPs, and HIE operations.

Review: EXT-2701, CQ-2901, HIE-2705, HIE-2707.

Performance Standards. BIP(UI) shall conduct HST brief/HRST brief. BIP(UI) shall demonstrate proper CRM and instructional techniques during external cargo, FCLP, and HIE operations. BIP(UI) shall conduct a minimum of 5 external pick-ups and drop-offs and place load within 15 feet of intended point of drop. BIP (UI) shall conduct a minimum of 5 FCLPs. BIP (UI) shall demonstrate ability to properly inspect aircraft rigging, execute HIE per local SOPs, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on insertion point, maintain effective scan, demonstrate proper CRM and voice commands, maintain SA of obstacles. If conducted as a fastrope/rappel event, the BIP(UI) shall demonstrate ability to insert ropers within 10 feet of intended insertion point, execute HIE per local SOPs, fly pattern within 50 feet and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize proper closure to insertion point, remain oriented on insertion point, utilize solid instrument scan, demonstrate proper crew resource management/voice commands, maintain SA of obstacle clearance, demonstrate ability to hold extended high hover, and demonstrate understanding of HOGE requirements. For either

profile, the BIP(UI) shall demonstrate proper instructional techniques for HIE operations.

Prerequisite. SBIP-5300.

External Syllabus Support. HST, external load (if able), LZ, hook and pendant, FCLP pad, designated DZ (if able). Applicable HIE support equipment. HRST/Jump Master as applicable. If conducted as an aerial delivery profile, a properly designated drop zone or landing zone, as applicable.

BIP-5303 1.5 E 1+ CH-46E A D

Goal. Introduce techniques of instruction for day FAM and instruments. The focus of FAM techniques of instruction should be on stan maneuvers, NATOPS procedures and aircraft systems.

Requirement

Discuss:
- CH-46E aircraft systems, NATOPS, and stan maneuvers.
- Safety parameters.
- Instructional techniques.
- Squadron, Group, Wing, and/or MEU SOPs.
- Squadron standardization trends.
- Basic instrument procedures.
- Basic instrument patterns (vertical S-1 and Oscar patterns).
- IFR flight planning.
- Filing DD-175 and DD-175-1.
- Airway procedures.
- Precision and non-precision instrument approaches.
- Emergency procedures.

Performance Standards. BIP(UI) shall demonstrate ability to properly instruct squadron pilots in stan and NATOPS maneuvers and instrument flight profiles. The flight shall be terminated with an instrument approach. The BIP (UI) shall conform to all INST maneuvers set forth in the NATOPS Instrument Flight Manual.

Prerequisite. SBIP-5300.

BIP-5304 1.5 R E 2+ CH-46E A D

Goal. Conduct an evaluation of the BIP(UI)'s instructional techniques for CALs, FORM/TACFORM, navigation, day externals, day HIE operations, day FCLPs and instruments. The intent of this flight event is to evaluate the BIP(UI)'s overall instructional techniques for all applicable flight events. The duration and focus of training in any of the flight profiles listed is at the discretion of the instructor and/or recommendations of the squadron stan board.

Requirement

Discuss:
- Instructional techniques.
- Squadron, Group, Wing, and/or MEU SOPs.

Squadron standardization trends.
ATF writing procedures.
Previously flown flight events.

Review: SBIP-5300 through BIP-5303.

Performance Standards. BIP(UI) shall demonstrate ability to properly instruct squadron pilots in all relevant flight profiles.

Prerequisite. SBIP-5300 through BIP-5303.

2.18.6 Advanced Instructor POI

2.18.6.1 General. There are 6 advanced level instructor syllabi that qualify instructors for specific portions of the T&R syllabus. These courses and corresponding T&R codes are as follows:

| SYLLABUS | T&R CODES |
|---|---|
| NSSI | NSSI-5501, NSSI-5502, NSSI-5503 |
| NSFI | NSFI-5601, NSFI-5602, NSFI-5603 |
| TERFI | TERFI-5701, TERFI-5702, TERFI-5703 |
| DMI | DMI-5801, DMI-5802 |
| NSI | NSI-5901, NSI-5902, NSI-5903, NSI-5904, NSI-5905, NSI-5906 |
| WTI | N/A |

2.18.6.2 The current MAWTS-1 CH-46E Course Catalog details the above syllabi, including the prerequisite academic and flight events. There will be no refly factors for these instructor flights. T&R syllabus proficiency in stage is considered sufficient to maintain proficiency as an instructor.

2.19 REQUIREMENTS, QUALIFICATIONS, DESIGNATIONS (RQD) PHASE (6000)

2.19.1 Purpose. This phase contains required evaluation and flight leadership events to determine qualification for designation in specific flight skills, systems, knowledge, and flight leadership traits.

2.19.1 General

2.19.1.1 Squadrons should use this phase of training for check flights and designations. The PUI will demonstrate sound levels of aircraft/flight leadership and judgment required in a combat environment.

2.19.1.2 Squadrons shall evaluate pilots for required and flight leadership designations at the discretion of the commanding officer per the criteria in the CH46 NATOPS Flight Manual, OPNAV 3710.7, and local SOPs.

2.19.1.3 Upon the successful completion of the check flight, the new Helicopter Aircraft Commander (HAC), Section/Division/Flight Leader, or Air Mission Commander will be designated in writing by the commanding officer.

2.19.1.4 Flight leadership codes do not chain other syllabus events. Log appropriate T&R syllabus events in addition to flight leadership codes. Range, ordnance, and external support will be IAW the appropriate T&R syllabus events.

2.19.1.5 Initial designation requires completion of all flight leadership events specific to a designation. Flight leadership re-designation criteria for aircrew that do not require Core Skill Introduction Refresher training is at the discretion of the commanding officer. For aircrew that require Core Skill Introduction Refresher training, the minimum re-designation requirement for flight leader positions are the successful completion of the respective flight leader POI check (R-coded) events, for each flight leader POI previously held.

2.19.1.6 Flight Leadership proficiency shall be logged in M-SHARP.

2.19.2 NATOPS/Instrument POI

2.19.2.1 Purpose. To evaluate the airman in specific flight skills, knowledge of aircraft systems, performance limitations, emergency procedures and ground operations, and can be used to determine qualification for NATOPS Instructor designation.

2.19.2.2 General

a. The evaluating pilot shall be a designated Assistant NATOPS Instructor (ANI), NATOPS Instructor (NI), or NATOPS Evaluator (NE) and shall conduct the NATOPS evaluation in accordance with OPNAVINST 3710.7 Series and other applicable directives, instructions and orders.

b. The NATOPS Evaluator shall utilize the NATOPS Model Manager generated NATOPS Aviation Training Form (ATF) and the evaluation metrics required for the accomplishment and performance of the standardized criterion to determine whether the aircrewman completed the sortie. Prior to the Oral Examination, the NATOPS Evaluator shall review the Evaluee's NATOPS Monthly Emergency Procedures examinations and quarterly Simulator/Cockpit-Cabin Drills located in the APR for the previous twelve (12) months and previous NATOPS evaluations. At the discretion of the squadron commanding officer, a letter designating the pilot as NATOPS qualified shall be placed in the NATOPS jacket.

c. NATOPS Evaluees shall complete and have a graded Open Book, Closed Book, and Oral Examination prior to the commencement of the actual NATOPS evaluation event.

d. Minimum Crew Requirements. P/CP/CC/(AGO if NS are used).

2.19.2.3 NATOPS Training. All requirements delineated in the matrix below shall be completed/graded prior to the evaluation event.

| T&R CODE | EVENT |
|---|---|
| NTPS-6001 | CH-46E OPEN BOOK EXAMINATION |
| NTPS-6002 | CH-46E CLOSED BOOK EXAMINATION |
| NTPS-6003 | CH-46E ORAL EXAMINATION |

NTPS-6001 3.0 365 R Open Book NATOPS Examination

Goal. The Open Book Examination may be taken from the NATOPS question bank. The purpose of the Open Book examination portion is to evaluate the airman's knowledge of the appropriate publications and the aircraft.

Performance Standards. Achieve a minimum grade of Qualified (minimum score of 3.5/4.0) on the Open Book examination. The maximum time for this examination should not exceed one week.

NTPS-6002 1.0 365 R Closed Book NATOPS Examination

Goal. The Closed Book Examination may be taken from the NATOPS question bank. The purpose of the Closed Book examination portion is to evaluate the airman's knowledge concerning normal/emergency procedures and aircraft limitations. Questions designated critical will be so marked.

Performance Standards. Achieve a minimum grade of Qualified (minimum score of 3.3) on the Closed Book examination. An incorrect answer to any question in the critical category will result in a grade of Unqualified being assigned to the examination.

NTPS-6003 2.0 365 R Oral NATOPS Examination

Goal. The Oral Examination questions may be taken from the NATOPS manual. The instructor/evaluator may draw upon their experience to propose questions of a direct and positive manner and in no way be opinionated to evaluate the airman's knowledge concerning normal/emergency procedures, aircraft systems, limitations, and performance.

Performance Standards. Achieve a minimum grade of Qualified on the Oral Examination.

NTPS-6101 1.5 365 R,E 1 CH-46E/WST A/S (N)

Goal. Conduct an objective evaluation of the airman's knowledge of mission planning, briefing, normal operation procedures (flight and ground), crew resource management, aircraft systems, performance criteria, emergency procedures, and debriefing, with emphasis on normal and emergency procedures vice tactical execution. Other focus areas should included Rotorwing SOPs, local course rules and SOP's, and standardization manual. The NATOPS evaluation is intended to evaluate compliance and efficiency in the execution of normal operating procedures and reaction to emergencies and malfunctions. The NATOPS evaluation process should be as much a learning tool and/or experience as it as an evaluation.

Requirement. Demonstrate comprehensive knowledge and understanding of NATOPS, applicable SOPs and local Course Rules.

Discuss: All emergency procedures and Standardization Manual maneuvers.

Review:
Local SOP's / Course Rules
Emergency Procedures (Simulated).
Standardization Manual maneuvers.
Familiarization maneuvers.

Performance Standards. Executes flight and/or ground operations safely and IAW OPNAV 3710.7 Series, NATOPS, NATOPS Instrument Flight Manual and Standardization Manual, and complies with SOP and Local Course Rules. The performance expected by the evaluator in this flight shall be commensurate with the experience of the pilot under evaluation.

Prerequisite. Qualified H2P. Successful completion with a grade of qualified on NTPS-6001(Open Book Exam), NTPS-6002(Closed Book Exam), and NTPS-6003(Oral Exam).

External Syllabus Support. WST/APT (If sim is utilized).

2.19.3 Instrument Evaluation POI

2.19.3.1 Purpose. To evaluate the airman in specific flight skills, knowledge and strict adherence to NATOPS instrument procedures.

2.19.3.2 General

a. The evaluating pilot shall be a member of the Instrument Flight Board and shall conduct the Instrument Evaluation IAW OPNAVINST 3710.7 Series, NAVAIR 00-80T-112 (NATOPS Instrument Flight Manual), FAR/AIM, and other applicable directives, instructions and orders.

b. The Instrument Evaluator shall utilize the NATOPS Model Manager generated Instrument Evaluation Aviation Training Form (ATF) and the evaluation metrics required for the accomplishment and performance of the standardized criterion to determine whether the aircrewman completed the sortie.

c. Minimum Crew Requirements. P/CP/CC

2.19.3.3 Required Training. All requirements delineated in the matrix below shall be completed/graded prior to the evaluation event.

| T&R CODE | EVENT |
|---|---|
| INST-6004 | INSTRUMENT GROUND SCHOOL (IGS) |
| INST-6005 | WRITTEN INSTRUMENT EXAMINATION |
| INST-6006 | ORAL INSTRUMENT EXAMINATION |

INST-6004 4.0 365 R Instrument Ground School(IGS)

Goal. The Instrument Ground School shall be a Commander Naval Air Forces (CNAF) approved syllabus and at a minimum cover the following topics:

1) Spatial disorientation review.

2) Use of non-DOD instrument approach/departure procedures.

3) GPS fundamentals and CNO GPS policy Statement.

Performance Standards. Achieve a minimum grade of Qualified for Instrument Ground School which also encompasses the Written and Oral examinations.

INST-6005 1.0 365 R Written Instrument Examination

Goal. The Written Examination shall cover the following subject areas:

1) Instrument procedures contained in pertinent Navy or Marine Corps regulations, orders, and instructions.

2) Pertinent parts of the Federal Aviation Regulations (FAR), other regulations, and/or aeronautical publications as applicable.

3) Interpretation of weather information normally used in flight planning.

Performance Standards. Achieve a minimum grade of Qualified on the Written Examination within 60 days prior to commencement of the evaluation flight.

INST-6006 2.0 365 R Oral Instrument Examination

Goal. The Oral Examination may consist of questions derived from applicable directives, instructions and orders. The instructor/evaluator may draw upon their experience to propose questions of a direct and positive manner and in no way be opinionated, to evaluate the airman's knowledge of the NATOPS, Instrument Flight Manual, FAR/AIM and/or aeronautical publications as applicable, normal/emergency instrument ground and flight procedures, weather, aircraft limitations, and performance.

Performance Standards
Achieve a minimum grade of Qualified on the Oral Examination.

INST-6102 1.5 365 R E WST/1 CH-46E S/A (N)

Goal. Conduct annual instrument evaluation and evaluate all phases of instrument flight to include precision and non-precision approaches, partial panel, and instrument holding.

Requirement

Discuss: Instrument procedures per NATOPS Instrument Flight Manual.

Review:
- FLIP publications
- Takeoff / Approach minimums
- Weather briefing
- Flight planning procedures
- TACAN procedures
- Instrument approach procedures
- Voice reporting procedures
- CNCS

Performance Standards. Pilots shall receive and acknowledge ATC clearance; Execute instrument takeoff as required to a positive climbing attitude and acceleration to climb schedule expeditiously and safely. Demonstrate smooth transitions to an angle of bank turn

required for desired turn rate; adjust angle of bank as required to maintain desired rate of turn while maintaining a relatively constant turn throughout. During steep turns, maintain positive control and applies proper correction to keep within safe limits of altitude and airspeed. Demonstrate proper procedure for recovery from unusual attitudes, proper procedures for positioning aircraft on predetermined TACAN radial. Conduct Partial Panel airwork. Maintain control and applies proper corrections to keep within safe limits of altitude, airspeed, attitude and heading. Conduct flight planning and clearance execution in accordance with local SOP's FLIP, OPNAV and other governing instructions. Maintain heading/track, airspeed, and altitude as briefed or cleared by controlling agency. Observe good radio discipline; give required reports clearly and in proper sequence. Execute approaches as published or instructed, from which a successful straight-in or circling approach to landing can be made. Execute prompt, proper procedures for activating, tuning, and utilizing comm and nav equipment. Properly analyzes simulated emergency situations and takes appropriate action without deviation, error, or omission. All areas on the Instrument Flight Evaluation are critical. An "Unsatisfactory" grade in any area results in an "Unsatisfactory" grade for the flight.

Prerequisite. Successful completion with a grade of Qualified on INST-6004 (IGS), INST-6005 (Written Exam) and INST-6006 (Oral Exam).

External Syllabus Support. Instrument capable WST/APT. Instrument capable NAVAID or facility if flown in aircraft.

2.19.4 CRM Training

2.19.4.1 Purpose. To conduct annual CRM training.

2.19.4.2 General

a. Aircrew shall be NSQ (appropriate light level) for all NS flights.

b. CRM Flight may be flown concurrent with any operational or training flight or simulator, including NATOPS NTPS-6101 or Instrument INST-6102 Evaluation, using the practice and feedback instructional strategies.

c. The CRM Flight Evaluator must be designated CRM Facilitator or CRM Instructor.

2.19.4.3 Minimum Crew Requirement. P/CP/CC (AGO if NS are used).

CRM-6007 3.0 365 R CH-46E CRM Class

Goal. Conduct annual CH-46E CRM Ground Training in accordance with the CH-46E NATOPS Flight Manual and OPNAVINST 1542.7.

Performance Standards. Complete CH-46E Specific CRM Ground Training and record in NATOPS Jacket.

CRM-6103 1.5 365 R,E 1 CH-46E/WST A/S (N)

Goal. Practice/review CRM principles presented in the CH-46E CRM training course while executing a simulated mission scenario.

Requirement

Discuss:
Decision making.
Assertiveness.
Mission analysis.
Communication.
Leadership.
Adaptability/flexibility.
Situational awareness.

Evaluate:
Decision making.
Assertiveness.
Mission analysis.
Communication.
Leadership.
Adaptability/Flexibility.
Situational Awareness.
CRM during emergencies and system failures.

Performance Standards. Pilots shall demonstrate effective use of the CRM 7 critical skills areas.

Prerequisite. Completion of an annual CH-46E CRM Class (CRM-6007).

2.19.5 Functional Check Flights (FCF)

2.19.5.1 Purpose. To introduce and develop proficiency in FCF procedures as well as obtain the squadron FCP designation.

2.19.5.2 General

a. PUI will demonstrate an understanding of, and proficiency in, the maintenance procedures involved in FCFs.

b. PUI will also demonstrate a detailed knowledge of aircraft systems and administrative maintenance procedures. These constitute the minimum requirements for qualification. Additional training may be required due to multiple aircraft configurations currently utilized.

c. The Quality Assurance Officer within each squadron should manage the FCP syllabus.

d. PUI must be designated as HAC, have 50 hours PIC in model to be designated an FCP. (Commanding officers have the option to waive this requirement).

e. Events will be instructed by a designated FCP.

f. Successful completion of the FCF-6137 constitutes FCP. A designation letter signed by the commanding officer stating the pilot is FCP

qualified is required. The original shall be placed in the Pilots NATOPS jacket and a copy shall be placed in the APR with a corresponding logbook entry. Additionally, the code FCF-6137 shall be logged on any subsequent functional check flights to track currency and proficiency regardless of whether or not a full card is conducted on that flight.

g. To the maximum extent possible all initial and refresher FCF T&R events (FCF-6131 through FCF-6137) should be conducted utilizing an aircraft in a test status. At the discretion of the squadron commanding officer, initial and refresher FCF T&R events may be conducted in MC and FMC aircraft that are not in a test status.

2.19.5.3 Crew Requirements. P/CP/CC.

2.19.5.4 Ground/Academic Training. Selected reading material from OPNAVINST 4790, CH-46E NATOPS, SOPs, MIMs, etc. as designated by each squadron commanding officer. Prior to the first training flight, the PUI must complete an FCF Equipment Brief and a FCF Procedures Brief. The FCF Equipment Brief is a locally produced document intended to familiarize the PUI with setup and operation of all FCF equipment (AIMS AU, enhanced AIMS, AIMS DU, etc). The FCF Procedures Brief is a locally produced document intended to familiarize the PUI with the basic conduct of Functional Check Flights. Prior to the 6136, the PUI must also complete the FCF open book exam.

SFCF-6130 2.0 B, E CH-46E S/A

Goal. IP Demonstrate and introduce right-seat full-card FCF procedures.

Requirement. IP will demonstrate all items in the FCF checklist to include ground, hover, and in-flight checks.

Discuss. ODO brief procedures, CRM, FCF paperwork process, ADB contents, crew requirements/authorized crewmembers, weather requirements, testing areas, importance of preflight, QA briefs, check flight profiles (A, B, C, D, E and F), and NAVFLIRs.

Performance Standards. IAW NATOPS, PUI must demonstrate familiarity with FCF checklists, procedures, and maneuvers.

Prerequisites. FCF ground/academic training complete, and be familiar with AIMS function within the CNCS.

External Syllabus Support. AIMS Capable WST.

Crew Requirements. FCP/PUI.

FCF-6131 1.5 B, E 1 CH-46E A D

Goal. Conduct T58-GE-16A Engine and Engine Condition Control System (ECCS) setup.

Requirement. Introduce procedures and techniques for setup of the T58-GE-16A Engine and the associated ECCS. Introduce all items in the ground check portion of the FCF checklist. Aircraft must be configured with AIMS.

Discuss

T58-GE-16A principles of operation and system limitations.
ECCS principles of operation and system limitations.
T58-GE-16A and ECCS setup procedures.
AIMS principles of operation and Display Unit setup.
Troubleshooting techniques.
Maintenance Instruction Manuals.
NAVAIR A1-H46E-NFM-700 FCF checklist (B-card).
SqdnO 4790.
Work center debriefs and MAF submission.

Introduce. Procedures and techniques for conducting engine setup and ECCS setup on the T58-GE-16A engine and vibration checks.

Quality Assurance brief/de-brief.
AIMS Display Unit setup and operation.
ICS, radios, and internal/external lights checks.
Engine start checks.
Starting rotor checks.
Rotor speed check.
Torque Zeroization.
Torque indicator comparison checks.
Engine acceleration checks.
ECCS FLY Adjustment.
Fuel control unit topping adjustment.
ECCS MID and MAX adjustment.
Single-point and four-point engine performance check.
Ground, hover and 120 KIAS vibration analysis.
Troubleshooting techniques.
T58 Engine Performance Check - Version 3.1.6 software.
Vib Review 2.2 software.
Work center debriefs and Maintenance Action Form (MAF) submission/sign off.

Performance Standards. Pilots shall observe AIMS Display Unit setup and operation, conduct a full engine setup and performance check and a complete ECCS setup on the T58-GE-16A engine (FLY, MID, and MAX adjustments), as well as complete a vibration analysis in the ground, hover, and 120 KIAS regimes. The vibration analysis shall include introduction to the Vib Review 2.2 vibration analysis software.

Prerequisites. HAC, FCP required reading, FCF Equipment Brief, and Maintenance Procedures and FCF Requirements Brief, FCF-6130.

Crew Requirements. FCP/PUI/FCCC.

FCF-6132 1.5 E 1 CH-46E A D

Goal. Conduct enhanced AIMS FCF checks.

Requirement. Introduce procedures and techniques for setup of the enhanced AIMS checks. Introduce stick position check, stick plot, autorotation, and engine performance checks. Aircraft must be configured with enhanced AIMS.

Discuss

DU and AU operation.

Troubleshooting techniques.
Maintenance Instruction Manuals.
NAVAIR A1-H46E-NFM-700A FCF checklist (B-card).
SqdnO 4790.
Work center debriefs and MAF submission.
Enhanced AIMS stick position check, stick plot, and autorotation procedures.
Enhanced AIMS engine performance checks.

Introduce. Procedures and techniques for conducting enhanced AIMS operational checks.
Quality Assurance brief/de-brief.

Enhanced AIMS engine performance check.
Troubleshooting techniques.
Enhanced AIMS stick position check, stick plot, and autorotation.
Work center debriefs and Maintenance Action Form (MAF) submission/sign off.

Performance Standards. Pilots shall observe enhanced AIMS setup and operation.

Prerequisites. HAC, FCP required reading, FCF Equipment Brief, and Maintenance Procedures and FCF Requirements Brief, FCF-6130.

Crew Requirements. FCP/PUI/FCCC.

FCF-6133 1.5 E 1 CH-46E A D

Goal. Conduct a full track and balance evolution starting with initial run and consisting of as many flights as required to achieve a balanced rotor system and observing at least one set of rotor blade adjustments.

Requirement. Introduce procedures and techniques for conducting ground and hover rotor flat track and ground, hover, and 120 KIAS rotor balance. Aircraft must be configured with AIMS.

Discuss
Vibrations associated with rotary wing systems.
Rotor system and flight control components, principles of operation and system limitations.
AIMS Display Unit setup, operation and troubleshooting techniques.
AIMS CDNU settings page.
Maintenance Instruction Manuals.
Rotor blade adjustments.
NAVAIR A1-H46E-NFM-700 FCF checklist (D-card).
SqdnO 4790.
Work center debriefs and MAF submission.

Introduce. Procedures and techniques for conducting rotor track and balance.
Quality Assurance brief/de-brief.
AIMS Display Unit setup, operation, and troubleshooting.
AIMS CDNU settings page

Rotor flat track.
Rotor balance.
Stick plot.
Autorotation check.
Track and balance run sheet reading and trend analysis.
Rotor blade adjustments.
Stick plot and autorotation check analysis.
Work center debriefs and MAF submission/sign off.

Performance Standards. Pilots shall conduct a complete rotor track and balance evolution resulting in a rotor system balanced in limits to include a focus on test equipment troubleshooting methods, rotor balance trend analysis, and rotor blade adjustments.

Prerequisites. HAC, FCP required reading, FCF Equipment Brief, and Maintenance Procedures and FCF Requirements Brief, FCF-6130.

Crew Requirements. FCP/PUI/FCCC.

FCF-6135 1.5 E 1 CH-46E A D

Goal. Conduct hover and forward flight Automatic Flight Control System (AFCS) checks.

Requirement. Introduce procedures and techniques for conducting hover and forward flight AFCS checks. Aircraft may be configured with or without AIMS.

Discuss
AFCS components, principles of operation and system limitations.
AFCS troubleshooting techniques.
Maintenance Instruction Manuals.
NAVAIR A1-H46E-NFM-700 or -700A FCF checklist (E-card).
SqdnO 4790.
Work center debriefs and MAF submission.

Introduce. Procedures and techniques for conducting hover and forward flight AFCS checks.
Flight control checks.
Stick position checks.
Hover AFCS stability check.
Heading hold check.
Radar altimeter check.
Forward flight AFCS stability checks.
Differential Airspeed Hold (DASH) low-rate driver check.
Barometric altitude hold check.
Troubleshooting and failed component isolation techniques.
Work center debriefs and MAF submission/sign off.

Performance Standards. Pilots shall conduct a full hover and forward flight AFCS check flight to include a focus on troubleshooting methods and techniques for isolating failed components based on aircraft behavior in various regimes.

Prerequisites. HAC, FCP required reading, FCF Equipment Brief, and Maintenance Procedures and FCF Requirements Brief, FCF-6130.

Crew Requirements. FCP/PUI/FCCC.

FCF-6136 1.5 R,E 1 CH-46E A D

Goal. Full card FCF introduction and review. Emphasize techniques for efficiently integrating individual test procedures.

Requirement. Conduct a full card FCF and introduce procedures and techniques for completion of an A-card Functional Check and a C-card Functional Check. Aircraft may be AIMS or non-AIMS.

Discuss

FCF procedures.
Troubleshooting techniques.
Maintenance Instruction Manuals.

NAVAIR A1-H46E-NFM-700 or -700A FCF checklist (A-card and C-card).
SqdnO 4790.

Introduce. Procedures and techniques for system checks specific to a full card (A-card) FCF as well as the procedures for a C-card FCF.

Fire handle check.
Master caution panel check.
Auxiliary Power Unit check.
Fuel quantity gauges/BITE indicators test.
No. 2 boost pressure check.
Internal Communication System and lighting checks.
Generators check.
Engine anti-ice checks.
-8/-9 ground, hover and 120 KIAS vibration analysis.
Pretaxi checks.
Taxi checks.
$N_F/N_T$ droop and overspeed system checks.
Longitudinal cyclic trim check.
In air alignment of AHRS/MAD.
Communications, navigation, and Aircraft Survivability Equipment (ASE) checks.
Post-FCF paperwork and FCF card closeout.

Review. FCF-6131, 6132, 6133, 6134, 6135

Quality Assurance brief/de-brief.
NP-600 Engine Test Set and 8500C Balancer/Analyzer setup and operation.
T58 Engine Performance Check - Version 3.1.6 software.
Vib Review 2.2 software.
Work center debriefs and MAF submission/sign off.

Performance Standards. Pilots shall conduct a full card FCF with a focus on integrating individual test procedures into an efficient and accurate functional check. FCP Under Instruction (FCPUI) shall demonstrate knowledge of all B, D, and E-card

functional checks. FCP instructor shall introduce all procedures associated with A and C-card functional checks.

Prerequisites. FCF-6130, FCF-6131, 6132 (as applicable), 6133, 6134 (as applicable), 6135. All ground and academic requirements complete.

Crew Requirements. FCP/PUI/FCCC

FCF-6137 1.5 180 R,E CH-46E A D

Goal. FCF designation.

Requirement. Effectively demonstrate the ability to perform a full card FCF. Aircraft may be configured with or without AIMS.

Discuss
FCF procedures.
Troubleshooting techniques.
Maintenance Instruction Manuals.
NAVAIR A1-H46E-NFM-700 and -700A FCF checklist (A-card).
SqdnO 4790.

Review. NATOPS Chapter 10, FCF checklist, and FCP-4.

Performance Standards. Pilots shall demonstrate the ability to conduct a full card (A-card) FCF correctly and efficiently, and demonstrate the ability to troubleshoot aircraft problems.

Prerequisite. FCP open-book examination, FCF-6136.

Crew Required. AMO or QAO (FCP at discretion of C.O.)/PUI/CC.

2.19.6 Helicopter Aircraft Commander (HAC)

2.19.6.1 Purpose. To review all areas of instruction, demonstrate proficiency and knowledge of all maneuvers, while evaluating the PUI's requisite knowledge, leadership, airmanship, and judgment in all phases of flight commensurate with the designation as a HAC.

2.19.6.2 General

a. Prospective HAC's shall conduct the following day and night flights in order to develop the PUI's flight leadership necessary for designation.

b. The prospective HAC must have completed all of the requirements for, and possess the knowledge, proficiency, and capabilities of an H2P to an advanced degree. He must further meet the requirements as set forth in detail in OPNAVINST 3710.7.

(1) Have been recommended by the Standardization Board.

(2) Have a minimum of 500 total flight hours.

(3) Have 150 flight hours in rotary-wing aircraft.

(4) Core Skill complete. (The commanding officer may defer any training flights per the T&R Program Manual.)

(5) Open and Closed book NATOPS examinations shall be completed prior to the commencement of the check flight (HAC-6204).

c. For HAC-6203 and 6204 the evaluating pilot shall be a designated NATOPS Instructor or ANI.

d. For each event the prospective HAC will be evaluated on the following:

(1) Preparation:

- Load comp.
- Map preparation.
- Flight/mission planning.
- Mission products.
- Time management.
- Teamwork/Initiative.
- Knowledge.

(2) Execution:

- Professionalism.
- Airwork.
- Crew Resource Management (CRM).
- NATOPS adherence.
- SOPs/Orders adherence.

e. Refresher pilots previously qualified as HACs, upon completion of NTPS-6101, may be designated as Aircraft Commanders by unit commanding officers.

2.19.6.3 Ground/Academic Training. Prospective HACs must have read and be familiar with the following publications: OPNAVINST 3710.7, A1-H46AE-NFM-000, CH-46E Flight Standardization Manual, ANTTP series publications and local SOP's.

2.19.6.4 Minimum Crew Requirements. P/CP/CC/(AGO when conducted on NS).

HAC-6201 1.5 E 1 CH-46E/WST A D

Goal. Conduct day HAC review. Emphasize emergency procedures. Fly at (or simulate) high gross weight condition.

Requirement. This flight will review all practicable day operations and procedures contained in the T&R syllabus in preparation for the HAC check.

Discuss: Aircraft commander duties and responsibilities.

Review: Flight maneuvers, aircraft systems.

Performance Standards. Pilot will conduct day Core Skill stage events IAW applicable manuals, and demonstrate sound knowledge of NATOPS limits, EPs, and aircraft systems.

Prerequisites. Per NATOPS, Squadron SOP, and NSQ.

HAC-6202 1.5 E 1 CH-46E/WST A N

Goal. Conduct night HAC review. Night and NS. Emphasize emergency procedures. Fly at (or simulate) high gross weight condition.

Requirement

Discuss: Aircraft commander duties and responsibilities.

Review: Flight maneuvers and aircraft systems.

Performance Standards. Pilot will conduct night/NVG Core Skill stage events IAW applicable manuals, and demonstrate sound knowledge of SOPs, T&R Program Manual regulations, and OPNAV regulations.

Prerequisites. Per NATOPS, Squadron SOP, and NSQ.

HAC-6203 1.5 E 1 CH-46E A D

Goal. Conduct day HAC check. Check will be conducted per the CH-46E NATOPS Flight Manual and OPNAVINST 3710.7 and include all practicable operations and procedures previously covered. Fly at (or simulate) high gross weight condition.

Requirement. Pilots shall demonstrate, to an advanced degree, the knowledge, proficiency and capabilities of an H2P, to include CRM, with emphasis on decision making and situational awareness.

Discuss: Aircraft commander duties and responsibilities.

Review: Flight maneuvers and aircraft systems.

Performance Standards. Pilot will conduct day Core Skill stage events IAW applicable manuals, demonstrate situational awareness, CRM, and operational knowledge necessary to be a HAC, and demonstrate sound knowledge of the ANTTP series publications and CH-46E tactical employment.

Prerequisites. HAC-6201, and HAC-6202.

HAC-6204 1.5 E 1 CH-46E A N

Goal. Conduct night HAC check. Night unaided and/or NS. Emphasize emergency procedures. Fly at (or simulate) high gross weight condition.

Requirement. Pilots shall demonstrate, to an advanced degree, the knowledge, proficiency and capabilities of an H2P, to include CRM, with emphasis on decision making and situational awareness.

Discuss: Aircraft commander duties and responsibilities.

Review: Flight maneuvers, aircraft systems.

Performance Standards. Pilot will conduct night, and/or NVG Core Skill stage events IAW applicable manuals, demonstrate situational awareness, CRM, and operational knowledge necessary to be a HAC, and demonstrate sound knowledge of the CH-46E ANTTP series publications and CH-46E tactical employment.

Prerequisites. HAC-6201 and HAC-6202.

2.19.7 Section Leader (SL)

2.19.7.1 Purpose. To prepare and evaluate the prospective section lead's ability to plan, brief and lead a section of assault support aircraft.

2.19.7.2 General

a. Prospective section leads shall conduct the following day and night sorties in order to develop the PUI's flight leadership necessary for designation. Sortie events SL-6301 through SL-6307 are not required to be flown in order and may be flown in conjunction with each other.

b. Section lead instruction sorties events (SL-6301 through SL-6305) may be evaluated by a section leader or higher. SL-6306 and SL-6307 shall be evaluated by a division lead or higher. Additionally, one of the final two sortie events (SL-6306/6307) shall be flown at night. The check flight (SL-6307) shall be evaluated by a qualified MAG designated FLSE from another command. If an FLSE from another command is unavailable, the MAG/MAGTF commanding officer may approve the use of internal squadron FLSE.

c. A prospective section leader must be fully qualified to lead a section under all conditions in performance of any of the squadron tasks as well as meet the following prerequisites:

(1) Be a qualified CH-46E Aircraft commander.

(2) Have a minimum of 50 HAC hours.

(3) Nominated by the Standardization Board.

d. The Section Leader Under Instruction (SLUI) will perform preflight planning, conduct a training or tactical mission and NATOPS brief, lead a section and conduct a debrief. For each SLUI event, the SLUI shall be evaluated on the following:

(1) Plan:

- Learning objective accomplishment.
- Training area selection.
- Mission Products.
- Contingency planning.
- ANTTP series publications utilization.
- External support coordination.

(2) Execution:

- Flight Leadership.
- Professionalism.
- Airwork.
- Crew Resource Management (CRM).
- NATOPS adherence.
- SOPs/Orders adherence.

e. The squadron will ensure that the SLUI is prepared for the section lead syllabus. The flight stage of this syllabus must be complete within six (6) months following the first flight. If six months have elapsed since completion of any SLUI flight, that flight must be reflown prior to completing the final certification flight.

f. For SL-6306 and SL-6307 flights, the squadron operations department will provide the proposed section leader with a tactical scenario containing sufficient information to enable mission analysis and planning.

2.19.7.3 Minimum Crew Requirements. P/CP/CC/AGO.

2.19.7.4 Ground/Academic Training. The MAWTS-1 CH-46E Course Catalog contains the required readings, chalk talks, and lectures which shall be completed prior to starting the Section Leader (SL) stage.

2.19.7.5 Prerequisites

| T&R CODE | EVENT |
|---|---|
| ACAD-2007 | (U) SIX FUNCTIONS OF MARINE AVIATION |
| ACAD-2029 | (U) MAGTF TARGETING AND FIRE SUPPORT PLANNING |
| ACAD-2022 | (U) TACTICAL FLIGHT BRIEFING |
| ACAD-2030 | (U) INTEL PREPARATION OF THE BATTLESPACE |
| ACAD-3005 | (U) RAPID RESPONSE PLANNING PROCESS |
| ACPM-8630 | (U) TACTICAL AIR COMMAND CENTER (TACC) |
| ACPM-8660 | (U) JOINT OPS INTRO |

SL-6301 1.0 E 2 Assault Support Aircraft A D

Goal. Demonstrate the ability to conduct a day section tactical formation (TACFORM) flight as the section leader.

Requirement. Plan, brief, lead, and debrief a section tactical formation (TACFORM) flight as the section leader. The SLUI shall conduct all authorized TACFORM maneuvers as outlined in FORM-2301 as TAC Lead. Upon successful completion, both FORM-2301 and SL-6301 shall be logged for tracking purposes.

Discuss:
- CRM while conducting TACFORM.
- Crew comfort level while conducting TACFORM.
- Flight safety.
- Training rules.
- Standard terminology.
- TACFORM maneuvers.
- Intra/inter-plane communications.
- Intra/inter-flight crew coordination.
- Lost comm procedures and considerations while conducting TACFORM.
- IIMC procedures and rendezvous while conducting TACFORM.
- Loss of visual contact and rendezvous/join-up procedures.
- Flight control and training area management.
- In-flight emergency coordination.
- Section flight considerations (e.g., use of power, AOB, rates of climb/descents, power management).
- Day section tactical considerations.
- Appropriate formation maneuvers against a FW threat, RW threat, IR SAM threat, RF SAM threat, AAA/SA threat.
- Delegation of responsibilities to the flight.
- Mission planning for training missions (e.g., how to get all of the X's that S-3 has scheduled).

Introduce: Section flight leadership while conducting TACFORM.

Review: FORM-2301.

Performance Standards. Comply with all performance standards outlined in FORM-2301. In addition, the SLUI shall demonstrate the ability to plan and execute a training mission IAW the T&R codes annotated on the flight schedule, maintain situational awareness of wingman's position, training area boundaries, and timeline, enforce flight discipline (adherence to SOPs, training rules, NATOPS, etc.),

ensure flight safety, exercise flight coordination and control to maneuver the flight as necessary to remain within the training area, communicate intentions to the flight, demonstrate proper decision making in response to changing situations (e.g., EPs, IIMC, loss of visual contact).

Prerequisites. HAC, FORM-2301.

SL-6302 1.0 E 2 Assault Support Aircraft A D

Goal. Demonstrate the ability to conduct a day TERF navigation flight as the section leader.

Requirement. Plan, brief, lead, and debrief a day TERF navigation flight. The SLUI shall conduct all requirements outlined in TERF-2304 as the section leader. Upon successful completion, both TERF-2304 and SL-6302 shall be logged for tracking purposes.

Discuss:

CRM while conducting TERF navigation.
Crew comfort level while conducting TERF navigation.
Lost comm procedures and considerations while conducting day TERF navigation.
IIMC procedures and rendezvous while conducting day TERF navigation.
Map preparation / map study (1:50,000 & 1:250,000).
Cockpit management and CNCS employment considerations/techniques.
Route planning considerations.
Timeline planning and management.
Fuel planning considerations and the use of mission planning systems.
Loss of visual contact and rendezvous/join-up procedures.
Flight control and training area management.
In-flight emergency coordination.
Mission planning for training missions (e.g., how to get all of the X's that S-3 has scheduled).

Introduce: Section flight leadership while conducting TERF navigation.

Review: TERF-2304.

Performance Standards. Comply with all performance standards outlined in TERF-2304 except that the route must be flown remaining oriented within 200 meters. In addition, the SLUI shall arrive at the LZ or final checkpoint within 30 seconds of the planned arrival time, demonstrate the ability to plan and execute a training mission IAW the T&R codes annotated on the flight schedule, demonstrate proper CNCS utilization to assist with navigation and timing, maintain situational awareness of wingman's position, TERF area boundaries, and timeline, enforce flight discipline (adherence to SOPs, training rules, NATOPS, etc.), ensure flight safety, exercise flight coordination and control to maneuver the flight as necessary to remain within the approved TERF area, demonstrate proper understanding of high bird roles and responsibilities (if required), communicate intentions to the flight, demonstrate proper decision

making in response to changing situations (e.g., EPs, IIMC, loss of visual contact).

Prerequisites. HAC, TERF-2304.

External Syllabus Support. Approved TERF route (special use airspace preferred).

SL-6303 1.0 E 2 Assault Support Aircraft A NS

Goal. Demonstrate the ability to conduct a NS (HLL or LLL) section CAL flight as the section leader.

Requirement. Plan, brief, lead, and debrief a NS (HLL or LLL) section CAL flight. The SLUI shall conduct all requirements outlined in NS-2603 or NS-2652 (light level dependent) as the section leader. Upon successful completion, both NS-2603 or NS-2652 and SL-6303 shall be logged for tracking purposes.

Discuss:
- CRM while conducting NS section CALs.
- Crew comfort level while conducting NS section CALs.
- Lost comm procedures and considerations while conducting NS section CALs.
- IIMC procedures and rendezvous while using NS.
- Loss of visual contact and rendezvous/join-up procedures while using NS.
- In-flight emergency coordination while using NS.
- External aircraft lighting considerations during NS formation operations.
- Section tactics during NS operations.
- LZ brief and evaluation.
- Section tactical approaches, landings, and departures to a confined area.
- NS formation considerations and techniques.
- Ordnance affects on NS.
- Laser aiming devices (GCP-2/A, IZLID-200P).

- Mission planning for training missions (e.g., how to get all of the X's that S-3 has scheduled).

Introduce: Section flight leadership while conducting NS section CALs.

Review: NS-2606(HLL) or NS 2655(LLL).

Performance Standards. Comply with all performance standards outlined in NS-2603 and NS 2652. In addition, the SLUI shall demonstrate the ability to plan and execute a training mission IAW the T&R codes annotated on the flight schedule, maintain situational awareness of wingman's position, training area boundaries, and timeline, enforce flight discipline (adherence to SOPs, training rules, NATOPS, etc.), ensure flight safety, exercise flight coordination and control to maneuver the flight as necessary to remain within the training area, maintain proper formation and mutual support, demonstrate proper wingman considerations throughout the CAL pattern, maintain section integrity during approach and

landing, communicate intentions to the flight, demonstrate proper decision making in response to changing situations (e.g., EPs, IIMC, lost comm, waveoff).

Prerequisites. HAC, NS-2603/2652.

External Syllabus Support. NS compatible CAL zone that accommodates multiple aircraft.

SL-6304 1.0 E 2 Assault Support Aircraft A NS

Goal. Demonstrate the ability to conduct a NS (HLL or LLL) section TERF navigation flight as the section leader.

Requirement. Plan, brief, lead, and debrief a NS (HLL or LLL) section TERF navigation flight. The SLUI shall conduct all requirements outlined in NS-2606 or NS-2655 (light level dependent) as the section leader. Upon successful completion, both NS-2606 or NS-2655 and SL-6304 shall be logged for tracking purposes.

Discuss:
CRM while conducting NS section TERF navigation.
Crew comfort level while conducting NS section TERF navigation.
Lost comm procedures and considerations while conducting NS TERF navigation.
IIMC procedures and rendezvous while conducting NS TERF navigation.
Loss of visual contact and rendezvous/join-up procedures while using NS.
In-flight emergency coordination while using NS.
Emergency procedures while conducting NS TERF.
TERF navigation considerations while conducting NS.
Map preparation / map study (1:50,000 & 1:250,000).
Cockpit management and CNCS employment considerations/techniques.
Timeline planning and management.
Fuel planning considerations and the use of mission planning systems.

Mission planning for training missions (e.g., how to get all of the X's that S-3 has scheduled).

Introduce: Section flight leadership while conducting NS section TERF navigation.

Review: NS-2606 (HLL) or NS-2655 (LLL) (section CALs not required).

Performance Standards. Comply with all performance standards outlined in NS-2606 and NS-2655 except that the route must be flown remaining oriented within 200 meters and arrival at the LZ or final checkpoint must be within 30 seconds of planned arrival time. In addition, the SLUI shall demonstrate the ability to plan and execute a training mission IAW the T&R codes annotated on the flight schedule, demonstrate proper CNCS utilization to assist with navigation and timing, maintain situational awareness of wingman's position, TERF area boundaries, and timeline, enforce flight discipline (adherence to SOPs, training rules, NATOPS, etc.), ensure flight safety, exercise flight coordination and control to maneuver

the flight as necessary to remain within the approved TERF area, demonstrate proper understanding of high bird roles and responsibilities (if required), communicate intentions to the flight, demonstrate proper decision making in response to changing situations (e.g., EPs, IIMC, loss of visual contact), and demonstrate an understanding of objective area planning and briefing IAW ANTTP series publications.

Prerequisites. HAC, NS-2606/2655.

External Syllabus Support. Approved TERF route (special use airspace preferred).

SL-6305 1.0 E 2 Assault Support Aircraft A (N)

Goal. Demonstrate the ability to conduct a day or night section aerial gunnery flight as the section leader.

Requirement. Plan, brief, lead, and debrief a section aerial gunnery flight. The SLUI shall conduct all requirements outlined in AG-2401 or AG-2405 (day or night dependent) as the section leader. Upon successful completion, both AG-2401 or AG-2405 and SL-6304 shall be logged for tracking purposes.

Discuss:
- CRM while conducting AG.
- Crew comfort level while conducting AG.
- Lost comm procedures and considerations while conducting AG.
- IIMC procedures and rendezvous while conducting AG.
- Loss of visual contact and rendezvous/join-up procedures.
- In-flight emergency coordination while conducting AG.
- Formation tactics during AG.
- Sectors of fire vs. fields of fire.
- Laser aiming devices (GCP-2/A, IZLID-200P).
- Weapons preflight.
- Weapons conditions.
- Weapons commands.
- Lost ICS procedures (visual signals).
- Weapons safety considerations.
- Weapons malfunctions, emergencies, and hung ordnance procedures.
- Effects of ordnance, expendables, pyrotechnics on NS.
- Mission planning for training missions (e.g., how to get all of the X's that S-3 has scheduled).

Introduce: Section flight leadership while conducting AG.

Review: AG-2401(day) or AG-2405(night).

Performance Standards. Comply with all performance standards outlined in AG-2401 or AG-2405. In addition, the SLUI shall demonstrate the ability to plan and execute a training mission IAW the T&R codes annotated on the flight schedule, maintain situational awareness of wingman's position, training area boundaries, and timeline, enforce flight discipline (adherence to SOPs, training rules, NATOPS, etc.), ensure flight safety, exercise flight coordination and control to maneuver the flight as necessary to remain within the target area, maintain proper formation and mutual

support, communicate intentions to the flight, demonstrate proper decision making in response to changing situations (e.g., EPs, IIMC, lost comm, waveoff), and demonstrate the proper understanding of ordnance effects and weapons employment while using NS.

Prerequisites. HAC, AG-2401/2405.

Ordnance. 500 rounds .50 cal and/or 7.62, 2 smoke grenades, chaff/flare (optional).

Range Requirements. Aerial gunnery range with targets ranging from personnel to APC size.

SL-6306 1.5 E 2 Assault Support Aircraft A (N)

Goal. Conduct a day or night MCTL mission based on a tactical scenario as the section leader.

Requirement. Plan, brief, lead, and debrief a day or night section tactical mission in a low/medium threat environment to include external fire support assets/agencies (actual or notional), escorts (actual or notional), aerial gunnery (if possible). The SLUI shall conduct all requirements outlined in TAC-2501 or TAC-2502 (day or night dependent) as the section leader. Upon successful completion, TAC-2501 or TAC-2502, AG-2401 or AG-2405 (if executed), and SL-6306 shall be logged for tracking purposes.

Discuss:
- CRM during a tactical mission.
- Emergencies in a tactical environment.
- Crew comfort level during a tactical mission.
- Mission analysis and METT-TSL.
- Marine Corps Planning Process (MCPP) / Rapid Response Planning Process (R2P2).
- Tactical mission planning, briefing, and execution.
- Rules of Engagement (ROE) as they apply to the mission.
- GCE support considerations.
- Weapons employment considerations (sectors of fire vs. fields of fire).
- ASE employment considerations.
- Evasive maneuvers (IR SAM, SA/AAA, radar threat).
- Objective area planning/flow considerations and briefing techniques.
- Fire Support considerations.
- Escort considerations and escort tactics.
- Contingency planning (CASEVAC, immediate TRAP, emergency extract, immediate reembarkation, Sparrowhawk/QRF).
- Section tactical considerations (day/night).
- Procedural control (shore-based and sea-based).
- Immediate tasking.
- Go vs. No-go criteria.
- In-flight changes to the route, LZ, L-hour.
- EMCON and radio procedures.
- Authentication/encryption.
- Delegation of responsibilities to the flight.
- Detailed fuel planning considerations and the use of mission

planning systems.
Cockpit management and CNCS employment considerations/techniques.
Ordnance effects on NS.
Laser aiming devices (GCP-2/A, IZLID-200P).

Introduce: Section flight leadership while conducting a day or night tactical mission in a low/medium threat environment.

Review: TAC-2501 or TAC-2502.

Performance Standards. Comply with all performance standards outlined in TAC-2501 or TAC-2502 except that the route must be flown remaining oriented within 200 meters and arrival at the LZ or final checkpoint must be within 30 seconds of planned arrival time. In addition, the SLUI shall conduct objective area planning and briefing IAW ANTTP series publications, maintain situational awareness of wingman, mission assets, fires, and mission progress, demonstrate proper CNCS utilization to assist with navigation and timing, utilize appropriate tactical approach and landing profiles based on the threat and situation, demonstrate an understanding of evasive maneuvers and ground threat reaction, execute radio procedures IAW planned EMCON condition, demonstrate the proper understanding of ordnance effects and weapons employment while using NS, demonstrate proper decision making in response to changing situations (e.g., EPs, pop-up threats, downed aircraft), communicate intentions to the flight, demonstrate proper decision making in response to immediate missions and/or contingencies.

Prerequisite. HAC, TAC-2501/2502, SL-6301 through SL-6305.

Ordnance. As required.

Range Requirements. Ranges as required based on the tactical scenario and tactics employed (e.g., AG, expendable use, EW).

External Syllabus Support. NS compatible CAL zone that accommodates multiple aircraft and other external support as required by the scenario (e.g., HST, threat emitter/simulator).

SL-6307 1.5 R,E 2 Assault Support aircraft A (N)

Goal. Conduct a day or night section leader check utilizing a MCTL mission based on a tactical scenario as the section leader.

Requirement. Plan, brief, lead, and debrief a day or night section tactical mission in a low/medium threat environment to include external fire support assets/agencies (actual or notional), escorts (actual or notional), and aerial gunnery (if possible) as the section leader. The SLUI shall conduct all requirements outlined in TAC-2501 or TAC-2502 (day or night dependent) as the section leader. Upon successful completion, TAC-2501 or TAC-2502, AG-2401 or AG-2405 (if executed), and SL-6307 shall be logged for tracking purposes.

Discuss:
CRM during a tactical mission.
Emergencies in a tactical environment.
Crew comfort level during a tactical mission.

Flight leader maturity.
Any previously introduced discuss items from SL-6301 through SL -6306.

Review:
Section flight leadership.
SL-6301 through SL-6306.

Performance Standards. Comply with all performance standards outlined in SL-6301 through SL-6306 as required. In addition, the SLUI shall possess the tactical and operational knowledge required of a section leader.

Prerequisite. SL-6306, SL academics complete.

Ordnance. As required.

Range Requirements. Ranges as required based on the tactical scenario and tactics employed (e.g., AG, expendable use, EW).

External Syllabus Support. NS compatible CAL zone that accommodates multiple aircraft and other external support as required by the scenario (e.g., HST, threat emitter/simulator).

2.19.8 Division Leader (DL)

2.19.8.1 Purpose. To prepare and evaluate the prospective division lead's ability to plan, brief and lead a division of assault support aircraft.

2.19.8.2 General

a. Prospective division leads shall conduct the following day and night sorties in order to develop the PUI's flight leadership necessary for designation. Sortie events DL-6401 & DL-6402 are not required to be flown in order.

b. Division lead instruction sortie events DL-6401 and DL-6402 may be evaluated by a division leader or higher. DL-6403 and DL-6404 shall be evaluated by a flight lead or higher. Additionally, one of the final two sortie events DL-6403 and 6404 shall be flown at night. The check flight (DL-6404) shall be flown by a qualified MAG designated FLSE from another command. If a FLSE from another command is unavailable, the MAG/MAGTF commanding officer may approve the use of an internal squadron FLSE.

c. A prospective division leader must be fully qualified to lead a division under all conditions in performance of any of the squadron tasks as well as meet the following prerequisites:

(1) Be a designated CH-46E Section Leader.

(2) Have no less than 600 total flight hours. Of this total, 200 hours must be in rotary-wing aircraft. Of these 200 hours, 50 must be in squadron model.

(3) Have flown a minimum of three flights as a designated Section Leader.