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Subj: CH-46E T&R MANUAL

Ref: (a) NAVMC 3500.14B

Encl: (1) Revised page inserts to NAVMC 3500.46A.

1. Purpose. To transmit revised pages to the basic Manual.

2. Action. All chapters of the basic Manual have been revised per the reference.

3. Information. Significant changes include the following.

a. Chapter 1

(1) Consolidation of all references to crews or crew definition into a new paragraph entitled "Readiness Reporting." The intent of this new paragraph is to more accurately capture how a commander forms crews that are capable of executing a Mission Essential Task (MET).

(2) Segregation of certain designations from the Combat Leadership table (such as the Functional Check Pilot designation) that do not directly contribute to providing the commander with the leadership skills required to execute the unit Mission Essential Task List (METL).

(3) Emphasis on greater readiness terminology standardization.

(4) Changes minimum requirement from 8 crews to 4 crews for Aerial Delivery (AD).

b. Chapter 2 Pages 2-92 through 2-97

(1) Events AT-3103 and AT-3104; changes aircraft requirement from 6 to 2 and amplifies External Syllabus Support requirements.

(2) Deletes event HIE-2707 as a prerequisite for event TRAP-3106.

c. Chapter 3 Pages 3-65 through 3-68. Events AT-3103 and AT-3104; changes aircraft requirement from 6 to 2 and amplifies External Syllabus Support requirements.

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

4. Recommendations. Recommended changes to this publication are invited, and may be submitted via the syllabus sponsor and the appropriate chain of command to: Commanding General, Training and Education Command, Aviation Training Division using standard Naval Correspondence or the Automated Message Handling System plain language address: CG TECOM ATD.

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

6. Certification. Reviewed and approved this date.

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R. C. FOX
By direction

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Subj: CH-46E T&R MANUAL

Ref: (a) NAVMC 3500.14B

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1. Purpose. To publish standards and regulations regarding the training of CH-46E aircrew per the reference.

2. Cancellation. NAVMC 3500.46

3. Information. Significant changes in this revision include the following.

a. Mission Essential Task (MET) incorporation to facilitate MET-based readiness.

b. Incorporation of Marine Corps Task (MCT) list versus Universal Joint Task List (UJTL).

c. Emphasis on Mission Skills versus Core Skills to support MET-based reporting.

d. Re-naming and re-numbering of Phases from 3 digit to 4 digit codes.

e. Standardized NATOPS and instrument evaluation policy.

f. Standardized Fleet Replacement Squadron (FRS) and Basic Instructor Pilot (BIP) Programs of Instruction (POI).

g. Addition of FRS Table Of Organization.

h. Addition of Aviation Career Progression Model (ACPM) training requirements.

4. Recommendations. Recommended changes to this publication are invited, and may be submitted via the syllabus sponsor and the appropriate chain of command to: Commanding General, Training and Education Command, Aviation Training Branch using standard Naval Correspondence or the Defense Message System plain language address: CG TECOM QUANTICO VA ATB.

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CHAPTER 1

CH-46E TRAINING AND READINESS UNIT REQUIREMENTS

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CHAPTER 1

CH-46E TRAINING AND READINESS UNIT REQUIREMENTS

100. HMM TRAINING AND READINESS UNIT REQUIREMENTS. The goal of Marine Aviation is to attain and maintain combat readiness to support Expeditionary Maneuver Warfare while conserving resources. The standards established in this program are validated by subject matter experts to maximize combat capabilities for assigned Mission Essential Tasks (METs). 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.

101. HMM 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.

102. HMM 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 units. As of this publication date, HMM/HMM FRS units are authorized:

HMM Squadron
12 Aircraft
28 Pilots
19 Crew Chiefs
19 Aerial Gunners/Observers
12 Tail Gunners

HMM FRS Squadron
18 CH-46E
23 Instructor Pilots
12 Crew Chief Instructors/21 Crew Chiefs
20 Aerial Gunner / Observers

103. HMM SKILL ABBREVIATIONS. Shading indicates Core Plus/Mission Plus Skills.

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
HIE	Helicopter Insertion Extraction
GTR	Ground Threat Reaction
CQ	Carrier Qualification
MISSION SKILLS	
SEA	Expeditionary Sea-Based
EXP	Expeditionary Shore-Based
AT	Combat Assault Transport
AD	Aerial Delivery
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
HIE	Helicopter Insertion Extraction
DM	Defensive Measures
CQ	Carrier Qualification
MISSION PLUS SKILLS	
RAID	Rapid Insertion/Extraction

104. HMM MISSION ESSENTIAL TASK LIST (METL)

1. Core METL. The METL is a list of specified tasks an HMM (CH-46E) squadron is designed to perform. Core METs are drawn from the Marine Corps Task List (MCTL), are standardized by type unit, and are used for unit 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 the selected MCTs (drawn from Core and Core Plus METs) necessary for that Assigned Mission.

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 4.3.4	Conduct Air Delivery
MCT 6.2.1.1	Conduct Aviation Support of Tactical Recovery of Aircraft and Personnel (TRAP)
MCT 6.2.2	Conduct Air Evacuation

Core Plus MET

MCT 1.3.4.1.1	Conduct Airborne Rapid Insertion/Extraction

2. MET Output Standards. MET output standards are the required level of performance an 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 CH-46E unit 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 and assumes $\geq$ 70 percent FMC aircraft and $\geq$ 90 percent T/O aircrew on hand. If unit FMC aircraft < 70 percent or T/O aircrew < 90 percent, core capability will be degraded by a like percentage. A core capable unit is able to accomplish all tasks designated in the unit METL from a main base, expeditionary base, or amphibious platforms.

HMM MET Output Standards CH-46E Squadron (12 Aircraft)			
MCT	**MET**	**OUTPUT STANDARD**	
		MAXIMUM DAILY SORTIES*	**MAXIMUM SORTIES PER MCT**
MCT 1.3.3.3.1	Conduct Aviation Operations From Expeditionary Sea-Based Sites	20	20
MCT 1.3.3.3.2	Conduct Aviation Operations From Expeditionary Shore-Based Sites		20
MCT 1.3.4.1	Conduct Combat Assault Transport		20
MCT 4.3.4	Conduct Air Delivery		10
MCT 6.2.1.1	Conduct Aviation Support of Tactical Recovery of Aircraft and Personnel (TRAP)		20
MCT 6.2.2	Conduct Air Evacuation		20
Core Plus MET Output Standards			
MCT	**MET**	**OUTPUT STANDARD**	
		MAXIMUM DAILY SORTIES*	**MAXIMUM SORTIES PER MCT**
MCT 1.3.4.1.1	Conduct Airborne Rapid Insert/Extraction	10	10

*A 12 plane Mission Capable HMM squadron is able to execute 20 total overall sorties on a daily (24 hour period) basis during contingency/combat operations.

105. HMM MET TO CORE/MISSION/CORE PLUS SKILL/MISSION PLUS SKILL MATRIX. This matrix provides a pictorial view of the relationship between the unit Mission Essential Task (MET) and each Core/Mission/Core Plus/Mission Plus Skill required to perform the MET. Shading indicates a Core Plus MET and corresponding Core Plus/Mission Plus Skills.

HMM MET TO CORE/MISSION/CORE PLUS/MISSION PLUS SKILL MATRIX																													
MARINE CORPS TASK (MCT) // MISSION ESSENTIAL TASK (MET)	CORE SKILLS (2000 PHASE)													MISSION SKILLS (3000 PHASE)						CORE PLUS (4000 PHASE) SKILLS									MISSION PLUS
	FAM/INST	CAL	FORM	TERF	AG	TG	TAC	NS HLL	NS LLL	EXT	HIE	GTR	CQ	SEA	EXP	AT	AD	TRAP	AE	MAT	CAL	CBRN	EXT	GTR	TAC*	HIE	DM	CQ	RAID
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		
MCT 1.3.4.1 AT	X	X	X	X	X	X	X	X	X	X	X	X				**X**				X		X		X	X				
MCT 4.3.4 AD	X	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 1.3.4.1.1 RAID	X	X	X	X	X	X	X	X	X		X	X													X				**X**

The Core Plus Skill stages are recommended for each Mission Skill, however, they are not required.
*The Core Plus Skill (TAC) stage is recommended for the RAID Mission Plus Skill, however, it is not required.

106. HMM CORE MODEL MINIMUM REQUIREMENT (CMMR) SKILLS PROFICIENCY REQUIREMENTS. The CMMR is the optimum number of aircrew to execute each stage of flight as detailed below. The numbers associated with each crew position column reflect the number of proficient individuals required.

FRS CORE SKILLS (2000 PHASE)	
CORE SKILL	**FRS PILOTS**
FAM / INST	23
FRS CAL	23
FRS EXT	23
FRS TERF	23
FRS NSQ	23

With regard to FRS Pilots and FRS Crews, this table considers the requirements set forth by the Individual Designation Requirements Table in Paragraph 205.

CORE SKILLS (2000 PHASE)				
CORE SKILL	**PILOTS**	**CREW CHIEFS**	**AG/O**	**TG**
FAM / INST	16	8	8	N/A
CAL	16	8	8	N/A
FORM	16	8	8	N/A
TERF	16	8	8	N/A
AG/TG	16	8	8	8
TAC	16	8	8	8
NS HLL	16	8	8	N/A
NS LLL	16	8	8	N/A
EXT	16	8	8	N/A
HIE	16	8	8	N/A
GTR	16	8	8	8
CQ	16	8	8	N/A
MISSION SKILLS (3000 PHASE)				
MISSION SKILL	**PILOTS**	**CREW CHIEFS**	**AG/O**	**TG**
SEA	16	8	8	8
EXP	16	8	8	8
AT	16	8	8	8
AD	8	4	4	4
TRAP	16	8	8	8
AE	16	8	8	8
CORE PLUS SKILLS (4000 PHASE)				
CORE+ SKILL	**PILOTS**	**CREW CHIEFS**	**AG/O**	**TG**
MAT	8	4	4	4
CAL	-	-	-	-
CBRN	8	4	4	4
EXT	8	4	4	4
GTR	8	4	4	4
TAC	8	4	4	4
HIE	8	4	4	4
DM	8	4	4	4
CQ	-	-	-	-
MISSION PLUS SKILL (4000 PHASE)				
MISSION+ SKILL	**PILOTS**	**CREW CHIEFS**	**AG/O**	**TG**
RAID	8	4	4	4

107. HMM READINESS REPORTING. The paragraphs and tables below delineate the minimum aircrew qualifications and designations required to contribute to unit readiness. 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) and the Current Readiness program.

1. Combat Leadership requirements for readiness reporting are per paragraph 109.1.

2. Crew requirements for specific missions may be balanced by the experience level of the crew and are at the discretion of the commanding officer. For readiness reporting purposes, the table delineates the minimum crew definition qualifications and designations as well as the number of crews required per MET. Designated instructors may be used to offset specific training deficits when forming crews for readiness reporting. 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 and will be compared to the CMMR requirement for crews when reporting readiness.

HMM MINIMUM CREW QUALIFICATIONS / DESIGNATIONS REQUIRED FOR MET CAPABILITY					
CORE METS	**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
4.3.4 (AD)	MSP, HAC	NSQ(LLL)	MSP	NSQ(LLL)	4
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 METS					SQD
1.3.4.1.1 (RAID)	MSP, HAC	NSQ(LLL)	MSP	NSQ(LLL)	4

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

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.

108. HMM INSTRUCTOR REQUIREMENTS. A HMM/HMM FRS squadron should possess the following instructor qualified personnel listed below.

DESIGNATION	PILOTS/FRS PILOTS	CREW CHIEFS/FRS CREW CHIEFS
BASIC INSTRUCTOR	8/23	N/A
NATOPS	1/2	1/2
ASST NATOPS	4/4	4/4
INST EVALUATOR	5/5	N/A
TERF I	6/23	6/12
DMI	2/0	2/0
NSI	4/4	4/12
NSFI	0/18	0/10
WTI+	2/1	2/1^
AGI	N/A	4/1
TGI	N/A	2/0
FLSE	2/2	N/A
FRSI / FRSCCI	23	12

+One shall be assigned as the squadron WTI. The squadron CO, XO, OPSO, and AMO shall not fill the squadron WTI billet.
^One shall be assigned in Operations as the squadron enlisted WTI.

109. HMM QUALIFICATIONS AND DESIGNATIONS

1. CMMR Combat Leadership Requirements. At a minimum, in order to be considered Core Competent, an HMM/HMM FRS squadron must possess the following number of listed combat leadership designations.

FLIGHT LEADERSHIP (6000 PHASE)	
DESIGNATION	**PILOTS**
HAC	12
SEC LDR	6
DIV LDR	4
FLT LDR	2
MSN CMDR	2

2. Qualifications and Designations

HMM CMMR QUALIFICATION (6000 PHASE)	
QUALIFICATION	**PILOTS**
FCP	4

3. FRS Qualifications and Designations

HMM FRS FLIGHT LEADERSHIP (6000 PHASE)	
DESIGNATIONS	**PILOTS***
HAC	23
SECTION LEADER	23
DIVISION LEADER	23
FLIGHT LEADER	2
FCP	8

*With regard to FRS Pilots, this table considers the requirements set forth by the Individual Designation Requirements Table in Paragraph 205.

110. HMM ORDNANCE REQUIREMENTS. See CH-46E CCRM (Ordnance Module) for specific squadron requirements.

111. HMM TRAINING 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							
	HIE	X	X					X		
	GTR	X	X	X	X	X				
	CQ	X							X	
MISSION SKILL (3000)	SEA									
	EXP									
	AT		X	X	X		X			
	AD		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
	HIE									
	DM	X	X		X					X
	CQ	X							X	
MISSION PLUS SKILL (4000)	RAID		X	X	X					

CHAPTER 2

CH-46E PILOT/7562

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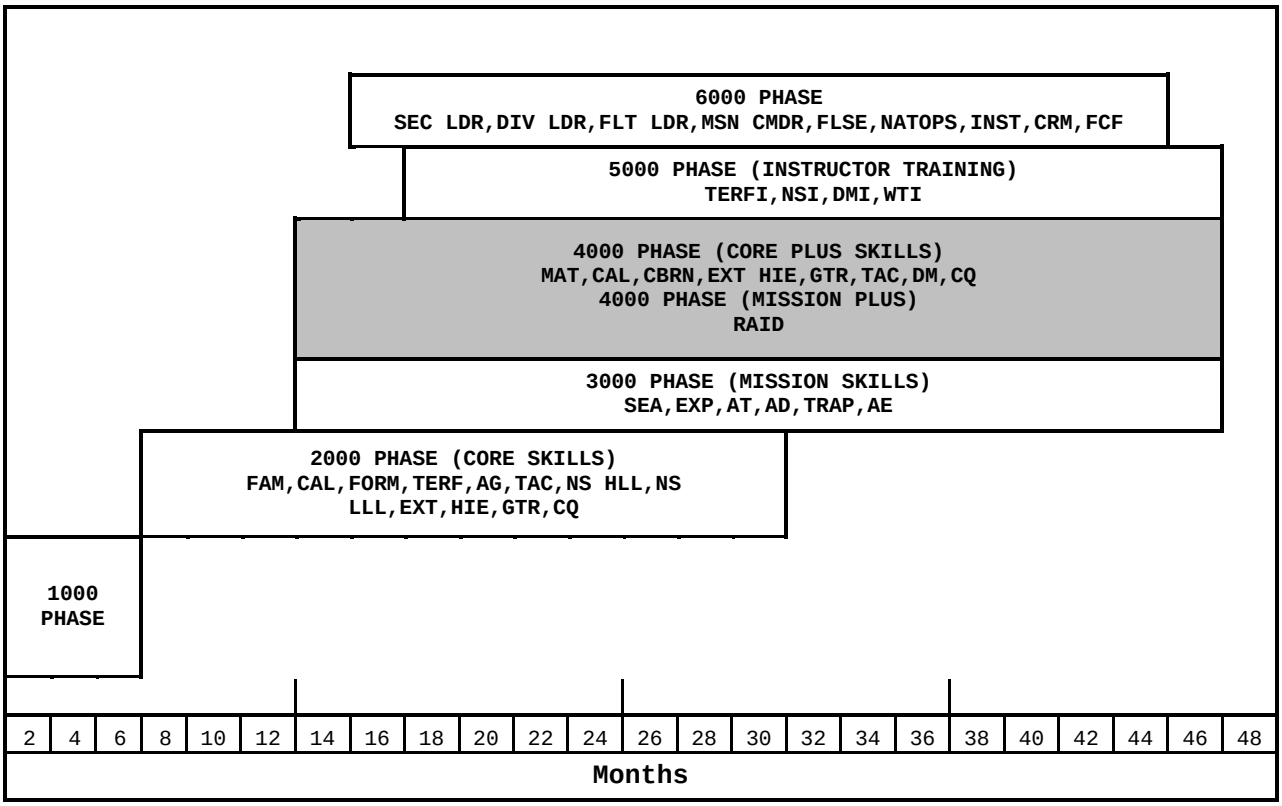
CHAPTER 2

CH-46E PILOT/7562

200. 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.

201. 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.



202. 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.

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 CH-46E Pilot											
T&R events required to Attain CSP (2000 Phase)											
FAM/ INST	**CAL**	**FORM**	**TERF**	**AG**	**TAC**	**NS HLL**	**NS LLL**	**EXT**	**HIE**	**GTR**	**CQ**
S2100	S2200	S2300	S2302	2401	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	2653R	2703R	2707R		2903R
						2604	2654R				2904R
						2605					
						2606					
						2607R					
Gray highlight & an R suffix on the event code = Refresher POI											
An S prefix on the event code = Event conducted in a simulator											

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 CH-46E Pilot											
T&R events required to Attain CSP (2000 Phase)											
FAM/ INST	**CAL**	**FORM**	**TERF**	**AG**	**TAC**	**NS HLL**	**NS LLL**	**EXT**	**HIE**	**GTR**	**CQ**
2102R	2203R	2301R	2305R	2401R	2502R	2607R	2653R	2701R	2705R	2801R	2904R
				2405R			2654R	2703R	2707R		
Gray highlight & an R suffix on the event code = Refresher POI											
An S prefix on the event code = Event conducted in a simulator											

203. INDIVIDUAL MISSION SKILL PROFICIENCY (MSP) REQUIREMENTS. A 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.

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 CH-46E Pilot					
T&R events required to Attain MSP (3000 Phase)					
SEA	**EXP**	**AT**	**AD**	**TRAP**	**AE**
3101R	3102R	3103	3105R	3106R	3107R
		3104R			
Gray highlight & an R suffix on the event code = Refresher POI					
An S prefix on the event code = Event conducted in a simulator					

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 CH-46E Pilot					
T&R events required to Maintain MSP (3000 Phase)					
SEA	**EXP**	**AT**	**AD**	**TRAP**	**AE**
3101R	3102R	3104R	3105R	3106R	3107R
Gray highlight & an R suffix on the event code = Refresher POI					
An S prefix on the event code = Event conducted in a simulator					

204. INDIVIDUAL CORE PLUS SKILL/MISSION PLUS SKILL PROFICIENCY REQUIREMENTS

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 CH-46E Pilot									
T&R events required to Attain CSP+ (4000 Phase)									
CORE PLUS SKILLS									MISSION PLUS
MAT	CAL	CBRN	EXT	GTR	TAC	HIE	DM	CQ	RAID
S4200	4202R	S4205	4301R	4401R	S4500	4701R	S4800	4901	4503
4201R	S4208	4206			4501	4702R	4801R	4902R	4504R
4203R	4209R	4207R			4502R	4703R	4802R		
4204R	S4210						S4803		
	4211R								
Gray highlight & an R suffix on the event code = Refresher POI									
An S prefix on the event code = Event conducted in a simulator									

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 CH-46E Pilot									
T&R events required to Maintain CSP+ (4000 Phase)									
CORE PLUS SKILLS									MISSION PLUS
MAT	CAL	CBRN	EXT	GTR	TAC	HIE	DM	CQ	RAID
4201R	4202R	4207R	4301R	4401R	4502R	4701R	4801R	4902R	4504R
4203R						4702R	4802R		
4204R						4703R			
Gray highlight & an R suffix on the event code = Refresher POI									
An S prefix on the event code = Event conducted in a simulator									

205. 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, 2606, 2607R
NSQ LLL	2650, 2651R, 2652R, 2653R, 2654R
CQ	2901R, 2902R, 2903R, 2904R
DMQ	4801R, 4802R
FRS TERFQ	5108
FRS NSQ	5112

INDIVIDUAL DESIGNATION REQUIREMENTS	
Designation	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	IAW MAWTS-1 CH-46E Course Catalog
NSFI	IAW MAWTS-1 CH-46E Course Catalog
TERFI	IAW MAWTS-1 CH-46E Course Catalog
DMI	IAW MAWTS-1 CH-46E Course Catalog
NSI	IAW MAWTS-1 CH-46E Course Catalog
FRSI	Designated as a TERFI and DIV LDR with 1000 flight hours prior to reporting to the FRS, 5101 through and including 5112. Exceptions at the discretion of the FRS commanding officer.
FRSCCI	Designated as an NSI prior to reporting to the FRS, 5100 through and including 5110. Exceptions at the discretion of the FRS commanding officer.
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
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.

206. CH-46E PILOT PROGRAMS OF INSTRUCTION (POI)

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. 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

3. POI For FRS Instructor Pilot

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

4. NATOPS/Instrument POI

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

5. POI For Contract Instructor

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

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

207. ACADEMIC TRAINING

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. 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/PFPS

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
ACAD-0023	(U) MISSION PLANNING
ACAD-0031	(U) NIGHT SYSTEMS CLASS
ACAD-0042	(U) NS LAB

T&R CODE	ACADEMIC SYLLABUS
	CORE SKILL PHASE (2000)
ACAD-2000	(U) HAVEQUICK/SINCGARS*
ACAD-2001	(U) CNCS EMPLOYMENT
ACAD-2002	(U) ASD TERRAIN FLIGHT
ACAD-2003	(U) CH-46E TACTICAL AIRCREW COORDINATION*
ACAD-2004	(U) NITE LAB NIGHT OPERATIONAL ENVIRONMENT
ACAD-2005	(U) CH-46E TACTICS IN THE NIGHT ENVIRONMENT
ACAD-2006	(U) CH-46E NVG HUD
ACAD-2007	(U) SIX FUNCTIONS OF MARINE AVIATION
ACAD-2008	(S) FW THREAT TO THE MAGTF
ACAD-2009	(S) RW 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 NVG ROUTE CONSIDERATIONS
ACAD-2013	(U) MAWTS-1 BASIC RADAR PRINCIPLES
ACAD-2014	(U) GROUND THREAT REACTION
ACAD-2015	(S) RF SAMs*
ACAD-2016	(S) IR SAM THREAT TO RW AIRCRAFT*
ACAD-2017	(S) AAA 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) RULES OF ENGAGEMENT
ACAD-2022	(U) TACTICAL FLIGHT BRIEFING*
ACAD-2023	(U) LARGE FLIGHT LEADERSHIP
ACAD-2024	(U) OBJECTIVE AREA PLANNING*
ACAD-2025	(U) BATTLEFIELD ILLUMINATION
ACAD-2026	(S) ASSAULT SUPPORT ESCORT TACTICS
ACAD-2027	RESERVED FOR FUTURE USE
ACAD-2028	(U) EXECUTION CHECKLIST
ACAD-2029	(U) MAGTF TARGETING AND FIRE SUPPORT PLANNING*
ACAD-2030	(U) INTEL PREPARATION OF THE BATTLESPACE

ACAD-2031	(U) MISSION ANALYSIS
ACAD-2032	(S) EVASIVE MANUEVERS
ACAD-2033	RESERVED FOR FUTURE USE
ACAD-2034	(U) AVIATION GROUND SUPPORT
ACAD-2035	(U) NITE LAB NVG HUMAN VISUAL SYSTEM
ACAD-2036	(U) NITE LAB NVG MISPERCEPTIONS AND ILLUSIONS
ACAD-2037	(U) NITE LAB NVG ADJUSTMENT PROCEDURES
ACAD-2038	(U) NITE LAB FLIR SENSOR INTEGRATION
ACAD-2039	(U) ASD FAST ROPE
ACAD-2040	(U) ASD RAPPEL OPERATIONS

* Denotes annual academic training requirements.

T&R CODE	ACADEMIC SYLLABUS
	MISSION SKILL PHASE (3000)
ACAD-3000	(S) TRAP
ACAD-3001	(S) 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*

* Denotes annual academic training requirements.

T&R CODE	ACADEMIC SYLLABUS
	CORE PLUS SKILL PHASE (4000)
ACAD-4002	(S) MAGTF THEATER AND NATIONAL ISR EMPLOYMENT
ACAD-4003	(U) RW OAS
ACAD-4004	(U) FW OAS CAPABILITIES
ACAD-4005	(U) DM
ACAD-4006	(U) Ps/EM
ACAD-4007	(S) ATTACK HELICOPTER THREAT TO RW AIRCRAFT
ACAD-4008	(S) FIXED WING THREAT TO RW AIRCRAFT
ACAD-4009	(U) ASD SPIE
ACAD-4010	(U) ASD HELOCAST
ACAD-4011	(U) AIR MISSION COMMANDER
ACAD-4012	(U) JCAS
ACAD-4013	(U) JOINT CAS AIRCRAFT CAPABILITES
ACAD-4014	(S) LASER THREAT
ACAD-4015	(U) AEW
ACAD-4016	(U) ASD HELICOPTER ASSAULT KEY PLAYERS
ACAD-4017	(S) GCE 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

208. SYLLABUS NOTES

1. General

a. 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.	

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

c. 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.

d. 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. 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.

3. Evaluation Sorties

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

b. A designated Instrument Evaluator shall evaluate INST-6102.

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

d. 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.

e. 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.

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

g. 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.

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

i. 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.

j. 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.

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

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.

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.

a. 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.

b. 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.

c. 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.

d. 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.

e. 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.

f. 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.

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

a. Annual NATOPS Check (NTPS-6101).

b. Annual Instrument Check (INST-6102).

c. Annual CRM Check (CRM-6103)

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

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

8. Definitions

a. 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.

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

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

d. 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.

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

209. FRS ACADEMIC PHASE (0000)

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. 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.

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/PFPS
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

210. CORE SKILL INTRODUCTION PHASE (1000)

1. General

a. 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.

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

c. 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)

211. CORE SKILL INTRODUCTION STAGES (1000)

1. Familiarization (FAM)

a. 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.

b. General

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

(2) 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.

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

(4) 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.

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

c. Crew Requirements

(1) Simulator Training - One RAC/Sim instructor.

(2) Flight Training - FRSI/RAC/CC or FRSI/REF/CC.

d. Ground/Academic Training

(1) All pilots shall complete all assigned CBT lessons per the FRS Training Orientation Guide.

(2) 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.

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

(4) 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.

(5) 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. Instruments (INST)

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

b. General

(1) 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.

(2) 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.

(3) All flights will terminate with an instrument approach when practical.

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

c. Prerequisite. Appropriate FRS CBT program lessons.

d. Crew Requirement

(1) Simulator Training - Two pilots/Qualified Instructor.

(2) Flight Training - FRSI/RAC/CC or FRSI/REF/CC.

e. 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, 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.
  - 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.

3. Navigation (NAV)

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

b. General

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

(2) All Conversion aircrews qualified and current in navigation in previous type aircraft are exempt.

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

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

c. Crew Requirement. FRSI/RAC/CC.

d. 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.

4. Confined Area Landings (CAL)

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

b. General

(1) 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.

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

c. 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-1502, FAM-1116.

External Syllabus Support. CAL zone to accommodate a section.

5. Formation (FORM)

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

b. General

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

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

c. 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.

6. External Cargo Operations(EXT)

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

b. General

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

(2) 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.

c. 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.

7. Terrain Flight (TERF)

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

b. General

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

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

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

d. 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.

8. Night Systems (NS)

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

b. General

(1) 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.

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

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

d. Ground/Academic Training

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

(2) 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, FAM-1117, 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.

9. Review (REV)

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

b. General

(1) 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.

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

c. Crew Requirements. FRSI/RAC/CC.

d. 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.

10. Core Skill Introduction Check (CSIX)

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

b. General

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

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

(3) Prerequisite. The PUI shall meet all CBT and NATOPS prerequisites prior to this flight.

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

d. 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.

212. CORE SKILL PHASE (2000)

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. General

a. 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
HIE-2705	Day Fastrope/Rappel
HIE-2707	Day Aerial Delivery
CQ-2901	Day FCLPs
CQ-2903	Day CQs

b. 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	Helicopter Insertion/Extraction (HIE)
11	Ground Threat Reaction (GTR)
12	Carrier Qualification (CQ)

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.

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.

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:

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) SOPs/Orders adherence.

213. CORE SKILL STAGES (2000)

1. Familiarization (FAM)/Instruments (INST)

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

b. General

(1) Pilots will find FAM maneuver descriptions in the CH-46E NATOPS Manual and FRS Stan Manual.

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

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

(4) Pilots shall discuss CRM as applicable to each event.

(5) 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.

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

c. 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.

d. 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

e. 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. Confined Area Landings (CAL)

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

b. General

(1) Pilots will find maneuver descriptions in the NATOPS Flight Manual and FRS Standardization Manual.

(2) Pilots shall discuss CRM as applicable to each event.

(3) BIP required for Initial/Refresher CAL-2200-2203 flights.

c. Minimum Crew Requirements. P/CP/CC.

d. 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.

3. Formation Flight (FORM)

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

b. General

(1) Pilots shall discuss CRM as applicable to each event.

(2) 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.

(3) BIP required for Initial/Refresher FORM-2300-2301 flights.

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

d. 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 1.5 180 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.

4. Terrain Flight (TERF)

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

b. General

(1) TERF 2303-2305 instructional flights require a TERF Instructor.

(2) 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.

(3) T&R Program Manual establishes TERF altitude restrictions and currency requirements.

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

d. 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:

e. 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, ACAD-2003
FLIGHT	FAM-2101, FAM-2102, CAL-2202
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, 2003.

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. TERF-2304.

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

5. Aerial Gunnery (AG)

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

b. General

(1) Employ onboard weapons systems to conduct aerial gunnery during day and utilizing NS.

(2) Entire crew must be present for the brief.

(3) Discuss CRM as applicable.

(4) NSI required for AG-2405 if PUI is not NSQ for appropriate light level.

(5) .50 cal machine guns and/or M240 Ramp Mounted Weapon System (RMWS) shall be employed.

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

d. 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.

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

EVENT TYPE	T&R CODE / DESIGNATION PREREQUISITES
ACADEMIC	ACAD-2003, 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.

6. Tactics (Low/Medium Threat) (TAC)

a. 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.

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

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

(3) Combat Assault Transport (MCT 1.3.4.1).

(4) Air Delivery (MCT 4.3.4).

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

(6) Air Evacuation (MCT 6.2.2).

b. General

(1) 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.

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

(3) Pilots shall discuss CRM as applicable to each event.

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

(5) An NSI shall instruct an initial TAC-2502 event for PUI.

(6) Squadrons are permitted and encourage 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-2654 and AG-2405 as well as Flight Leadership events conducting using NS.

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

d. 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.

e. Prerequisites

EVENT TYPE	T&R CODE / QUAL PREREQUISITES
ACADEMIC	ACAD-2000, ACAD-2003, 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.

7. NS High Light Level (HLL)

a. 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.

b. General

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

(2) Successful completion of NS-2607 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.

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

d. 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.

e. 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-2003, ACAD-2004, ACAD-2006, ACAD-2011 ACAD-2012, ACAD-2035, ACAD-2036, ACAD-2037
FLIGHT	FAM-2101, CAL-2201
QUALIFICATION	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.
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 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).

NS-2607 1.5 180 B,R 2 CH-46E A NS

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

Requirement

Discuss:
Emergencies in the TERF environment while using NS.
LZ brief/evaluation.

Introduce: TERF navigation for timing (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-2603, NS-2606.

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-2607 requires the PUI to conduct a minimum of three landings as lead and dash two.

Prerequisite. NS-2603 and NS-2606.

External Syllabus Support. NS compatible CAL zone and approved TERF route (special use airspace preferred).

8. NS Low Light Level (LLL)

a. Purpose. Qualify the PUI in NS LLL operations.

b. General

(1) Upon completion of TAC-2502 and NS-2654, 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.

(2) Initial/Refresher flights require an NSI.

(3) Pilots shall fly all events in light levels less than .0022 lux.

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

d. 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.

e. 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-2607
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. NS-2607, SNS-2650.

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,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-2653 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-2652.

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

NS-2654 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-2607, NS-2652, 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-2654 requires the PUI to conduct a minimum of three landings as lead and dash two.

Prerequisite. NS-2653

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

9. External Cargo Operations (EXT)

a. 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).

b. General

(1) BIP required for Initial/Refresher EXT-2700-2701 flights.

(2) Pilots shall discuss CRM as applicable to external cargo operations for each event.

(3) NSI required for Initial/Refresher EXT-2703. Aircrew shall be NSQ for the appropriate light level EXT-2703 is flown in.

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

d. 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.

e. Prerequisites. FAM-2101, NSQ for the appropriate light level. NS-2607 if HLL, NS-2654 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-2607 if flown in HLL, NS-2654 if flown in LLL.

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

10. Helicopter Insertion/Extraction Techniques (HIE)

a. Purpose. To develop proficiency in HIE procedures.

b. General

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

(2) The Jump Master is responsible for the safe and proper rigging of the aircraft for conduct of aerial delivery (paradrops and cargo drops). Pilots shall preflight aircraft rigging.

(3) ICS cranials and gunner's belts are required for HRST and Jump Master.

(4) CRM as applicable to HIE operations.

(5) BIP required for Initial/Refresher HIE-2704-2707 flights.

(6) An NSI is required for Initial/Refresher HIE-2706 and for HIE-2707 if conducted using NS.

c. External Syllabus Support. HRST master and safety observer.

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

e. 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.

f. Prerequisites

EVENT TYPE	T&R CODE / DESIGNATION PREREQUISITES
ACADEMIC	ACAD-2003, ACAD-2005, ACAD-2006, ACAD-2039, ACAD-2040
FLIGHT	FAM-2101, CAL-2201
DESIGNATION	H2P
NS	NS-2607 if HLL, NS-2654 if LLL

SHIE-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 HIE 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 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 CRM/ voice commands, maintain SA of obstacle clearance, demonstrate ability to hold extended high hover, demonstrate understanding of HOGE requirements.

Prerequisite. See HIE stage prerequisite matrix.

External Syllabus Support. WST/APT.

HIE-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: SHIE-2704.

Performance Standards. Pilots 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, demonstrate understanding of HOGE requirements.

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

External Syllabus Support. Applicable HIE 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 HIE operations.
Emergency procedures during NS HIE operations.

Introduce: NS fastrope/rappel procedures.

Review: HIE-2705.

Performance Standards. Pilots 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, 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, HIE-2705, NSQ Appropriate light level, NS-2607 if HLL, NS-2654 if LLL.

External Syllabus Support. Applicable HIE support equipment.

HIE-2707 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 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 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-2607 if HLL, NS-2654 if LLL.

External Syllabus Support. Certified DZ, Jumpmaster and Safety Observers.

11. Ground Threat Reaction (GTR)

a. 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.

b. General

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

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

(3) .50 cal machine guns shall be mounted for all GTR flights. M240 Ramp Mounted Weapon System (RMWS) may be employed.

(4) Minimum altitude for GTR flights is 50 feet.

(5) Enlisted aircrew instructors shall not have lookout duties during initial training events.

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

(7) Prior to conducting GTR-2801, pilots shall be proficient in AG-2401.

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

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

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

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

d. 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:

(1) Current theater specific ROE training from a Staff Judge Advocate.

(2) Enemy situation to include threat systems and related tactics.

e. Prerequisites

EVENT TYPE	T&R CODE / DESIGNATION PREREQUISITES
ACADEMIC	ACAD-2002, ACAD-2003, 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.

12. Carrier Qualification (CQ)

a. Purpose. To qualify the PUI in day and NS FCLPs and train/refresh the PUI in day and NS shipboard landings.

b. General. Refer to LHA/LPH/LHD NATOPS Manuals and NWP-42 for Shipboard Operations.

(1) An NSI is required for Initial/Refresher NS FCLP (CQ-2902) and NS CQ (CQ-2904) flights.

(2) A BIP is required for Initial/Refresher CQ-2901 and CQ-2903 flights.

(3) Night CQ Requirements:

(a) For initial/Refresher/delinquent:

1 Five day FCLPs.

2 Five NS FCLPs.

3 Five day CQs.

4 Five NS CQs.

(b) 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.

(4) 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.

(5) 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.

(6) Pilot is CQ upon completion of CQ-2903 and CQ-2904.

(7) Pilots are authorized to carry passengers during daylight hours when proficient in CQ-2903.

(8) Pilots are authorized to carry passengers at night with NS when proficient and current in CQ-2904 and NSQ for the appropriate light level.

(9) Pilots shall discuss CRM as applicable to each event.

c. Minimum Crew Requirements

(1) CQ-2901 and CQ-2093. P/CP/CC.

(2) CQ-2902 and CQ-2904. P/CP/CC/AGO.

d. 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.

e. 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-2607 HLL, NS-2654 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-2607 HLL, NS-2654 LLL.

External Support. NS capable ship deck.

214. MISSION SKILL PHASE (3000)

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.

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. General

a. Attainment of proficiency in Aviation Operations from Expeditionary Sea-Based Sites and Expeditionary Shore-Based Sites are not specific flight events.

b. 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-2003, 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-2607, NS-2654, CQ-2904	=	3101
EXP	ACAD-2003, 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-2607, NS-2654	=	3102

c. 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.

d. AT-3103 through AE-3107 constitute specific flight events.

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

f. 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).

g. Mission Skill T&R codes can be combined in the same flight, and may be flown in any order.

h. 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.

i. Other applicable T&R events can be conducted in conjunction with the performance of a Mission Skill event.

j. 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-3107, 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).

k. An ATF is required to be completed by the flight leader, for all initial or refresher AT-3103 through AE-3107 Mission Skill flight events, provided the requirements and performance standards were met.

l. Proficiency in AT-3103 through AE-3107 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.

m. Upon signature of this Manual, pilots that are current and proficient in TAC-2501 through TAC-2502 and/or are current section leaders or above may log AT-3103 through AE-3107 without conducting the associated flight event(s), at the discretion of the commanding officer. Any pilot that is in the basic, series conversion, or refresher syllabus that has not attained TAC-2501 through TAC-2502 and/or is not a current section leader or above, must complete the flight events listed in paragraph (e).

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-3107, the following is the minimum crew: P/CP/CC/AGO.

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 1.5 180 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-2003, 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-2040, ACAD-3005, ACPM-8310, ACPM-8311, ACPM-8340
FLIGHT	FAM-2101, FAM-2102, CAL-2203, FORM-2301, TERF-2305, AG-2401, TAC-2501, EXT-2701, 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 1.5 180 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-2003, 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-2040, 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-2607(IF FLOWN IN HLL), NS-2654 (IF FLOWN IN LLL),EXT-2703, 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).

AD-3105 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-3105 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

EVENT TYPE	T&R CODE / QUAL PREREQUISITES
ACADEMIC	ACAD-2000, ACAD-2003, ACAD-2007, ACAD-2018, ACAD-2019, ACAD-2020, ACAD-2021, ACAD-2024, ACAD-2028, ACAD-2029, ACAD-3005
FLIGHT	FAM-2101,FAM-2102,CAL-2203,FORM-2301,TERF-2305, TAC-2501,TAC-2502(IF FLOWN AT NIGHT, NS-2607(IF FLOWN IN HLL), NS-2654 (IF FLOWN IN LLL), HIE-2707
QUALIFICATION	TERFQ, NSQ FOR THE APPROPRIATE LIGHT LEVEL

External Syllabus Support. Authorized CAL site or drop zone, as applicable, (special use airspace preferred). Jump/Load Master.

TRAP-3106 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-2607(IF FLOWN IN HLL), NS-2654 (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-3107 1.5 180 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-2003, 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-2607(IF FLOWN IN HLL), NS-2654 (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).

215. CORE PLUS SKILL PHASE (4000)

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. General

a. Squadron commanding officers shall give due consideration to the scheduling of experienced Helicopter Aircraft Commanders (HACs) who instruct Core Plus phase flight events.

b. 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	Helicopter Insertion/Extraction (HIE)
8	Defensive Measures (DM)
9	Carrier Qualification (CQ)

c. 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.

d. 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.

e. 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:

(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) Execution:

(a) Professionalism.

(b) Airwork.

(c) Crew Resource Management (CRM).

(d) NATOPS adherence.

(e) SOP’s/Orders adherence.

216. CORE PLUS SKILL STAGES (4000)

1. Mountain Area Training (MAT)

a. Purpose. To develop proficiency in mountainous terrain operations.

b. General

(1) 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.

(2) CRM as applicable to MAT operations.

c. Minimum Crew Requirement. P/CP/CC/AGO.

d. 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.

e. 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-2607 HLL, NS-2654 LLL.

External Syllabus Support. Operating area that supports MAT.

2. Confined Area Landings (CAL)

a. Purpose. To develop proficiency in takeoffs and landings in a confined area.

b. General. Pilots will find maneuver descriptions in the NATOPS Flight Manual. Pilots shall discuss CRM as applicable to each event.

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

d. 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:

e. 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.

3. Chemical, Biological, Radiological and Nuclear (CBRN)

a. Purpose. To develop proficiency with the NAVAIR approved CBRN mask protective assembly during normal and tactical flight operations to include while wearing NS.

b. General

(1) 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.

(2) Initial CBRN-4207 training flight will be flown in HLL conditions. Proficiency flights may be flown in LLL.

(3) NSI required for all initial NS instructional flights.

(4) Aircrew shall be NSQ for the appropriate light level for proficiency flights.

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

d. 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.

e. 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-2607 HLL, NS-2654 LLL.

External Syllabus Support. NS compatible CAL zone.

4. External Cargo Operations (EXT)

a. Purpose. To conduct TERF external cargo operations.

b. General

(1) CRM applicable to external cargo operations.

(2) TERFI required for initial EXT-4301.

(3) Fire Bucket training may be conducted in conjunction with TERF Externals. See local and command SOP for specific Fire Bucket training requirements.

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

d. 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.

e. 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.

5. Ground Threat Reaction (GTR)

a. 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.

b. General

(1) Conduct GTR-4401 against threat emitters (e.g. SA-8, ZSU 23-4, etc.) and use ground based threat simulation.

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

(3) .50 cal machine guns shall be mounted for GTR-4401. M240 Ramp Mounted Weapon System (RMWS) may also be employed.

(4) Minimum altitude for GTR flights is 50 feet.

(5) Enlisted Aircrew instructors shall not have lookout duties during initial training events.

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

(7) All event participants shall attend the academic training and flight brief. A walkthrough should be conducted.

(8) Prerequisites

(a) TERF qualified (STERF-2302 for SGTR-2800).

(b) FORM-2301.

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

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

d. 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:

(1) Current theater specific ROE training from a Staff Judge Advocate.

(2) Enemy situation to include threat systems and related tactics.

e. Prerequisites

EVENT TYPE	T&R CODE / DESIGNATION PREREQUISITES
ACADEMIC	ACAD-2002, ACAD-2003, ACAD-2010, ACAD-2013 ACAD-2014, ACAD-2015, ACAD-2016, ACAD-2017 ACAD-2018, ACAD-2019, ACAD-2020, ACAD-2021 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.

6. Tactics (High Threat Environment) (TAC)

a. Purpose. To develop proficiency in tactical planning, briefing and execution of assault support operations in the following mission areas in a high threat environment.

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

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

(3) Combat Assault Transport (MCT 1.3.4.1).

(4) Air Delivery (MCT 4.3.4).

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

(6) Air Evacuation (MCT 6.2.2).

b. General

(1) 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.

(2) Squadron ordnance shall mount .50 caliber machine guns for all tactical flights. Consideration should be given to utilizing the Ramp Mounted Weapon System (RMWS).

c. Minimum Crew Requirement

(1) STAC-4500, TAC-4501/4502. A flight leader should instruct PUI.

(2) P/CP/CC/AGO.

d. 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.

e. 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.

7. Helicopter Insertion/Extraction Techniques (HIE)

a. Purpose. To conduct and develop proficiency in HIE procedures.

b. General

(1) Pilot, copilot, crew chief, aerial gunner/observer, HRST Master, and HRST Safety Observer shall brief together prior to commencing fastrope, rappelling, and SPIE.

(2) 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.

(3) ICS cranials and gunner's belts are required for HRST Master/Cast Master.

(4) All initial/refresher events should be conducted as a day evolution.

(5) BIP required for initial HIE-4701, 4702, 4703.

c. Minimum Crew Requirements

(1) HIE-4701/4702/4703(day). P/CP/CC.

(2) HIE-4701/4702/4703(NS). P/CP/CC/AGO.

d. 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.

e. Prerequisites

EVENT TYPE	T&R CODE / QUAL PREREQUISITES
ACADEMIC	ACAD-2003, ACAD-4009, ACAD-4010
FLIGHT	EXT-2701, EXT-2703 (IF FLOWN UTILIZING NS)
QUALIFICATION	NSQ FOR THE APPROPRIATE LIGHT LEVEL

HIE-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 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, 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.

HIE-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 HIE 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.

HIE-4703 1.0 365 B,R 1 CH-46E A (NS)

Goal. Introduce hoist and rescue procedures for overland/over water operations.

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).

8. Defensive Measures (DM)

a. Purpose. To develop proficiency in tactics and aerial DM used to counter enemy air-to-air threats.

b. General

(1) 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.

(2) Aircrew shall not conduct DM training unless the following requirements are met:

(a) A proficient DMI is present in the cockpit for all initial and refresher flights.

(b) The flight lead must be DM qualified and specifically brief all applicable DM training rules per the CH-46E DM Guide.

(c) The flight lead briefs any aggressor aircrew per the T&R Program Manual, and covers training rules prior to each flight.

(3) For helicopter versus helicopter DM, the aggressor aircraft shall be a non-assault helicopter.

(4) .50 cal machine guns shall be mounted for all DM flights. Consideration should be given to utilizing the RMWS.

c. Minimum Crew Requirement. P/CP/CC/AGO.

d. 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.

e. 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.

9. Carrier Qualification (CQ)

a. Purpose. To train/refresh the PUI in night unaided shipboard landings.

b. General

(1) Refer to LHA/LPH/LHD NATOPS Manuals and NWP-42 for air capable ship operations. BIP required for initial qualification CQ-4901 and 4902.

(2) CQ Requirements

(a) Requirements for initial/refresher/delinquent night unaided CQ events are:

1 Five day CQs.

2 Five night unaided CQs.

(b) Pilots CQ-4902 proficient per paragraph 2(a) shall complete the following to maintain proficiency:

1 Two day CQs.

2 Two night unaided CQs.

(3) 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.

(4) Pilots shall discuss CRM as applicable to each event.

c. Minimum Crew Requirements. P/CP/CC.

d. 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.

e. Prerequisites

EVENT TYPE	T&R CODE / QUAL PREREQUISITES
ACADEMIC	NONE
FLIGHT	CQ-2901
QUAL	NONE

(1) Review appropriate chapters of NWP-42 and the LPH/LHA/LHD NATOPS Manual.

(2) 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.

217. MISSION PLUS SKILL PHASE (4000)

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:

Airborne Rapid Insertion/Extraction (MCT 1.3.4.1.1).

2. General

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

b. The Mission Plus Skills RAID-4503 and RAID-4504 shall be individually logged for each pilot upon the completion of the respective event.

c. XM-218s and/or M240G machine guns shall be mounted in the aircraft during execution of RAID-4503 and RAID-4504. Actual ordnance should be used to the maximum extent possible.

d. Other applicable T&R events can be conducted in conjunction with the performance of a Mission Skill event.

e. A flight leader (section or above) flying within the Mission Plus skill flight events can complete an initial or refresher PUI RAID-4503 and RAID-4504, 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).

f. An ATF is required for all initial or full refresher RAID-4503 and RAID-4504 Mission Plus Skill flight events, provided the requirements and performance standards were met.

g. Upon signature of this manual, pilots that are current and proficient in TAC-2501 through TAC-2502 and/or are current section leaders or above may log RAID-4503 and RAID-4504 without conducting the associated flight event(s), at the discretion of the commanding officer. Any pilot that is in the Basic, Series Conversion, or Refresher syllabus that has not attained TAC-2501 through TAC-2502 and/or is not a current section leader or above must complete RAID-4503 and RAID-4504.

3. Minimum Crew Requirement. P/CP/CC/AGO.

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.

RAID-4503 1.5 365 B 3+ 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-4016, ACAD-4017
FLIGHT	FAM-2101,FAM-2102,CAL-2203,FORM-2301,TERF-2305, AG-2401,TAC-2501,HIE-2705,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.

RAID-4504 1.5 365 B,R 3+ 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. RAID-4504 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-4016, ACAD-4017
FLIGHT	FAM-2101,FAM-2102,FORM-2301,AG-2404,TAC-2502, NS-2607 (IF FLOWN IN HLL), NS-2654 (IF FLOWN IN LLL),HIE-2706,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.

218. INSTRUCTOR TRAINING PHASE (5000)

1. FRS Instructor Under Training POI (IUT)

a. 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.

b. General

(1) 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.

(2) 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.

(3) 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.

(4) The IUT may find all maneuver descriptions in the FRS Standardization Manual, NATOPS Flight Manual, and Air NTTP series publications.

(5) Pilots shall discuss CRM as applicable to each event.

2. Minimum Crew Requirements. IP/IUT/CC (AGO if conducting TERF or NS are used).

3. Ground/Academic Training

a. All IUTs shall complete all assigned CBT lessons prior to FAM-5101.

b. 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.

c. 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.

d. All IUTs shall complete the Navigation Class (ACAD-0021) prior to NAV-5106.

e. All IUTs shall complete the TERF Class (ACAD-0022) prior to CAL-5108.

f. All IUTs shall complete the NATOPS Closed Book Exam (NTPS-6002) prior to IUT-5111.

g. 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-l 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-l75-1.
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. Contract Instructor Under Training (CIUT)

a. 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.

b. General

(1) The CIUT should fly all sorties with an experienced Contract Instructor or FRS Instructor Pilot.

(2) The CIUT may find all maneuver descriptions in the FRS Standardization Manual or NATOPS Flight Manual.

(3) The CIUT shall discuss CRM as applicable to each event.

(4) After completing the CIUT Syllabus, all CIUTs shall pass a NATOPS, Instrument, and CRM Evaluation before being designated a Contract Instructor.

c. Minimum Crew Requirements. CI or IP/CUIT.

d. Ground/Academic Training

(1) All CIUTs shall complete all assigned CBT lessons prior to SFAM-5200.

(2) All CIUTs shall complete the Instructional Techniques class (ACAD-5000) prior to SFAM-5200.

(3) 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.

(4) All CIUTs shall complete Instrument Ground School (INST-6004), Instrument Written Exam (INST-6005), and Instrument Oral Exam (INST-6006) prior to INST-6102.

(5) 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.

3. Basic Instructor Pilot (BIP)

a. Purpose. To qualify the PUI in the methods and techniques necessary to instruct squadron pilots in selected Core and Core Plus Skill events.

b. General

(1) A prospective BIP must be a designated HAC, and demonstrate the maturity, judgment, and discipline required of a pilot serving in an instructor role.

(2) 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.

(3) 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.

(4) 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.

(5) 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.

(6) 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.

c. Minimum Crew Requirements

(1) SBIP-5300 P/CP/CC*
(2) BIP-5301 P/CP/CC/AGO
(3) BIP-5302 P/CP/CC/AGO
(4) BIP-5303 P/CP/CC
(5) BIP-5304 P/CP/CC/AGO

* CC required if event performed in the aircraft.

d. Ground Training. Prior to commencement of the BIP syllabus, the BIP(UI), whether an initial or refresher prospective BIP, shall complete the following:

(1) A standardization discussion with the squadron stan board.

(2) BIP PUIs will be prepared to discuss the seven critical skills of CRM as applicable to each event.

e. BIP Event Requirements. In addition to all requirements and performance standards listed for each BIP event, each IUT shall be evaluated on the following:

(1) Plan:

(a) Learning objective accomplishment.

(b) Training area selection.

(c) External support coordination.

(d) Mission products.

(2) Execution:

(a) Professionalism.

(b) Airwork.

(c) Crew Resource Management (CRM).

(d) NATOPS adherence.

(e) SOP’s/Orders adherence.

f. 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-2003, ACAD-5000,
FLIGHT	FAM-2101,FAM-2102,CAL-2202,FORM-2301,EXT-2701, CQ-2901,HIE-2705,HIE-2707
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.

4. Advanced Instructor POI

a. 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

b. 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.

219. REQUIREMENTS, QUALIFICATIONS, DESIGNATIONS (RQD) PHASE (6000)

1. Overview

a. 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.

b. General

(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) 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.

(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.

(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.

(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.

(6) Flight Leadership proficiency shall be logged in M-SHARP.

2. NATOPS/Instrument POI

a. 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.

b. General

(1) 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.

(2) 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.

(3) 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.

(4) Minimum Crew Requirements. P/CP/CC/(AGO if NS are used).

c. 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).

3. Instrument Evaluation POI

a. Purpose. To evaluate the airman in specific flight skills, knowledge and strict adherence to NATOPS instrument procedures.

b. General

(1) 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.

(2) 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.

(3) Minimum Crew Requirements. P/CP/CC

c. 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.

4. CRM Training

a. Purpose. To conduct annual CRM training.

b. General

(1) Aircrew shall be NSQ (appropriate light level) for all NS flights.

(2) 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.

(3) The CRM Flight Evaluator must be designated CRM Facilitator or CRM Instructor.

c. 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).

5. Functional Check Flights (FCF)

a. Purpose. To introduce and develop proficiency in FCF procedures as well as obtain the squadron FCP designation.

b. General

(1) PUI will demonstrate an understanding of, and proficiency in, the maintenance procedures involved in FCFs.

(2) 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.

(3) The Quality Assurance Officer within each squadron should manage the FCP syllabus.

(4) 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).

(5) Events will be instructed by a designated FCP.

(6) 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.

(7) 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.

c. Crew Requirements. P/CP/CC.

d. 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 (8500, NP600, 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 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 not 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.
NP-600 Engine Test Set and 8500C Balancer/Analyzer setup and operation.
Troubleshooting techniques.
Maintenance Instruction Manuals.
NAVAIR A1-H46E-NFM-700A 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 -24 vibration checks.

Quality Assurance brief/de-brief.
NP-600 Engine Test Set and 8500C Balancer/ Analyzer setup and operation.
ICS, radios, and internal/external lights checks.
Engine start checks.
Starting rotor checks.
Rotor speed check.
Torque Zeroization.
Engine acceleration checks.
ECCS FLY Adjustment.
Fuel control unit topping adjustment.
Torque indicator comparison checks.
ECCS MID and MAX adjustment.
Single-point and four-point engine performance check.
-24 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 NP-600 Engine Test Set and 8500C Balancer/Analyzer 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 -24 vibration analysis in the ground, hover, and 120 KIAS regimes. The -24 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-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-6134 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, 90 KIAS, and 120 KIAS rotor balance. Aircraft must be non-AIMS.

Discuss

- Vibrations associated with rotary wing systems.
- Rotor system and flight control components, principles of operation and system limitations.
- 8500C Balancer/Analyzer setup, operation and troubleshooting techniques.
- Maintenance Instruction Manuals.
- Rotor blade adjustments.
- NAVAIR A1-H46E-NFM-700A 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.
- 8500C Balancer/Analyzer setup, operation, and troubleshooting.
- 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_r 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.

6. Helicopter Aircraft Commander (HAC)

a. 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.

b. General

(1) Prospective HAC's shall conduct the following day and night flights in order to develop the PUI's flight leadership necessary for designation.

(2) 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.

(a) Have been recommended by the Standardization Board.

(b) Have a minimum of 500 total flight hours.

(c) Have 150 flight hours in rotary-wing aircraft.

(d) Core Skill complete. (The commanding officer may defer any training flights per the T&R Program Manual.)

(e) Open and Closed book NATOPS examinations shall be completed prior to the commencement of the check flight (HAC-6204).

(3) For HAC-6203 and 6204 the evaluating pilot shall be a designated NATOPS Instructor or ANI.

(4) For each event the prospective HAC will be evaluated on the following:

(a) Preparation:

1. Load comp.

2. Map preparation.

3. Flight/mission planning.

4. Mission products.

5. Time management.

6. Teamwork/Initiative.

7. Knowledge.

(b) Execution:

1. Professionalism.

2. Airwork.

3. Crew Resource Management (CRM).

4. NATOPS adherence.

5. SOPs/Orders adherence.

(5) Refresher pilots previously qualified as HACs, upon completion of NTPS-6101, may be designated as Aircraft Commanders by unit commanding officers.

c. 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.

d. 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.

7. Section Leader (SL)

a. Purpose. To prepare and evaluate the prospective section lead’s ability to plan, brief and lead a section of assault support aircraft.

b. General

(1) 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.

(2) 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.

(3) 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:

(a) Be a qualified CH-46E Aircraft commander.

(b) Have a minimum of 50 HAC hours.

(c) Nominated by the Standardization Board.

(4) 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:

(a) Plan:

1. Learning objective accomplishment.

2. Training area selection.

3. Mission Products.

4. Contingency planning.

5. ANTTP series publications utilization.

6. External support coordination.

(b) Execution:

1. Flight Leadership.

2. Professionalism.

3. Airwork.

4. Crew Resource Management (CRM).

5. NATOPS adherence.

6. SOPs/Orders adherence.

(5) 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.

(6) 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.

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

d. 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.

e. 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-2607(HLL) or NS 2654(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-2654 (light level dependent) as the section leader. Upon successful completion, both NS-2606 or NS-2654 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-2607 (HLL) or NS-2654 (LLL) (section CALs not required).

Performance Standards. Comply with all performance standards outlined in NS-2606 and NS-2654 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-2606/2654.

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).

8. Division Leader (DL)

a. Purpose. To prepare and evaluate the prospective division lead’s ability to plan, brief and lead a division of assault support aircraft.

b. General

(1) 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.

(2) 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.

(3) 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:

(a) Be a designated CH-46E Section Leader.

(b) 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.

(c) Have flown a minimum of three flights as a designated Section Leader.

(d) Nominated by the Standardization Board.

(4) The Division Leader Under Instruction (DLUI) will perform preflight planning, conduct a training or tactical mission and NATOPS brief, lead a division and conduct a debrief. For each DLUI event, the DLUI shall be evaluated on the following:

(a) Plan:

1. Learning objective accomplishment.

2. Training area selection.

3. Mission Products.

4. Contingency planning.

5. ANTTP series publications utilization.

6. External support coordination.

(b) Execution:

1. Flight Leadership.

2. Professionalism.

3. Airwork.

4. Crew Resource Management (CRM).

5. NATOPS adherence.

6. SOP’s/Orders adherence.

(5) The squadron will ensure that the DLUI is prepared for the division 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 DLUI flight, that flight must be reflown prior to completing the final certification flight.

(6) For all DL-6403 and DL-6404 flights, the squadron operations department will provide the proposed division leader with a tactical scenario containing sufficient information to enable mission analysis and planning.

c. At the discretion of squadron commanding officers, qualified division leaders may be nominated as MAG FLSEs to the MAG commanding officer. The MAG CO designation as a MAG FLSE shall be entered into the instructor pilot's NATOPS jacket and APR.

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

e. 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 Division Leader (DL) stage. The following matrix will be used to track academic and administrative training:

f. Prerequisites

T&R CODE	EVENT
ACAD-2021	(U) RULES OF ENGAGEMENT
ACAD-2022	(U) TACTICAL FLIGHT BRIEFING
ACAD-2024	(U) OBJECTIVE AREA PLANNING
ACPM-8640	(U) JOINT DATA NETWORK
ACPM-8641	(U) MAGTF THEATER AND NATIONAL ISR EMPLOYMENT

DL-6401 1.5 E 3 or 4 Assault Support Aircraft A D

Goal. Demonstrate the ability to conduct a day division CAL and section TERF navigation flight as the division leader.

Requirement. Plan, brief, lead, and debrief a day division CAL and section TERF navigation flight. The DLUI shall conduct all requirements outlined in CAL-2203 and TERF-2305 as the division leader. Upon successful completion, CAL-2203, TERF-2305, DL-6401 shall be logged for tracking purposes.

Discuss:
CRM while conducting CALs and section TERF navigation.
Crew comfort level while conducting CALs and section TERF\ navigation.
Lost comm procedures and considerations while conducting CALs and TERF navigation.
IIMC procedures and rendezvous while conducting day CALs and TERF navigation.
Loss of visual contact and rendezvous/join-up procedures.
In-flight emergency coordination.
Division tactical approaches.
Landings and departures to a confined area in all threat environments.
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: Division flight leadership while conducting day division CALs and section TERF navigation.

Review: CAL-2203 and TERF-2305.

Performance Standards. Comply with all performance standards outlined in CAL-2203 and TERF-2304, except that the route must be flown remaining oriented within 200 meters. In addition, the DLUI 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, 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, demonstrate proper understanding of high bird roles and responsibilities (if required), maintain proper formation and mutual support, demonstrate proper wingman considerations throughout the CAL pattern, maintain division integrity during approach and landing, 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. SL, CAL-2203, and TERF-2305.

External Syllabus Support. CAL zone that accommodates multiple aircraft and approved TERF route (special use airspace preferred).

DL-6402 1.5 E 3 OR 4 Assault Support aircraft A NS

Goal. Demonstrate the ability to conduct a NS division CAL and section TERF navigation flight as the division leader.

Requirement. Plan, brief, lead, and debrief a day division CAL and section TERF navigation flight. The DLUI shall conduct all requirements outlined in NS-2604 and 2607 or NS-2653 and 2654 (light level dependent) as the division leader. Upon successful completion, NS-2604, NS-2607 or NS-2653, NS-2654, and DL-6402 shall be logged for tracking purposes.

Discuss:
CRM while conducting NS CALs and section TERF navigation.
Crew comfort level while conducting NS CALs and section TERF navigation.
Lost comm procedures and considerations while conducting NS CALs and TERF navigation.
IIMC procedures and rendezvous while conducting NS CALs and TERF navigation.
Loss of visual contact and rendezvous/join-up procedures.
In-flight emergency coordination.
NS division formation techniques.

External aircraft lighting considerations during NS formation operations.
NS TERF considerations.
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: Division flight leadership while conducting NS division CALs and section TERF navigation.

Review: NS-2604 and NS-2607 or NS-2653 and NS-2654.

Performance Standards. Comply with all performance standards outlined in NS-2604 and NS-2607 or NS-2653 and NS-2654 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 DLUI 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 wingmen'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, demonstrate proper understanding of high bird roles and responsibilities (if required), maintain proper formation and mutual support, demonstrate proper wingman considerations throughout the CAL pattern, maintain division integrity during approach and landing, communicate intentions to the flight, 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, IIMC, loss of visual contact), and demonstrate an understanding of objective area planning and briefing IAW ANTTP series publications.

Prerequisite. SL, NS-2607 and NS-2654.

External Syllabus Support. NS compatible CAL zone that accommodates multiple aircraft and approved TERF route (special use airspace preferred).

DL-6403 1.5 E 3 or 4 Assault Support aircraft A (N)

Goal. Conduct a day or night MCTL mission based on a tactical scenario as the division leader.

Requirement. Plan, brief, lead, and debrief a day or night division tactical mission in a medium threat environment to include external fire support assets/agencies (actual or notional), escorts (actual or notional), and aerial gunnery (if possible). The DLUI shall conduct all requirements outlined in TAC-2501 or TAC-2502 (day or night dependent) as the division leader. Upon successful completion, TAC-2501 or TAC-2502, AG-2401 or AG-2405 (if executed), and DL-6403 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).
- Multi-plane aerial gunnery considerations in the objective area.
- ASE employment considerations (expendable use day and night).
- 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).
- Lost comm considerations.
- 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.
- CBRN considerations.
- Delegation of responsibilities to the flight.
- Detailed fuel planning considerations and the use of mission planning systems.
- Navigation and timing considerations.
- Multi-plane aerial gunnery considerations in the objective area.
- Cockpit management and CNCS employment considerations/techniques.
- Ordnance effects on NS.
- Laser aiming devices (GCP-2/A, IZLID-200P).

Introduce: Division 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 DLUI shall conduct objective area planning and briefing IAW ANTTP series publications, maintain situational awareness of wingmen, 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, communicate intentions to the flight, demonstrate proper decision making in response to changing situations (e.g., EPs, pop-up threats, downed aircraft),

demonstrate proper decision making in response to immediate missions and/or contingencies.

Prerequisite. DL-6401 and DL-6402.

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).

DL-6404 1.5 R,E 3 or 4 Assault Support aircraft A (N)

Goal. Conduct a day or night division leader check utilizing a MCTL mission based on a tactical scenario as the division leader.

Requirement. Plan, brief, lead, and debrief a day or night division tactical mission in a medium threat environment to include external fire support assets/agencies (actual or notional), escorts (actual or notional), and aerial gunnery (if possible) as the division leader. The DLUI shall conduct all requirements outlined in TAC-2501 or TAC-2502 (day or night dependent) as the division leader. Upon successful completion, TAC-2501 or TAC-2502, AG-2401 or AG-2405 (if executed), and DL-6404 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 DL-6401 through DL -6403.

Review:
Division flight leadership.
DL-6401 through DL-6403.

Performance Standards. Comply with all performance standards outlined in DL-6401 through DL-6403 as required. In addition, the DLUI shall possess the tactical and operational knowledge required of a division leader.

Prerequisite. DL-6403, DL 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).

9. Flight Leader (FL)

a. Purpose. To prepare and evaluate the prospective flight lead's ability to plan, brief and lead a multi-element tactical flight.

b. General

(1) Prospective Flight Leads (FL) shall conduct the following sortie in order to develop the PUI's flight leadership necessary for designation.

(2) Flight Leader training will be conducted under the guidance of an FL or higher. Informal mission commander training may be conducted at any time, however, for consistency; the FL-6501 code will be reserved for the check flight. The check flight shall be evaluated by a FLSE from another command. If a FLSE from another command is unavailable, the MAG/MAGTF commanding officer may approve the use of internal squadron FLSE.

(3) A prospective FL must be fully qualified to lead a flight under all conditions in performance of any of the squadron tasks as well as meet the following prerequisites:

(a) Be a CH-46E Division Leader.

(b) Have no less than 750 total flight hours.

(c) Have flown a minimum of three flights as a designated Division Lead.

(d) Nominated by the Standardization Board.

(4) The FL Under Instruction (FLUI) will perform preflight planning, conduct a tactical mission brief, lead a flight of five (5) or more assault aircraft with escorts, and conduct a debrief. For each FLUI event, the FLUI shall be evaluated on the following:

(a) Plan:

1. Mission Products.

2. Contingency planning.

3. ANTTP series publications utilization.

4. External support coordination.

(b) Execution:

1. Flight Leadership.

2. Professionalism.

3. Airwork.

4. Crew Resource Management (CRM).

5. NATOPS adherence.

6. SOPs/Orders adherence.

(5) If not flown in conjunction with MEU workups, WTI or MAGTF exercise, the squadron operations department will provide the proposed FL with a tactical scenario containing sufficient information to enable mission analysis and planning.

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

d. 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 Flight Leader (FL) stage.

g. Prerequisites

T&R CODE	EVENT
ACAD-2022	(U) TACTICAL FLIGHT BRIEFING
ACAD-2023	(U) LARGE FLIGHT LEADERSHIP
ACAD-2028	(U) EXECUTION CHECKLIST
ACAD-3000	(S) TRAP
ACAD-4012	(U) JCAS
ACAD-4013	(U) JOINT CAS AIRCRAFT CAPABILITIES
ACAD-4016	(U) ASD HELICOPTER ASSAULT KEY PLAYERS
ACAD-3003	(S) NEO EXECUTION
ACPM-8620	(U) ESG/CSG INTEGRATION

FL-6501 1.5 R,E 5+ Assault Support aircraft A (N)

Goal. Conduct a day or night flight leader check utilizing a MCTL mission based on a tactical scenario as the flight leader.

Requirement. Plan, brief, lead, and debrief a day or night multi-element tactical mission to include external fire support assets/agencies (actual or notional), actual escorts, and aerial gunnery (if possible) as the flight leader. The FLUI shall conduct all requirements outlined in TAC-2501 or TAC-2502 or TAC-4501 or TAC-4502 (day/night and threat environment dependent) as the flight leader. Upon successful completion, the appropriate TAC code, AG code (if executed), and FL-6501 shall be logged for tracking purposes.

Discuss:
- CRM during a tactical mission.
- 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.
- GCE support considerations.
- MACCS agencies, functions, and employment.
- Weapons employment considerations (sectors of fire vs. fields of fire).

Aerial gunnery procedures.
ASE employment considerations (expendable use day and night).
Objective area planning/flow considerations and briefing techniques.
Fire support considerations.
Escort considerations and escort tactics.
Multiple wave requirements for an objective area.
Deconfliction and integration of multiple flight elements.
Landing zone, landing site, landing point considerations.
EMCON and radio procedures.
Secure vs. active communications.
Delegation of responsibilities to the flight.
Cockpit management and CNCS employment considerations/techniques.

Review:
Flight leadership.
TAC-2501, TAC-2502, TAC-4501, or TAC-4502.

Performance Standards. Comply with all performance standards outlined in TAC-2501, TAC-2502, TAC-4501, or TAC-4502 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 DLUI shall conduct objective area planning and briefing IAW ANTTP series publications, maintain situational awareness of all wingmen, assault flight elements, other mission assets, fires, and the progress of the mission, coordinate with and control all supporting arms, escorts, and other external agencies as necessary for mission accomplishment, 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), demonstrate proper decision making in response to immediate missions and/or contingencies. Communicate intentions to the flight, maintained positive control of all wingmen and flight elements, and possess the tactical and operational knowledge required of a flight leader.

Prerequisite. DL, FL 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).

10. Air Mission Commander (AMC)

a. Purpose. To prepare and evaluate the prospective Air Mission Commander’s (AMC’s) ability to plan, brief and lead a multi-element tactical flight.

b. General

(1) Designation as AMC is a function of command. When designating AMCs, the squadron commanding officer will consider qualities of personal integrity, judgment and initiative in addition to rank and flight experience. Prospective AMCs shall conduct the following flight in order to develop/evaluate the PUI's flight leadership. Informal mission commander training may be conducted at any time under the guidance of a qualified AMC, however, for consistency; the AMC-6601 code will be reserved for the check flight. The check flight shall be evaluated by a FLSE from another command. If a FLSE from another command is unavailable, the MAG/MAGTF commanding officer may approve the use of internal squadron FLSE. AMC check flights will be evaluated by a qualified AMC.

(2) An AMC is responsible for all phases of the assigned mission except those aspects of safety of flight that are related to the physical control of the aircraft and fall within the prerogatives of the pilot in command.

(3) A prospective AMC must be fully qualified to lead a flight under all conditions in performance of any of the squadron tasks as well as meet the following prerequisites:

(a) Be a designated CH-46E Division Leader.

(b) Minimum of 750 total flight hours and three flights as a designated Division Leader.

(c) Nominated by the Standardization Board.

(4) The AMC Under Instruction (AMCUI) will perform preflight planning, conduct a tactical mission brief, lead a multi-division integrated mission with escorts, and conduct a debrief. Evaluation will be based on brief delivery, coordination and supervision of key personnel (FL, EFL, SFL & HUC), flight management/leadership, communication procedures, plan flexibility, use of supporting arms, and overall command and control of the evolution.

c. Minimum Crew Requirements. N/A

d. Ground/Academic Training. The MAWTS-1 CH-46E Course Catalog contains the required readings and chalk talks which shall be completed prior to starting the Air Mission Commander (AMC) stage. The following matrix will be used to track academic and administrative training:

e. Prerequisites

T&R CODE	EVENT
ACAD-3005	(U) RAPID RESPONSE PLANNING PROCESS
ACAD-4011	(U) AIR MISSION COMMANDER
ACAD-4016	(U) ASD HELICOPTER ASSAULT KEY PLAYERS

AMC-6601 1.5 R E 1+ Assault Element and 1+ RW or FW escort Element (N)

Goal. Conduct a day or night Air Mission Commander (AMC) check utilizing a MCTL based mission and a tactical scenario.

Requirement. Plan, brief, lead, and debrief a day or night multi-element, multi-T/M/S tactical mission in any threat environment utilizing at a minimum, one assault element and one RW or FW escort element. The AMCUI shall be evaluated on his/her ability to integrate the six functions of Marine Aviation and should lead the mission from a C&C platform or COC (as appropriate).

Discuss:
- Mission analysis and METT-TSL.
- Marine Corps Planning Process (MCPP) / Rapid Response Planning Process (R2P2).
- COA development and task delegation.
- Six functions of Marine Aviation.
- Aviation Ground Support (AGS) capabilities.
- MACCS agencies, functions, and employment.
- Threat planning considerations for multiple T/M/S aircraft.
- GCE support considerations.
- Objective area planning considerations.
- Fire Support Coordination Measures (FSCMs).
- Fire support/supporting arms considerations and integration (e.g. indirect fires, CAS).
- RW and FW escort considerations and escort tactics.
- Assault support considerations and tactics.
- Contingency planning.
- Immediate tasking.
- Go vs. No-Go criteria.
- Event vs. time driven mission execution.
- Chain of responsibility and delegation of authority.
- C&C platform considerations and Mission Coordination Area (MCA) selection.
- Secure vs. active communications.
- EMCON and radio procedures.
- Information flow requirements.
- Execution checklist utilization.

Review:
- Tactical mission planning and briefing.
- Command and control during a tactical mission.

Performance Standards. The AMCUI shall conduct mission analysis IAW MCWP 5-1, delegate mission tasks to the most advantageous asset/flight, ensure coordination and supervision of key personnel during planning, conduct tactical planning IAW ANTTP series publications, develop a plan that integrates the six functions of Marine Aviation and AGS, develop a plan that fully supports the GCE ground scheme of maneuver and Essential Fire Support Tasks (EFSTs), conduct an AMC brief IAW ANTTP series publications, maintain SA of all assets participating in the mission, maintain SA on mission progress/execution, maximize C&C platform capabilities, demonstrate proper decision making and task delegation in response to immediate missions and/or contingencies, execute appropriate command and control to ensure mission success. Demonstrate proper understanding and utilization of C4I to facilitate information flow and execution, RW and/or FW escort, secure and active communications, FSCM utilization and supporting arms, and contingency planning and

execution. Possess the tactical and operational knowledge required of an AMC.

Prerequisite. Designated Flight Leader and AMC academics complete.

Ordnance. As required.

Range Requirements. As required.

External Syllabus Support. GCE, MACCS agencies, AGS assets, multiple T/M/S RW and/or FW assets as required, and any other support required based on the tactical scenario (HST, threat emitter/simulator).

11. Flight Leader Standardization Evaluator (FLSE) Training

a. Purpose. Each MAG with CH-46E aircraft shall assign an appropriate number of FLSEs to sufficiently conduct Flight Leader evaluation requirements IAW this publication.

b. General

(1) Each squadron Commanding Officer will nominate a minimum of two FLSEs to their corresponding MAG Commanding Officer.

(2) Each FLSE will be designated in writing by the MAG commanding officer.

(3) The MAG Operations department will be responsible for coordinating the scheduling of FLSE required flights.

(4) FLSE designated personnel shall attend MAG-sponsored semi-annual FLSE standardization training.

(5) FLSE certification of prospective flight leaders for deployed units or locations where a FLSE from a different unit is not available to conduct the certification may be conducted by an internal FLSE with MAG/MAGTF commander approval.

c. Minimum Requirements

(1) Designated Flight Lead.

(2) Must be well-versed in all academic readings, classes and chalk talks listed in Flight Leader POIs.

d. Flight and Simulator Event Training. No additional flight or simulator training is required for the designation of an FLSE.

220. AVIATION CAREER PROGRESSION MODEL (8000)

1. Purpose. To enhance professional understanding of Marine Aviation and the MAGTF and ensure individuals possess the requisite skills to fill battle command and battle staff positions in support of the ACE and the MAGTF in a joint environment. The focus of training in the Aviation Career Progression Model (ACPM) is on academic events in the following areas:

a. Marine Air Command and Control System (MACCS)

b. Aviation Ground Support

c. Joint Air Operations

d. ACE Battle Staff

e. MAGTF

f. Seabased Operations

g. Combatant Commander Organizations

2. General

a. The ACPM is intended to be an integrated series of academic events contained within each phase of training. Accordingly, ACPM academic events are like any other academic event in that they serve as pre-requisites to selected flight events or stages. Additionally, several ACPM academic events are integrated as prerequisites for flight leadership syllabi.

b. ACPM academic events, along with their identifying prerequisite association with other training phases/stages/events are listed below.

TRAINING PHASE	ACPM ACADEMIC EVENT	PRE-REQUISITE TO
CORE SKILL	(U) ACPM-8200 MACCS AGENCIES, FUNCTIONS, AND CONTROL OF AIRCRAFT AND MISSILES	TAC STAGE/CQ STAGE
	(U) ACPM-8201 MWCS BRIEF	TAC STAGE
	(U) ACPM-8202 ACA & AIRSPACE	CQ STAGE
	(U) ACPM-8210 AVIATION GROUND SUPPORT*	TAC STAGE
	(U) ACPM-8230 ACE BATTLESTAFF	TAC STAGE
	(U) ACPM-8231 BATTLE COMMAND DISPLAY	TAC STAGE
	(U) ACPM-8240 SIX FUNCTIONS OF MARINE AVIATION**	TAC STAGE
	(U) ACPM-8241 ASR/JTAR INTRODUCTION AND PRACTICAL APPLICATION	TAC STAGE
	(U) ACPM-8242 SITE COMMAND PRIMER	TAC STAGE
	(U) ACPM-8250 THEATER AIR GROUND SYSTEM (TAGS)	GTR STAGE
MISSION SKILL	(U) ACPM-8300 AIR DEFENSE	EXP-3102
	(U) ACPM-8310 FORWARD ARMING REFUELING POINT (FARP) OPERATIONS	EXP-3102, AT-3103
	(U) ACPM-8311 MARINE CORPS TACTICAL FUEL SYSTEMS	EXP-3102
	(U) ACPM-8320 JOINT STRUCTURE AND JOINT AIR OPERATIONS	AT-3104
	(U) ACPM-8321 JOINT AIR TASKING CYCLE PHASE 1: STRATEGY DEVELOPMENT	AT-3104
	(U) ACPM-8322 JOINT AIR TASKING CYCLE PHASE 2: TARGET DEVELOPMENT	AT-3104
	(U) ACPM-8323 JOINT AIR TASKING CYCLE PHASE 3: WEAPONEERING AND ALLOCATION	AT-3104
	(U) ACPM-8324 JOINT AIR TASKING CYCLE PHASE 4: JOINT ATO PRODUCTION	AT-3104
	(U) ACPM-8325 JOINT AIR TASKING CYCLE PHASE 5: FORCE EXECUTION	AT-3104
	(U) ACPM-8326 JOINT AIR TASKING CYCLE PHASE 6: COMBAT ASSESSMENT	AT-3104
	(U) ACPM-8340 INTEGRATING FIRES AND AIRSPACE WITHIN THE MAGTF	AT-3103
	(U) ACPM-8350 PHASING CONTROL ASHORE	SEA-3101
	(U) ACPM-8351 TACRON ORGANIZATIONS AND FUNCTIONS	SEA-3101

FLIGHT LEADERSHIP	(U) ACPM-8630 TACTICAL AIR COMMAND CENTER (TACC)	SECTION LEADER STAGE
	(U) ACPM-8660 JOINT OPS INTRO	
	(U) ACPM-8640 JOINT DATA NETWORK	DIVISION LEADER STAGE
	(U) ACPM-8641 MAGTF THEATER AND NATIONAL ISR EMPLOYMENT***	
	(U) ACPM-8620 ESG/CSG INTEGRATION	FLIGHT LEADER STAGE

* Completion of ACAD-2034 satisfies the requirement for completion of ACPM-8210
** Completion of ACAD-2007 satisfies the requirement for completion of ACPM-8240
*** Completion of ACAD-4002 satisfies the requirement for completion of ACPM-8641.

c. At the completion of each ACPM event, the appropriate training code shall be logged in M-SHARP by the individual pilot, or squadron operations personnel, as appropriate.

d. ACPM events do not have refly intervals.

221. T&R SYLLABUS MATRIX. The below matrix summarizes T&R syllabus event information.

CH-46E PILOT T&R MATRIX																	
STAGE	TRNG CODE	DESCRIPTION	POI	E	DEVIC	# OF A/C	CON	TEN+	REFLY	# OF ACAD	ACAD	# OF SIM	SIM	# OF FLTS	FLT	PREREQUISITE	EVENT CONV
1000 PHASE – CORE SKILL INTRODUCTION																	
ACADEMIC STAGE (ACAD)																	
ACAD	0001	PFAM CLASS							*		1.0						001
ACAD	0002	WELCOME ABOARD							*		1.0						002
ACAD	0003	ODO CLASS							*		1.0						003
ACAD	0004	SDO CLASS							*		1.0						004
ACAD	0005	FRS COURSE RULES							*		1.0						005
ACAD	0006	LOAD COMPUTATIONS							*		1.0						006
ACAD	0007	CNCS / PFPS							*		1.0						007
ACAD	0008	ECCS CLASS							*		1.0						008
ACAD	0009	CBTs (All complete)							*		1.0						009
ACAD	0011	COURSE RULES EXAM							*		1.0						011
ACAD	0012	SOP EXAM							*		1.0						012
ACAD	0021	NAVIGATION CLASS							*		1.0						021
ACAD	0022	TERF							*		1.0						022
ACAD	0023	MISSION PLANNING							*		1.0						023
ACAD	0031	NIGHT SYSEMS CLASS							*		1.0						N/A
ACAD	0042	NS LAB							*		1.0						-
TOTAL ACAD STAGE										16	16.0	0	0.0	0			
FAMILIARIZATION STAGE (FAM)																	
SFAM	1100	SIM-START		E	S		D		*				2.0				100
SFAM	1101	SIM-PATTERN	R,MR	E	S		D		*				2.0			1100	101
SFAM	1102	SIM-ENGINE MALFUNCTION		E	S		D		*				2.0			1101	102
SFAM	1103	SIM-RUN LAND	R,MR	E	S		D		*				2.0			1102	103
SFAM	1104	SIM-AUTOS	R,MR	E	S		D		*				2.0			1103	104
SFAM	1105	SIM-ECCS		E	S		D		*				2.0			1104	105
SFAM	1106	SIM-FAM REVIEW		E	S		D		*				2.0			1105	106
SFAM	1107	SIM-ALL FAM	R,MR	E	S		D		*				2.0			1106	107
SFAM	1118	SIM-FAM / EP REVIEW	R,MR	E	S		D		*				2.0			1107	118
SFAM	1119	SIM-GOUND REVIEW		E	S		D		*				2.0			1118	119
FAM	1108	GROUND PREFLIGHT	R,MR	E	A	1	D		*						0.0	1107	108
FAM	1109	START		E	A	1	D		*						2.0	1108	109
FAM	1110	PATTERN		E	A	1	D		*						2.0	1109	110
FAM	1111	REV FAM		E	A	1	D		*						2.0	1110	111
FAM	1112	AFCS		E	A	1	D		*						2.0	1111	112

CH-46E PILOT T&R MATRIX																		
STAGE	TRNG CODE	DESCRIPTION	POI	E	DEVIC	# OF A/C	CON	TEN+	REFLY	# OF ACAD	ACAD	# OF SIM	SIM	# OF FLTS	FLT	PREREQUISITE	EVENT CONV
FAM	1113	REVIEW FAM	R,MR	E	A	1	D		*						1.5	1112	113
FAM	1114	REVIEW FAM		E	A	1	D		*						1.5	1113	114
FAM	1115	REV FAM		E	A	1	D		*						1.5	1114	115
FAM	1116	FAM PROG CHECK	R,MR	E	A	1	D		*						1.5	1115	116
FAM	1117	NIGHT FAM	R,MR	E	A	1	N*		*						1.5	1116	117
TOTAL FAM STAGE										0	0.0	10	20.0	10	15.5		
INSTRUMENT STAGE (INST)																	
SINST	1200	SIM-CNCS FAM	R,MR	E	S		D		*				2.0				120
SINST	1201	SIM-BI/RI	R,MR	E	S		(N*)		*				2.0			1200	121
SINST	1202	SIM-TACAN/GCA	R,MR	E	S		(N*)		*				2.0			1201	122
INST	1203	TACAN/GCA	R,MR	E	A/S	1	(N*)		*						1.5	1202	123
INST	1204	ENROUTE	R,MR	E	A/S	1	(N*)		*						1.5	1203	124
INST	1205	INST EVAL	R,MR	E	A/S	1	(N*)		*						1.5	1204	125
TOTAL INST STAGE										0	0.0	3	6.0	3	4.5		
NAVIGATION STAGE (NAV)																	
NAV	1301	DAY NAV – 1:250		E	A	1	D		*						1.5	0021,0023,1112	130
NAV	1302	DAY NAV – 1:50		E	A	1	D		*						1.5	1301	131
NAV	1303	UNAIDED NAV		E	A	1	N*		*						1.5	1117,1302	132
TOTAL NAV STAGE										0	0.0	0	0.0	3	4.5		
CONFINED AREA LANDING STAGE (CAL)																	
SCAL	1400	CAL		E	S		D		*				2.0				140
CAL	1401	DAY CAL	R	E	A	1	D		*						1.5	1116	141
CAL	1402	DAY SEC CAL		E	A	2	D		*						1.5	1502,1401,1116	142
TOTAL CAL STAGE										0	0.0	1	2.0	2	3.0		
FORMATION STAGE (FORM)																	
SFORM	1500	DAY/NS FORM		E	S		(NS)		*				2.0			1400	150
FORM	1501	DAY FORM CRUISE	R	E	A	2	D		*						1.5	1401	151
FORM	1502	DAY FORM PARADE		E	A	2	D		*						1.5	1501	152
TOTAL FORM STAGE										0	0.0	1	2.0	2	3.0		
EXTERNAL STAGE (EXT)																	
SEXT	1600	EXT		E	S		D		*				2.0			1400	160
EXT	1601	EXT		E	A	1	D		*						1.5	1401	161
TOTAL EXT STAGE										0	0.0	1	2.0	1	1.5		

CH-46E PILOT T&R MATRIX																	
STAGE	TRNG CODE	DESCRIPTION	POI	E	DEVIC	# OF A/C	CON	TEN+	REFLY	# OF ACAD	ACAD	# OF SIM	SIM	# OF FLTS	FLT	PREREQUISITE	EVENT CONV
TERRAIN FLIGHT STAGE (TERF)																	
TERF	1701	TERF	R,MR	E	A	1	D		*						1.5	0022,1401	171
TOTAL TERF STAGE										0	0.0	0	0.0	1	1.5		
NIGHT SYSTEMS STAGE (NS)																	
SNS	1800	SIM-NS FAM		E	S		NS		*				2.0			0031,0042,1107	180
NS	1801	NS FAM	R	E	A	1	NS		*						2.0	0031,0042,1117	181
NS	1802	NS NAV		E	A	1	NS		*						1.5	1303,1801	182
NS	1803	NS CAL		E	A	1	NS		*						1.5	1401,1802	183
TOTAL NS STAGE										0	0.0	1	2.0	3	5.0		
REVIEW STAGE (REV)																	
SREV	1900	SIM-REV	R	E	S		D		*				2.0			ALL PREV STAGES COMP	190
REV	1901	REV		E	A	1	D		*						1.5	1900	191
TOTAL REV STAGE										0	0.0	1	2.0	1	1.5		
CORE SKILL INTRODUCTION CHECKRIDE (CSIX)																	
CSIX	1902	NATOPS	R,MR	E	A	1	D		*						1.5	1901	192
TOTAL CSIX STAGE										0	0.0	0	0.0	1	1.5		
CORE SKILL INTRODUCTION PHASE TOTAL										16	16.0	18	36.0	27	41.5		
2000 PHASE - CORE SKILL BASIC																	
ACADEMIC STAGE (ACAD)																	
ACAD	2000	HAVEQUICK/SINGARS							365		1.0						
ACAD	2001	CNCS EMPLOYMENT							*		1.0						
ACAD	2002	ASD TERRAIN FLIGHT							*		1.0						
ACAD	2003	CH-46E TACTICAL AIRCREW COORD							365		1.0						
ACAD	2004	NITE LAB NIGHT OPER ENV							*		1.0						
ACAD	2005	CH-46E TACTICS IN THE NIGHT ENV							*		1.0						
ACAD	2006	CH-46E NVG HUD							*		1.0						
ACAD	2007	SIX FUNCTIONS OF MARINE AVIATION							*		1.0						
ACAD	2008	FW THREAT TO MAGTF							*		1.0						
ACAD	2009	RW THREAT TO MAGTF							*		1.0						
ACAD	2010	SURFACE TO AIR THREAT TO MAGTF							*		1.0						
ACAD	2011	NITE LAB NVG OPERATIONS							*		1.0						
ACAD	2012	NITE LAB NVG ROUTE CONSIDERATIONS							*		1.0						

CH-46E PILOT T&R MATRIX																		
STAGE	TRNG CODE	DESCRIPTION	POI	E	DEVIC	# OF A/C	CON	TEN+	REFLY	# OF ACAD	ACAD	# OF SIM	SIM	# OF FLTS	FLT	PREREQUISITE	EVENT CONV
ACAD	2013	MAWTS-1 BASIC RADAR PRICIPLES							*		1.0						
ACAD	2014	GROUND THREAT REACTION							*		1.0						
ACAD	2015	RF SAMS							365		1.0						
ACAD	2016	IR SAM THREAT TO RW AIRCRAFT							365		1.0						
ACAD	2017	AAA THREAT TO RW AIRCRAFT							365		1.0						
ACAD	2018	ALE-47/AAR-47 V2							365		1.0						
ACAD	2019	APR-39 V1							365		1.0						
ACAD	2020	ALQ-157							365		1.0						
ACAD	2021	RULES OF ENGAGEMENT							*		1.0						
ACAD	2022	TACTICAL FLIGHT BRIEFING							365		1.0						
ACAD	2023	LARGE FLIGHT LEADERSHIP							*		1.0						
ACAD	2024	OBJECTIVE AREA PLANNING							365		1.0						
ACAD	2025	BATTLEFIELD ILLUMINATION							*		1.0						
ACAD	2026	ASSAULT SUPPORT ESCORT TACTICS							*		1.0						
ACAD	2027	RESERVED FOR FUTURE USE							*								
ACAD	2028	EXECUTION CHECKLIST							*		1.0						
ACAD	2029	MAGTF TARGETING AND FIRE SUPPORT PLANNING							365		1.0						
ACAD	2030	INTEL PREPERATION OF THE BATTLESPACE							*		1.0						
ACAD	2031	MISSION ANALYSIS							*		1.0						
ACAD	2032	EVASIVE MANEUVERS							365		1.0						
ACAD	2033	RESERVED FOR FUTURE USE							*								
ACAD	2034	AVIATION GROUND SUPPORT							*		1.0						
ACAD	2035	NITE LAB HUMAN VISUAL SYSTEMS							*		1.0						
ACAD	2036	NITE LAB MISPERCEPTIONS AND ILLUSIONS							*		1.0						
ACAD	2037	NITE LAB NVG ADJUSTMENT PROCEDURES							*		1.0						
ACAD	2038	NITE LAB FLIR SENSOR INTEGRATION							*		1.0						
ACAD	2039	ASD FASTROPE							*		1.0						
ACAD	2040	ASD RAPPEL OPERATIONS							*		1.0						
TOTAL ACAD STAGE										39	39.0						

CH-46E PILOT T&R MATRIX																		
STAGE	TRNG CODE	DESCRIPTION	POI	E	DEVIC	# OF A/C	CON	TEN+	REFLY	# OF ACAD	ACAD	# OF SIM	SIM	# OF FLTS	FLT	PREREQUISITE	EVENT CONV
FAMILIARIZATION / INSTRUMENT STAGE (FAM/INST)																	
SFAM /INST	2100	SFAM/INST			S/A	1	(N)		*				2.0			None	200
FAM/ INST	2101	FAM	R		A	1	(N)		180						1.5	2100	201
FAM/ INST	2102	INST	R		A	1	(N)		180						1.5	2100	202
TOTAL FAM/INST STAGE										0	0.0	1	2.0	2	3.0		
CONFINED AREA LANDING STAGE (CAL)																	
SCAL	2200	SIM CALS			S		(N)		*				2.0			None	210
CAL	2201	CALS			A	1	D		180						1.5	2200	211
CAL	2202	SEC CALS			A	2	D		180						1.5	2201	212
CAL	2203	DIV CALS	R		A	3	D		180						1.5	2202	N/A
TOTAL CAL STAGE										0	0.0	1	2.0	3	4.5		
FORMATION STAGE (FORM)																	
SFORM	2300	SIM FORM			S		D		*				2.0			None	230
FORM	2301	TACFORM	R		A	2	(NS)		180						1.5	2201,2300	231
TOTAL FORM STAGE										0	0.0	1	2.0	1	1.5		
TERRAIN FLIGHT STAGE (TERF)																	
STERF	2302	SIM TERF			S		D		*				2.0			2002,2003	240
TERF	2303	TERF MANEUVERS			A	1	D		180						1.5	2302	241
TERF	2304	TERF			A	1	D		180						1.5	2303	242
TERF	2305	SEC TERF	R		A	2	D		180						1.5	2304	243
TOTAL TERF STAGE										0	0.0	1	2.0	3	4.5		
AIR-TO-GROUND STAGE (AG)																	
AG	2401	DAY AG	R		A	1	D		365						1.5	2003,2005,2021,2024, 2029,2101,2301	281
AG	2402	NS AG	R		A	1	NS		365						1.5	2401,2601	321
TOTAL AG STAGE										0	0.0	0	0.0	2	3.0		
TACTICS STAGE (TAC)																	
STAC	2500	SIM D/N LOW/MED THREAT			S		(NS)		*				2.0			See TAC Stage	370/ 373
TAC	2501	DAY LOW/MED THREAT			A	2	D		180						1.5	2202,2500,2801,TERF Q	371/ 374
TAC	2502	NS LOW/MED THREAT	R		A	2	NS		180						1.5	2501,2405,2603	372/ 375
TOTAL TAC STAGE										0	0.0	1	2.0	2	3.0		

CH-46E PILOT T&R MATRIX																	
STAGE	TRNG CODE	DESCRIPTION	POI	E	DEVIC	# OF A/C	CON	TEN+	REFLY	# OF ACAD	ACAD	# OF SIM	SIM	# OF FLTS	FLT	PREREQUISITE	EVENT CONV
NIGHT SYSTEMS HIGH LIGHT LEVEL STAGE (HLL)																	
SNS	2600	SIM NS FAM			S		NS		*				2.0			See Stage Matrix	250
NS	2601	HLL CALS	R		A	1	NS		180						1.5	2101,2201,2600	251
NS	2602	HLL FORM			A	2	NS		180						1.5	2301,2601	252
NS	2603	HLL SEC CALS	R		A	2	NS		180						1.5	2202,2602	253
NS	2604	HLL DIV CALS/FORM			A	3	NS		*						1.5	2203,2603	254
NS	2605	HLL TERF			A	1	NS		180						1.5	2305,2601	255
NS	2606	HLL SEC TERF			A	2	NS		180						1.5	2305,2602,2605	256
NS	2607	HLL SEC TERF/CALS	R		A	2	NS		180						1.5	2603,2606	257
TOTAL NS HLL STAGE										0	0.0	1	2.0	7	10.5		
NIGHT SYSTEMS LOW LIGHT LEVEL STAGE (LLL)																	
SNS	2650	SIM LLL			S		NS		*				2.0			2600,2038	310
NS	2651	LLL SINGLE SHIP CALS	R		A	1	NS		180						1.5	2607,2650	311
NS	2652	LLL SECTION CALS	R		A	2	NS		180						1.5	2651	312
NS	2653	LLL DIVISION CALS	R		A	3	NS		180						1.5	2652	313
NS	2654	LLL TERF/FORM/CALS	R		A	2	NS		180						1.5	2653	314
TOTAL LLL STAGE										0	0.0	1	2.0	4	6.0		
EXTERNAL STAGE (EXT)																	
SEXT	2700	SIM EXTERNALS			S		D		*				2.0			None	220
EXT	2701	DAY EXTERNALS	R		A	1	D		365						1.5	2700,2201	221
SEXT	2702	SIM D/N TERF EXT			S		(NS)		*				2.0			2302,2600,2700	390
EXT	2703	NS EXT	R		A	1	NS		365						1.5	2701,2607~NS,2654~LLL	392
TOTAL EXT STAGE										0	0.0	2	4.0	2	3.0		
HELICOPTER INSERTION EXTRACTION STAGE (HIE)																	
SHIE	2704	SIM HIE			S		NS		*				2.0			2003,2005,2006,2039, 2040	360
HIE	2705	DAY FASTROPE/RAPPEL	R		A	1	D		365						1.5	2201,2701,2704	361
HIE	2706	NS FASTROPE/RAPPEL			A	1	NS		*						1.5	2703,2705,2607~NS, 2654~LLL	362
HIE	2707	DAY OR NS AERIAL DELIVERY	R		A	1	(NS)		365						1.5	2607~NS,2654~LLL	461
TOTAL HIE STAGE										0	0.0	1	2	3	4.5		

CH-46E PILOT T&R MATRIX																	
STAGE	TRNG CODE	DESCRIPTION	POI	E	DEVIC	# OF A/C	CON	TEN+	REFLY	# OF ACAD	ACAD	# OF SIM	SIM	# OF FLTS	FLT	PREREQUISITE	EVENT CONV
GROUND THREAT REACTION STAGE (GTR)																	
SGTR	2800	SIM GTR			S		D		*				2.0			2002,2003,2010,2013, 2014,2016,2017,2018, 2019,2020,2021,2032, 2300,8250	330
GTR	2801	NON-RADAR THREAT REACTION	R		A	2	(NS)		365						1.5	2301,2401,2405~N, 2800,TERF Q,2305	331
TOTAL GTR STAGE										0	0.0	1	2.0	1	1.5		
CARRIER QUALIFICATION STAGE (CQ)																	
SCQ	2900	SIM D/N UNAIDED CQ			S		(N)		*				2.0			8200,8202	290
CQ	2901	DAY FCLP	R		A	1	D		365						1.5	2900	291
CQ	2902	NS FCLP	R		A	1	NS		365						1.5	2901,2607~NS, 2654~LLL	293
CQ	2903	DAY CQ	R		A	1	D		365						1.5	2901	300
CQ	2904	NS CQ	R		A	1	NS		365						1.5	2902,2903,2607~NS, 2654~LLL	301
TOTAL CQ STAGE										0	0.0	1	2.0	4	6.0		
CORE SKILL PHASE TOTAL										39	39.0	12	24.0	34	51.0		
3000 PHASE - MISSION SKILLS																	
ACADEMIC STAGE (ACAD)																	
ACAD	3000	TRAP							*		1.0						
ACAD	3001	MOUT							*		1.0						
ACAD	3002	CASEVAC							*		1.0						
ACAD	3003	NEO EXECUTION							*		1.0						
ACAD	3004	REC THREAT TO MAGTF							*		1.0						
ACAD	3005	RAPID RESPONSE PLANNING PROCESS							365		1.0						
TOTAL ACAD STAGE										6	6.0						
SEA BASED OPERATIONS STAGE (SEA)																	
SEA	3101	SEA-BASED OPERATIONS	R						*							See Stage Matrix	N/A
TOTAL SEA STAGE										0	0.0	0	0.0	0	0.0		
EXPEDITIONARY SHORE BASED OPERATIONS STAGE (EXP)																	
EXP	3102	SHORE BASED OPERATIONS	R						*							See Stage Matrix	N/A
TOTAL EXP STAGE										0	0.0	0	0.0	0	0.0		

CH-46E PILOT T&R MATRIX																	
STAGE	TRNG CODE	DESCRIPTION	POI	E	DEVIC	# OF A/C	CON	TEN+	REFLY	# OF ACAD	ACAD	# OF SIM	SIM	# OF FLTS	FLT	PREREQUISITE	EVENT CONV
ASSAULT TRANSPORT STAGE (AT)																	
AT	3103	DAY ASSAULT TRANSPORT			A	2	D		180						1.5	See Stage Matrix	N/A
AT	3104	NS ASSAULT TRANSPORT	R		A	2	NS		180						1.5	See Stage Matrix	N/A
TOTAL AT STAGE										0	0.0	0	0.0	2	3.0		
AERIAL DELIVERY STAGE (AD)																	
AD	3105	AERIAL DELIVERY	R		A	2	(NS)		365						1.5	See Stage matrix	N/A
TOTAL AD STAGE										0	0.0	0	0.0	1	1.5		
TACTICAL RECOVERY OF AIRCRAFT AND PERSONNEL STAGE (TRAP)																	
TRAP	3106	TRAP	R		A	2	(NS)		365						1.5	See Stage Matrix	N/A
TOTAL TRAP STAGE										0	0.0	0	0.0	1	1.5		
AIR EVACUATION (AE)																	
AE	3107	CASEVAC	R		A	2	(NS)		180						1.5	See Stage Matrix	N/A
TOTAL AE STAGE										0	0.0	0	0.0	1	1.5		
TOTAL MISSION PHASE										0	0.0	0	0.0	5	7.5		
4000 PHASE – CORE PLUS																	
ACADEMIC STAGE (ACAD)																	
ACAD	4002	MAGTF THEATER AND NATIONAL ISR EMPLOYMENT							*		1.0						
ACAD	4003	RW OAS							*		1.0						
ACAD	4004	FW OAS CAPABILITIES							*		1.0						
ACAD	4005	DM							*		1.0						
ACAD	4006	PS/EM							*		1.0						
ACAD	4007	ATTACK HELICOPTER THREAT TO RW AIRCRAFT							*		1.0						
ACAD	4008	FIXED WING THREAT TO RW AIRCRAFT							*		1.0						
ACAD	4009	ASD SPIE							*		1.0						
ACAD	4010	ASD HELOCAST							*		1.0						
ACAD	4011	AIR MISSION COMMANDER							*		1.0						
ACAD	4012	JCAS							*		1.0						
ACAD	4013	CAS AIRCRAFT WEAPONS AND ORDNANCE							*		1.0						
ACAD	4014	LASER THREAT							*		1.0						

CH-46E PILOT T&R MATRIX																	
STAGE	TRNG CODE	DESCRIPTION	POI	E	DEVIC	# OF A/C	CON	TEN+	REFLY	# OF ACAD	ACAD	# OF SIM	SIM	# OF FLTS	FLT	PREREQUISITE	EVENT CONV
ACAD	4015	AEW							*		1.0						
ACAD	4016	ASD HELICOPTER ASSAULT KEY PLAYERS							*		1.0						
ACAD	4017	GCE RAID PLANNING							*		1.0						
TOTAL ACAD STAGE										16	16.0	0	0.0	0	0.0		
MOUNTAIN AREA TRAINING (MAT)																	
SMAT	4200	SIM MAT			S		D		*				2.0			2200	350
MAT	4201	DAY MAT	R		A	1	D		365						1.5	2201	351
MAT	4203	DAY SEC MAT	R		A	2	D		365						1.5	2202,4201	450
MAT	4204	NS MAT	R		A	1	NS		365						1.5	4201,2607~NS,2654~LLL	451
TOTAL MAT STAGE										0	0.0	1	2.0	3	4.5		
CONFINED AREA LANDING STAGE (CAL)																	
CALS	4202	UNAIDED CALS	R		A	1	N*		365						1.5	2101,2201	413
SAWT	4208	SIM HELO OPS IN ARTIC WEATHER			S	1	(N)		*				2.0			2200	620
AWT	4209	HELO OPS COLD WEATHER	R		A	1	(N)		365						1.5	2201	621
SDES	4210	SIM HELO OPS DESERT			S	1	(N)		*				2.0			2200	620
DES	4211	HELO OPS DESERT	R		A	1	(N)		365						1.5	2201	622
TOTAL CAL STAGE										0	0.0	2	4.0	3	4.5		
CHEMICAL, BIOLOGICAL, RADIOLOGICAL, AND NUCLEAR STAGE (CBRN)																	
SCBRN	4205	SIM CBRN			S		(NS)		*				2.0			2200	430
CBRN	4206	DAY CBRN	R		A	1	D		365						1.0	2201,4205	431
CBRN	4207	NS CBRN	R		A	1	NS		365						1.0	4206,2607~NS,2654~LLL	432
TOTAL CBRN STAGE										0	0.0	1	2.0	2	2.0		
EXTERNAL STAGE (EXT)																	
EXT	4301	TERF EXTERNALS	R		A	1	D		365						1.5	2304,2701,2702	392
TOTAL EXT STAGE										0	0.0	0	0.0	1	1.5		
GROUND THREAT REACTION STAGE (GTR)																	
GTR	4401	GROUND THREAT IN A RADAR ENV	R		A	2	(NS)		365						1.5	See Stage Matrix	332
TOTAL GTR STAGE														1	1.5		

CH-46E PILOT T&R MATRIX																		
STAGE	TRNG CODE	DESCRIPTION	POI	E	DEVIC	# OF A/C	CON	TEN+	REFLY	# OF ACAD	ACAD	# OF SIM	SIM	# OF FLTS	FLT	PREREQUISITE	EVENT CONV
TACTICS STAGE (TAC)																	
STAC	4500	SIM D/N HIGHT THREAT			S		(N)		*				2.0			See Stage Matrix	
TAC	4501	DAY HIGH THREAT			A	2	D		365						1.5	2401,2501,2801,4401, 4500	401
TAC	4502	NS HIGH THREAT	R		A	2	(NS)		365						1.5	2502,2405,4500,4501, 2607~NS,2654~LLL	402
TOTAL TAC STAGE										0	0.0	1	2.0	2	3.0		
HELICOPTER INSERTION EXTRACTION STAGE (HIE)																	
HIE	4701	SPIE	R		A	1	(NS)		365						1.0	2003,4009,4010,2701, 2703~NS	460
HIE	4702	HELOCAST/SOFTDUCK	R		A	1	(NS)		365						1.0	2607~NS,2654~LLL	462
HIE	4703	HOIST OPS	R		A	1	(NS)		365						1.0	2701,2607~NS,2654~LLL	463
TOTAL HIE STAGE										0	0.0	0	0.0	3	3.0		
DEFENSIVE MEASURES STAGE (DM)																	
SDM	4800	SIM A-A DM			S		D		*				2.0			2032,4005,4006,4007, 4008	440
DM	4801	RW DM	R		A	2	D		365						1.5	2301,TERF Q,2305	441
DM	4802	FW DM	R		A	2	D		365						1.5	2301,TERF Q,2305	442
SACM	4803	SIM ACM			S		D		*				2.0			DMQ	624
TOTAL DM STAGE										0	0.0	2	4.0	2	3.0		
CARRIER QUALIFICATION STAGE (CQ)																	
CQ	4901	NIGHT UNAIDED FCLP			A	1	N*		365						1.0	2901	490
CQ	4902	UNAIDED CQ	R		A	1	N*		365						1.0	2903,4901	491
TOTAL CQ STAGE										0	0.0	0	0.0	2	2.0		
AIRBORNE RAPID INSERTION/EXTRACTION STAGE (RAID)																	
RAID	4503	DAY RAID			A	3	D		365						1.5	See Event Matrix	N/A
RAID	4504	NS RAID	R		A	3	(NS)		365						1.5	See Event Matrix	N/A
TOTAL RAID STAGE										0	0.0	0	0.0	2	3.0		
TOTAL CORE PLUS PHASE										16	16.0	7	14.0	21	28.0		

CH-46E PILOT T&R MATRIX																	
STAGE	TRNG CODE	DESCRIPTION	POI	E	DEVIC	# OF A/C	CON	TEN+	REFLY	# OF ACAD	ACAD	# OF SIM	SIM	# OF FLTS	FLT	PREREQUISITE	EVENT CONV
5000 PHASE INSTRUCTOR TRAINING																	
FRS INSTRUCTOR TRAINING																	
ACADEMICS STAGE (ACAD)																	
ACAD	5000	INSTRUCTIONAL TECHNIQUES							*		1.0						N/A
TOTAL ACAD STAGE										1	1.0	0	0.0	0	0.0		
FAMILIARIZATION STAGE (FAM)																	
FAM	5101	DAY INSTR TECH		E	A	1	D		*						1.5	0005-0012	500
FAM	5102	DAY INSTR TECH		E	A/S	1	D		*						1.5	5101	501
FAM	5103	DAY INSTR TECH		E	A/S	1	N*		*						1.5	5102	502
TOTAL FAM STAGE										0	0.0	0	0.0	3	4.5		
INSTRUMENT STAGE (INST)																	
INST	5104	INST INSTR TECH		E	A/S	1	D		*						1.5		503
INST	5105	INST INSTR TECH		E	A/S	1	D		*						1.5	5104	504
TOTAL INST STAGE										0	0.0	0	0.0	2	3.0		
NAVIGATION STAGE (NAV)																	
NAV	5106	NAV INSTR TECH		E	A	1	D		*						1.5	0021	505
TOTAL NAV STAGE										0	0.0	0	0.0	1	1.5		
EXTERNAL STAGE (EXT)																	
EXT	5107	EXT INSTR TECH		E	A	1	D		*						1.5		506
TOTAL EXT STAGE										0	0.0	0	0.0	1	1.5		
CONFINED AREA LANDING STAGE (CAL)																	
CAL	5108	CAL/TERF INSTR TECH		E	A/S	1	D		*						1.5	0022	507
TOTAL CAL STAGE										0	0.0	0	0.0	1	1.5		
FAMILIARIZATION STAGE (FAM)																	
FAM	5109	FAM INSTR TECH		E	A/S	1	D		*						1.5	0008	508
TOTAL FAM STAGE										0	0.0	0	0.0	1	1.5		
FORMATION STAGE (FORM)																	
FORM	5110	FORM INSTR TECH		E	A	2	D		*						1.5		509
										0	0.0	0	0.0	1	1.5		
INSTRUCTOR UNDER TRAINING STAGE (IUT)																	
IUT	5111	STAN CHECK		E	A	1	D		*						3.0	0041	511
TOTAL IUT STAGE										0	0.0	0	0.0	1	3.0		

CH-46E PILOT T&R MATRIX																	
STAGE	TRNG CODE	DESCRIPTION	POI	E	DEVIC	# OF A/C	CON	TEN+	REFLY	# OF ACAD	ACAD	# OF SIM	SIM	# OF FLTS	FLT	PREREQUISITE	EVENT CONV
NIGHT SYSTEMS STAGE (NS)																	
NS	5112	HLL NS INSTR TECH		E	A	1	NS		*						1.5	0031,0042	513
TOTAL NS STAGE										0	0.0	0	0.0	1	1.5		
TOTAL FRS INSTRUCTOR PHASE										1	1.0	0	0.0	12	19.5		
5000 PHASE - CONTRACT INSTRUCTOR POI																	
SIMULATOR FAMILIARIZATION STAGE (SFAM)																	
SFAM	5200	DAY FAM INSTR TECH		E	S		D		*				2.0				N/A
SFAM	5201	DAY FAM INSTR TECH		E	S		D		*				2.0			5200	N/A
SFAM	5202	DAY FAM INSTR TECH		E	S		D		*				2.0			5201	N/A
SFAM	5203	DAY FAM INSTR TECH		E	S		D		*				2.0			5202	N/A
SFAM	5204	DAY FAM INSTR TECH		E	S		D		*				2.0			5203	N/A
SFAM	5205	DAY FAM INSTR TECH		E	S		D		*				2.0			5204	N/A
SFAM	5206	DAY FAM INSTR TECH		E	S		D		*				2.0			5205	N/A
SFAM	5207	DAY FAM INSTR TECH		E	S		D		*				2.0			5206	N/A
SFAM	5208	INST INSTR TECH		E	S		D		*				2.0			5207	N/A
SFAM	5209	INST INSTR TECH		E	S		D		*				2.0			5208	N/A
TOTAL SFAM STAGE										0	0.0	10	20.0				
SIMULATOR INSTRUMENT STAGE (SINST)																	
SINST	5210	BASIC INST PROCEDURES		E	S		D		*				2.0			5209	N/A
SINST	5211	BASIC INST MANEUVERS		E	S		D		*				2.0			5210	N/A
SINST	5212	BASIC INST MANEUVERS		E	S		D		*				2.0			5211	N/A
TOTAL SINST STAGE										0	0.0	3	6.0	0	0.0		
SIMULATOR CONFINED AREA LANDING STAGE (SCAL)																	
SCAL	5213	CAL INSTR TECH		E	S		D		*				2.0			5212	N/A
TOTAL SCAL STAGE										0	0.0	1	2.0	0	0.0		
SIMULATOR FORMATION STAGE (SFORM)																	
SFORM	5214	FORM INSTR TECH		E	S		D		*				2.0			5213	N/A
TOTAL SFORM STAGE										0	0.0	1	2.0	0	0.0		
SIMULATOR EXTERNAL STAGE (SEXT)																	
SEXT	5215	EXT INSTR TECH		E	S		D		*				2.0			5214	N/A
TOTAL SEXT STAGE										0	0.0	1	2.0	0	0.0		
SIMULATOR NIGHT SYSTEMS STAGE (SNS)																	
SNS	5216	NS PROCEDURES		E	S		NS		*				2.0			5215	N/A

CH-46E PILOT T&R MATRIX																	
STAGE	TRNG CODE	DESCRIPTION	POI	E	DEVIC	# OF A/C	CON	TEN+	REFLY	# OF ACAD	ACAD	# OF SIM	SIM	# OF FLTS	FLT	PREREQUISITE	EVENT CONV
TOTAL SNS STAGE										0	0.0	1	2.0	0	0.0		
SIMULATOR REVIEW STAGE (SREV)																	
SREV	5217	REV FAM/INST		E	S		D		*							5216	N/A
										0	0.0	1	2.0	0	0.0		
TOTAL CONTRACT INSTRUCTOR PHASE										0	0.0	18	36.0	0	0.0		
5000 PHASE - BASIC INSTRUCTOR PILOT																	
BASIC INSTRUCTOR PILOT STAGE (BIP)																	
SBIP	5300	SIM INTRO TO INSTRUCTION TECHNIQUES		E	S/A	1	D		*				2.0			See Stage Matrix	N/A
BIP	5301	INTRO TO FORM/TACFORM SS/SEC CALS INSTRUCTOR TECHNIQUES		E	A	2	D		*						1.5	5300	N/A
BIP	5302	INTRO TO EXT/HIE/FCLPS		E	A	1	D		*						1.5	5300	N/A
BIP	5303	DAY FAM/INST INTRUCTOR TECHNIQUES		E	A	1	D		*						1.5	5300	N/A
BIP	5304	BIP CHECK	R	E	A	2	D		*						1.5	5300,5301,5302,5303	N/A
TOTAL BIP STAGE										0	0.0	1	2.0	4	6.0		
TOTAL BIP PHASE										0	0.0	1	2.0	4	6.0		
5000 PHASE – ADVANCED INSTRUCTOR SYLLABI																	
NIGHT SYSTEMS SAR INSTRUCOR STAGE (NSSI)																	
NSSI	5501	NS SS WORK		E	A	1	NS		*						1.5	See MAWTS-1 CC	550
NSSI	5502	LLL CALS/NAV		E	A	1	NS		*						1.5	See MAWTS-1 CC	551
NSSI	5503	LLL CALS/NAV INSTR TECH	R	E	A	1	NS		*						1.5	See MAWTS-1 CC	552
TOTAL NSSI STAGE										0	0.0	0	0.0	3	4.5		
NIGHT SYSTEMS FAM INSTRUCTOR STAGE (NSFI)																	
NSFI	5601	HLL SS WORK		E	A	1	NS		*						1.5	See MAWTS-1 CC	560
NSFI	5602	HLL CAL/NAV		E	A	1	NS		*						1.5	See MAWTS-1 CC	561
NSFI	5603	HLL INSTR TECH	R	E	A	1	NS		*						1.5	See MAWTS-1 CC	562
TOTAL NSFI STAGE										0	0.0	0	0.0	3	4.5		
TERRAIN FLIGHT INSTRUCTOR (TERFI)																	
TERFI	5701	DAY TERF MAN INSTR TECH		E	A	1	D		*						1.5	See MAWTS-1 CC	570
TERFI	5702	DAY TERF NAV INSTR TECH		E	A	2	D		*						1.5	See MAWTS-1 CC	571
TERFI	5703	TERFI CHECK	R	E	A	2	D		*						1.5	See MAWTS-1 CC	572
TOTAL TERFI STAGE										0	0.0	0	0.0	3	4.5		

CH-46E PILOT T&R MATRIX																		
STAGE	TRNG CODE	DESCRIPTION	POI	E	DEVIC	# OF A/C	CON	TEN+	REFLY	# OF ACAD	ACAD	# OF SIM	SIM	# OF FLTS	FLT	PREREQUISITE	EVENT CONV
DEFENSIVE MEASURES INSTRUCTOR STAGE (DMI)																	
DMI	5801	RW/FW DM INSTR TECH		E	A	2	D		*						1.5	See MAWTS-1 CC	580
DMI	5802	RW/FW DMI CHECK	R	E	A	2	D		*						1.5	See MAWTS-1 CC	581
TOTAL DMI STAGE										0	0.0	0	0.0	2	3.0		
NIGHT SYSTEMS INSTRUCTOR STAGE (NSI)																	
NSI	5901	NS INSTR TECH		E	A	1	NS		*						1.5	See MAWTS	590
NSI	5902	NS LOW WORK INSTR TECH		E	A	1	NS		*						1.5	See MAWTS	591
NSI	5903	NS FORM/NAV/CAL INSTR TECH		E	A	2	NS		*						1.5	See MAWTS	592
NSI	5904	NS SEC TERF INSTR TECH		E	A	2	NS		*						1.5	See MAWTS	593
NSI	5905	LLL NSI CHECK		E	A	1	NS		*						1.5	See MAWTS	594
NSI	5906	LLL SEC NSI CHECK	R	E	A	2	NS		*						1.5	See MAWTS	595
TOTAL NSI STAGE										0	0.0	0	0.0	6	9.0		
TOTAL ADVANCED INSTRUCTOR PHASE										0	0.0	0	0.0				
6000 PHASE – REQUIREMENTS, QUALIFICATIONS, AND DESIGNATIONS																	
NATOPS SYLLABUS STAGE (NTPS)																	
NTPS	6001	NATOPS OPEN BOOK EXAM	R	E					365		2.0					QUALIFIED H2P	N/A
NTPS	6002	NATOPS CLOSED BOOK EXAM	R	E					365		1.0					6001	N/A
NTPS	6003	NATOPS ORAL EXAM	R	E					365		2.0					6001,6002	N/A
NTPS	6101	NATOPS CHECK	R	E	A/S	1	(N)		365						1.5	6001,6002,6003	600
TOTAL NTPS STAGE										3	5.0	0	0.0	1	1.5		
INSTRUMENT SYLLABUS STAGE (INST)																	
INST	6004	INSTRUMENT GROUND SCHOOL (IGS)	R	E					365		8.0					Per OPNAVINST 3710.7	N/A
INST	6005	INSTRUMENT WRITTEN EXAM	R	E					365		2.0					Per OPNAVINST 3710.7	N/A
INST	6006	ORAL INSTRUMENT EXAMINATION	R	E					365		2.0					Per OPNAVINST 3710.7	N/A
INST	6102	INST CHECK	R	E	S/A	1	(N)		365				1.5			6004,6005,6006	601
TOTAL INST STAGE										3	12.0	1	1.5	0	0.0		
CREW RESOURCE MANAGEMENT STAGE (CRM)																	
CRM	6007	CRM COURSE	R	E					365		2.0						N/A
CRM	6103	SIM/AC CRM CHECK	R	E	A/S	1	(N)		365						1.5	6007	640
TOTAL CRM STAGE										1	2.0	0	0.0	1	1.5		

CH-46E PILOT T&R MATRIX																		
STAGE	TRNG CODE	DESCRIPTION	POI	E	DEVIC	# OF A/C	CON	TEN+	REFLY	# OF ACAD	ACAD	# OF SIM	SIM	# OF FLTS	FLT	PREREQUISITE	EVENT CONV
FUNCTIONAL CHECK FLIGHT STAGE (FCF)																	
SFCF	6130	INTRO TO FCF PROCEDURES		E	S/A		D		*				2.0				N/A
FCF	6131	ECCS SETUP AIMS		E	A	1	D		*						1.5	6130	N/A
FCF	6132	ECCS SETUP NON-AIMS		E	A	1	D		*						1.5	6130	N/A
FCF	6133	FCF TRACK AND BALANCE AIMS		E	A	1	D		*						1.5	6130	N/A
FCF	6134	FCF TACK AND BALANCE NON-AIMS		E	A	1	D		*						1.5	6130	N/A
FCF	6135	FCF HOVE CHECKS & AFCS		E	A	1	D		*						1.5	6130	N/A
FCF	6136	FCF FULL CARD INTRO/REVIEW	R	E	A	1	D		*						1.5	6130,6131,6132,6133, 6134,6135	N/A
FCF	6137	FCF FULL CARD	R	E	A	1	D		180						1.5	6136	630
TOTAL FCF STAGE										0	0.0	1	2.0	7	10.5		
8000 PHASE – COMBAT / FLIGHT LEADERSHIP																	
HELICOPTER AIRCRAFT COMMANDER STAGE (HAC)																	
HAC	6201	DAY HAC REVIEW		E	A	1	D		*						1.5	NSQ,PER NATOPS & SDND SOPs	602
HAC	6202	NIGHT HAC REVIEW		E	A	1	N		*						1.5	NSQ,PER NATOPS & SDND SOPs	603
HAC	6203	DAY HAC CHECK		E	A	1	D		*						1.5	6201,6202	604
HAC	6204	NIGHT HAC CHECK		E	A	1	N		*						1.5	6201,6202	605
TOTAL HAC STAGE										0	0.0	0	0.0	4	6.0		
SECTION LEADER STAGE (SL)																	
SL	6301	SEC FORM/TAC FORM		E	A	2	D		*						1.0	HAC,2301	606
SL	6302	SEC TERF/NAV		E	A	2	D		*						1.0	HAC,2304	607
SL	6303	SEC NVG CALS		E	A	2	NS		*						1.0	HAC,2607,2654	608
SL	6304	SEC TERF/NAV		E	A	2	NS		*						1.0	HAC,2607,2654	609
SL	6305	SEC DAY OR NS AG		E	A	2	(N)		*						1.0	HAC,2401,2405	610
SL	6306	DAY OR NS SEC LDR TRNG USING SCENARIO		E	A	2	(N)		*						1.5	2501,2502,6301,6302, 6303,6304,6305,	611
SL	6307	DAY OR NS SEC LDR CHECK USING SCENARIO	R	E	A	2	(N)		*						1.5	6306,SL ACAD COMP	612
TOTAL SL STAGE										0	0.0	0	0.0	7	8.0		

CH-46E PILOT T&R MATRIX																	
STAGE	TRNG CODE	DESCRIPTION	POI	E	DEVIC	# OF A/C	CON	TEN+	REFLY	# OF ACAD	ACAD	# OF SIM	SIM	# OF FLTS	FLT	PREREQUISITE	EVENT CONV
DIVISION LEADER STAGE (DL)																	
DL	6401	DIV CALS/SEC TERF		E	A	3	D		*						1.5	SL,2203,2305	613
DL	6402	NS DIV CALS/SEC TERF		E	A	3	NS		*						1.5	SL,2607,2654	614
DL	6403	DAY OR NS DIV LDR TRNG USING SCENARIO		E	A	3	(N)		*						1.5	6401,6402	615
DL	6404	DAY OR NS DIV LDR CHECK USING SCENARIO	R	E	A	3	(N)		*						1.5	6403,DL ACAD COMP	616
TOTAL DL STAGE										0	0.0	0	0.0	4	6.0		
FLIGHT LEADER STAGE (FL)																	
FL	6501	FL CHECK USING SCENARIO	R	E	A	5	(N)		*						1.5	DL,FL ACAD COMP	617
										0	0.0	0	0.0	1	1.5		
AIR MISSION COMMANDER STAGE (AMC)																	
AMC	6601	AMC CHECK USING SCENARIO	R	E	A		(N)		*						1.5	AMC ACAD COMP	618
										0	0.0	0	0.0	1	1.5		
8000 PHASE – AVIATION CAREER PROGRESSION MODEL (ACPM)																	
AVIATION CAREER PROGRESSION MODEL STAGE (ACPM)																	
ACPM	8200	MACCS AGENCIES, FUNCTIONS AND CONTROL OF AIRCRAFT AND MISSLES							*		.5						
ACPM	8201	MWCS BRIEF							*		.5						
ACPM	8202	ACA AND AIRSPACE							*		.8						
ACPM	8210	AVIATION GROUND SUPPORT							*		.7						
ACPM	8230	ACE BATTLESTAFF							*		TBD						
ACPM	8231	BATTLE COMMAND DISPLAY							*		TBD						
ACPM	8240	SIX FUNCTIONS OF MARINE AVIATION							*		1.7						
ACPM	8241	JTAR/ASR INTRODUCTION AND PRACTICAL APPLICATION CLASS							*		1.3						
ACPM	8242	SITE COMMAND PRIMER							*		TBD						
ACPM	8250	THEATER AIR GROUND SYSTEM (TAGS)							*		.9						
ACPM	8300	AIR DEFENSE							*		.9						
ACPM	8310	FORWARD ARMING AND REFUELING POINT (FARP) OPERATIONS							*		.8						
ACPM	8311	MARINE CORPS TACTICAL FUEL SYSTEMS							*		.9						
ACPM	8320	ACE BATTLE STAFF							*		1.0						
ACPM	8321	JOINT AIR TASKING CYCLE PHASE 1: STRATEGY DEVELOPMENT							*		.4						

CH-46E PILOT T&R MATRIX																		
STAGE	TRNG CODE	DESCRIPTION	POI	E	DEVIC	# OF A/C	CON	TEN+	REFLY	# OF ACAD	ACAD	# OF SIM	SIM	# OF FLTS	FLT	PREREQUISITE	EVENT CONV
ACPM	8322	JOINT AIR TASKING CYCLE PHASE 2: TARGET DEVELOPMENT							*		.4						
ACPM	8323	JOINT AIR TASKING CYCLE PHASE 3: WEAPONING AND ALLOCATION							*		.4						
ACPM	8324	JOINT AIR TASKING CYCLE PHASE 4: JOINT ATO PRODUCTION							*		.4						
ACPM	8325	JOINT AIR TASKING CYCLE PHASE 5: FORCE EXECUTION							*		.4						
ACPM	8326	JOINT AIR TASKING CYCLE PHASE 6: COMBAT ASSESMENT							*		.4						
ACPM	8340	INTEGRATING FIRES AND AIRSPACE WITHIN THE MAGTF							*		.5						
ACPM	8350	ESTABLISHING CONTROL ASHORE							*		.9						
ACPM	8351	TACRON ORGANIZATIONS AND FUNCTIONS							*		TBD						
ACPM	8630	TACTICAL AIR COMMAND CENTER (TACC)							*		1.0						
ACPM	8660	JOINT OPS INTRO							*		.5						
ACPM	8640	JOINT DATA NETWORK							*		.9						
ACPM	8641	MAGTF THEATER AND NATIONAL ISR EMPOLYMENT							*		1.3						
ACPM	8620	ESG/CSG INTEGRATION							*		TBD						
TOTAL ACPM STAGE										28	17.5	0	0.0	0	0.0		
TOTAL ACPM 8000 PHASE										28	17.5	0	0.0	0	0.0		

CH-46E ATTAIN / MAINTAIN CORE, MISSION, & CORE+ SKILLS – PILOT													
EVENT DESCRIPTION	T&R EVENTS		BASIC POI ATTAIN			REFRESHER POI ATTAIN			MAINTAIN			CHAINING	PREREQUISITES
	EVENT	CODE	STAGE	CODE	*RE FLY*	STAGE	CODE	*RE FLY*	STAGE	CODE	*RE FLY*		
CORE SKILLS – 2000 PHASE													
SFAM/INST	**SFAM/ INST**	**2100**	**FAM**	**2100**	*	**FAM**			**FAM**				
FAM	**FAM/ INST**	**2101**		**2101**	*180*		**2101**	*180*				2100	2100
INST	**FAM/ INST**	**2102**		**2102**	*180*		**2102**	*180*		**2102**	*180*	2100,2101	2100
SIM CALS	**SCAL**	**2200**	**CAL**	**2200**	*	**CAL**			**CAL**				
CALS	**CAL**	**2201**		**2201**	*180*							2200	2200
SEC CALS	**CAL**	**2202**		**2202**	*180*							2200,2201	2201
DIV CALS	**CAL**	**2203**		**2203**	*180*		**2203**	*180*		**2203**	*180*	2200,2201,2202	2202
SIM FORM	**SFORM**	**2300**	**FORM**	**2300**	*	**FORM**			**FORM**				
TACFORM	**FORM**	**2301**		**2301**	*180*		**2301**	*180*		**2301**	*180*	2300	2201,2300
SIM TERF	**STERF**	**2302**	**TERF**	**2302**	*	**TERF**			**TERF**				2002,2003
TERF MANEUVERS	**TERF**	**2303**		**2303**	*180*							2302	2302
TERF	**TERF**	**2304**		**2304**	*180*							2302,2303	2303
SEC TERF	**TERF**	**2305**		**2305**	*180*		**2305**	*180*		**2305**	*180*	2300,2302,2303,2304	2304
DAY AG	**AG**	**2401**	**AG**	**2401**	*365*	**AG**	**2401**	*365*	**AG**	**2401**	*365*		2003,2005,2021, 2024,2029,2101, 2301
NS AG	**AG**	**2405**		**2405**	*365*		**2405**	*365*		**2405**	*365*	2401	2401,2601
SIM D/N LOW/MED THREAT	**STAC**	**2500**	**TAC**	**2500**	*	**TAC**			**TAC**			2200,2300,2600~NS,2650~LLL	
DAY LOW/MED THREAT	**TAC**	**2501**		**2501**	*180*							2500,2200,2201,2202,2300,2301	2202,2500,2801, TERF Q
NS LOW/MED THREAT	**TAC**	**2502**		**2502**	*180*		**2502**	*180*		**2502**	*180*	2200,2201,2202,2300,2301,2500,2501, 2600,2601,2602,2603,2650~LLL, 2651~LLL,2652~LLL	2501,2405,2603
SIM NS FAM	**SNS**	**2600**	**NS HLL**	**2600**	*	**NS HLL**			**NS HLL**			2200	
HLL CALS	**NS**	**2601**		**2601**	*180*		**2601**	*180*				2200,2201,2600	2101,2201,2600
HLL FORM	**NS**	**2602**		**2602**	*180*							2200,2201,2600	2301,2601
HLL SEC CALS	**NS**	**2603**		**2603**	*180*		**2603**	*180*				2200,2201,2202,2300,2301,2600,2601, 2602	2202,2602
HLL DIV CALS/FORM	**NS**	**2604**		**2604**	*							2200,2201,2202,2203,2300,2301,2600, 2601,2602,2603	2203,2603
HLL TERF	**NS**	**2605**		**2605**	*180*							2302,2303,2304,2305,2600	2305,2601
HLL SEC TERF	**NS**	**2606**		**2606**	*180*							2300,2301,2302,2303,2304,2305,2600, 2602,2605	2305,2602,2605
HLL SEC TERF/CALS	**NS**	**2607**		**2607**	*180*		**2607**	*180*		**2607**	*180*	2200,2201,2202,2300,2301,2302,2303, 2304,2305,2600,2601,2602,2603,2605, 2606	2603,2606

CH-46E ATTAIN / MAINTAIN CORE, MISSION, & CORE+ SKILLS – PILOT													
EVENT DESCRIPTION	T&R EVENTS		BASIC POI ATTAIN			REFRESHER POI ATTAIN			MAINTAIN			CHAINING	PREREQUISITES
	EVENT	CODE	STAGE	CODE	*RE FLY*	STAGE	CODE	*RE FLY*	STAGE	CODE	*RE FLY*		
SIM LLL	**SNS**	**2650**	**NS LLL**	**2650**	*	**NS LLL**	**2650**	*	**NS LLL**			2200,2600	2038,2600
LLL SINGLE SHIP CALS	**NS**	**2651**		**2651**	*180*		**2651**	*180*				2200,2201,2600,2601,2650	2607,2650
LLL SECTION CALS	**NS**	**2652**		**2652**	*180*		**2652**	*180*				2200,2201,2202,2600,2601,2602,2603, 2650,2651	2651
LLL DIVISION CALS	**NS**	**2653**		**2653**	*180*		**2653**	*180*		**2653**	*180*	2200,2201,2202,2203,2600,2601,2602, 2603,2604,2650,2651,2652	2652
LLL TERF/FORM /CALS	**NS**	**2654**		**2654**	*180*		**2654**	*180*		**2654**	*180*	2200,2201,2202,2300,2301,2302,2303, 2304,2305,2600,2601,2602,2603,2605, 2606,2607,2650,2651,2652	2653
SIM EXTERNALS	**SEXT**	**2700**	**EXT**	**2700**	*	**EXT**			**EXT**			2200	
DAY EXTERNALS	**EXT**	**2701**		**2701**	*365*		**2701**	*365*		**2701**	*365*	2200,2201,2700	2201,2700
SIM D/N TERF EXT	**SEXT**	**2702**		**2702**	*							2200,2700	2302,2600,2700
NS EXT	**EXT**	**2703**		**2703**	*365*		**2703**	*365*		**2703**	*365*	2200,2201,2600,2601,2650,2651~LLL, 2700,2701,2702	2701,2607~NS, 2654~LLL
SIM HIE	**SHIE**	**2704**	**HIE**	**2704**	*	**HIE**			**HIE**			2200	2003,2005,2006,2039, 2040
DAY FASTROPE/ RAPPEL	**HIE**	**2705**		**2705**	*365*		**2705**	*365*		**2705**	*365*	2200,2201,2704	2201,2701,2704
NS FASTROPE/ RAPPEL	**HIE**	**2706**		**2706**	*							2200,2201,2600,2704,2705	2703,2705,2607~NS, 2654~LLL
DAY OR NS AERIAL DELIVERY	**HIE**	**2707**		**2707**	*365*		**2707**	*365*		**2707**	*365*		2607~NS,2654~LLL
SIM GTR	**SGTR**	**2800**	**GTR**	**2800**	*	**GTR**			**GTR**			2300,2302	2002,2003,2010,2013, 2014,2016,2017,2018, 2019,2020,2021,2032, 2300,8250
NON-RADAR THREAT REACTION	**GTR**	**2801**		**2801**	*365*		**2801**	*365*		**2801**	*365*	2300,2301,2302,2303,2304,2401, 2405~N	2301,2401,2405~N, 2800,TERF Q,2305
SIM D/N UNAIDED CQ	**SCQ**	**2900**	**CQ**	**2900**	*	**CQ**			**CQ**				8200,8202
DAY FCLP	**CQ**	**2901**		**2901**	*365*		**2901**	*365*				2900	2900
NS FCLP	**CQ**	**2902**		**2902**	*365*		**2902**	*365*				2900, 2901	2901,2607~NS, 2654~LLL
DAY CQ	**CQ**	**2903**		**2903**	*365*		**2903**	*365*				2200,2201,2900,2901	2901
NS CQ	**CQ**	**2904**		**2904**	*365*		**2904**	*365*		**2904**	*365*	2200,2201,2600,2601~HLL,2650~LLL, 2651~LLL,2900,2901,2902,2903	2607~NS,2654~LLL, 2902,2903

CH-46E ATTAIN / MAINTAIN CORE, MISSION, & CORE+ SKILLS – PILOT													
EVENT DESCRIPTION	T&R EVENTS		BASIC POI ATTAIN			REFRESHER POI ATTAIN			MAINTAIN			CHAINING	PREREQUISITES
	EVENT	CODE	STAGE	CODE	*RE FLY*	STAGE	CODE	*RE FLY*	STAGE	CODE	*RE FLY*		
MISSION SKILLS – 3000 PHASE													
SEA-BASED OPS	**SEA**	**3101**	**SEA**	**3101**	*	**SEA**	**3101**	*	**SEA**	**3101**	*		See Stage
SHORE-BASED OPS	**EXP**	**3102**	**EXP**	**3102**	*	**EXP**	**3102**	*	**EXP**	**3102**	*		See Stage
ASSAULT TRANSPORT	**AT**	**3103**	**AT**	**3103**	*180*	**AT**			**AT**				See Stage
NIGHT ASSAULT TRANSPORT	**AT**	**3104**		**3104**	*180*		**3104**	*180*		**3104**	*180*	3103	See Stage
AERIAL DELIVERY	**AD**	**3105**	**AD**	**3105**	*365*	**AD**	**3105**	*365*	**AD**	**3105**	*365*		See Stage
TRAP	**TRAP**	**3106**	**TRAP**	**3106**	*365*	**TRAP**	**3106**	*365*	**TRAP**	**3106**	*365*		See Stage
CASEVAC	**AE**	**3107**	**AE**	**3107**	*180*	**AE**	**3107**	*180*	**AE**	**3107**	*180*		See Stage
CORE PLUS SKILLS – 4000 PHASE EVENTS													
SIM MAT	**SMAT**	**4200**	**MAT**	**4200**	*	**MAT**			**MAT**			2200	2200
DAY MAT	**MAT**	**4201**		**4201**	*365*		**4201**	*365*		**4201**	*365*	2200,2201,4200	2201
DAY SEC MAT	**MAT**	**4203**		**4203**	*365*		**4203**	*365*		**4203**	*365*	2200,2201,2202,4200,4201	2202,4201
NS MAT	**MAT**	**4204**		**4204**	*365*		**4204**	*365*		**4204**	*365*	2200,2201,2600~NS,2601~NS,2650~LLL, 2651~LLL,4200,4201	4201,2607~NS, 2654~LLL
UNAIDED CALS	**CALS**	**4202**	**CAL**	**4202**	*365*	**CAL**	**4202**	*365*	**CAL**	**4202**	*365*	2200,2201	2101,2201
ARTIC WEATHER	**SIM AWT**	**4208**		**4208**	*								2200
COLD WEATHER	**AWT**	**4209**		**4209**	*		**4209**	*				2200	2201
DESERT	**SIM DES**	**4210**		**4210**	*								2200
DESERT	**DES**	**4211**		**4211**	*		**4211**	*				4210	2201
SIM CBRN	**SCBRN**	**4205**	**CBRN**	**4205**	*	**CBRN**			**CBRN**			2200	2200
DAY CBRN	**CBRN**	**4206**		**4206**	*365*		**4206**	*365*				2200,2201,4205	2201,4205
NS CBRN	**CBRN**	**4207**		**4207**	*365*		**4207**	*365*		**4207**	*365*	2200,2201,2600~NS,2601~NS,2650~LLL, 2651~LLL,4205,4206	4206,2607~NS, 2654~LLL
TERF EXTERNALS	**EXT**	**4301**	**EXT**	**4301**	*365*	**EXT**	**4301**	*365*	**EXT**	**4301**	*365*	2304,2701	2304,2701,2702
GROUND THREAT RADAR	**GTR**	**4401**	**GTR**	**4401**	*365*	**GTR**	**4401**	*365*	**GTR**	**4401**	*365*	2300,2301,2302,2303,2304	See Stage
SIM D/N HIGH THREAT	**STAC**	**4500**	**TAC**	**4500**	*	**TAC**			**TAC**			2200,2300,2302,2500	See Stage
DAY HIGH THREAT	**TAC**	**4501**		**4501**	*365*							2200,2201,2202,2300,2301,2302,2303, 2304,2305,2500,2501,4500	2401,2501,2801,4401, 4500
NS HIGH THREAT	**TAC**	**4502**		**4502**	*365*		**4502**	*365*		**4502**	*365*	2200,2201,2202,2300,2301,2302,2303, 2304,2305,2500,2501,2502,2600~NS, 2601~NS,2602~NS,2603~NS,2605~NS, 2606~NS,2607~NS,2650~LLL,2651~LLL, 2652~LLL,2654~LLL,4500,4501	2502,2405,2607~NS,26 54~LLL,4500,4501

CH-46E ATTAIN / MAINTAIN CORE, MISSION, & CORE+ SKILLS – PILOT													
EVENT DESCRIPTION	**T&R EVENTS**		**BASIC POI ATTAIN**			**REFRESHER POI ATTAIN**			**MAINTAIN**			**CHAINING**	**PREREQUISITES**
	EVENT	**CODE**	**STAGE**	**CODE**	*RE FLY*	**STAGE**	**CODE**	*RE FLY*	**STAGE**	**CODE**	*RE FLY*		
SPIE	**HIE**	**4701**	**HIE**	**4701**	*365*	**HIE**	**4701**	*365*	**HIE**	**4701**	*365*	2200,2201,2700,2701	2003,2701,2703~NS, 4009,4010
HELOCAST/ SOFTDUCK	**HIE**	**4702**		**4702**	*365*		**4702**	*365*		**4702**	*365*		2607~NS,2654~LLL
HOIST OPS	**HIE**	**4703**		**4703**	*365*		**4703**	*365*		**4703**	*365*	2200,2201,2700,2701	2701,2607~NS, 2654~LLL
SIM A-A DM	**SDM**	**4800**	**DM**	**4800**	*	**DM**			**DM**			2300	2032,4005,4006,4007, 4008
RW DM	**RWDM**	**4801**		**4801**	*365*		**4801**	*365*		**4801**	*365*	2300,2301,4800	2301,TERF Q
FW DM	**FWDM**	**4802**		**4802**	*365*		**4802**	*365*		**4802**	*365*	2300,2301,4800	2301,TERF Q
SIM ACM	**SACM**	**4803**		**4803**	*								2607~NS, 2654~LLL,2701
NIGHT UNAIDED FCLP	**CQ**	**4901**	**CQ**	**4901**	*365*	**CQ**			**CQ**			2900,2901	2901
UNAIDED CQ	**CQ**	**4902**		**4902**	*365*		**4902**	*365*		**4902**	*365*	2200,2201,2900,2901,2903,4202,4901	2903,4901
MISSION PLUS – 4000 PHASE EVENTS													
DAY RAID	**MSN SKILL**	**4503**	**RAID**	**4503**	*365*	**RAID**			**RAID**				See Stage
NIGHT RAID	**MSN SKILL**	**4504**		**4504**	*365*		**4504**	*365*		**4504**	*365*	4503	See Stage

222. ADDITIONAL CHAINING FOR 5000 AND 6000 PHASE EVENTS

CH-46E CHAINING 5000 & 6000 PHASE EVENTS - PILOT		
STAGE	**TRNG CODE**	**CHAINING**
FAM	**5101**	2100,2101
FAM	**5102**	2100,2101
FAM	**5103**	2100,2101
INST	**5104**	2100,2102
INST	**5105**	2100,2102
NAV	**5106**	2200,2201
EXT	**5107**	2200,2201,2700,2701
CAL	**5108**	2200,2201,2300,2301
FAM	**5109**	2100,2101
FORM	**5110**	2300,2301
IUT	**5111**	2100,2101
NS	**5112**	2600,2601
SBIP	**5300**	2100,2101
BIP	**5301**	2100,2102,2200,2201,2202,2301
BIP	**5302**	2100,2101,2200,2201
BIP	**5303**	2100,2101,2200,2201
BIP	**5304**	2100,2101,2200,2201,2202,2301
NSSI	**5501**	2100,2101,2200,2201
NSSI	**5502**	2101,2102,2200,2201,2601,2602,2651,2652
NSSI	**5503**	2101,2102,2200,2201,2600,2601,2650,2651
NSFI	**5601**	2100,2101
NSFI	**5602**	2100,2101,2200,2201,2600,2601
NSFI	**5603**	2100,2101,2200,2201,2600,2601
TERFI	**5701**	2300,2301,2302,2303,2304,2700,4301
TERFI	**5702**	2300,2301,2302,2303,2304,2305
TERFI	**5703**	2300,2301,2302,2303,2304,2305
DMI	**5801**	2300,2301,2302,2303
DMI	**5801**	2300,2301,2302,2303
NSI	**5901**	2100,2101,2200,2201,2600,2601,2900,2901,2902,2650~LLL, 2651~LLL
NSI	**5902**	2100,2101,2200,2201,2600,2601,2700,2701,2702,2703,2650~LLL, 2651~LLL
NSI	**5903**	2100,2101,2200,2201,2202,2600,2601,2602,2603,2650~LLL, 2651~LLL,2652~LLL,2654~LLL
NSI	**5904**	2100,2101,2200,2201,2202,2302,2303,2304,2305,2600,2601,2602, 2603,2605,2606,2607,2650~LLL,2651~LLL,2652~LLL,2654~LLL
NSI	**5905**	2100,2101,2200,2201,2700,2701,2702,2703,2600,2601,2900,2901, 2902,2903,2650,2651
NSI	**5906**	2100,2101,2200,2201,2202,2300,2301,2302,2303,2304,2305,2600, 2601,2602,2603,2605,2606,2607,2650,2651,2652,2653,2654
NTPS	**6101**	2100
INST	**6102**	2100
FCF	**6137**	6136

223. AVIATION TRAINING FORMS (ATFS). Contact the MAWTS-1 CH-46E shop to receive CH-46E Pilot/Crewchief/AGO T&R syllabus ATFs.

224. SIMULATOR MISSION ESSENTIAL SUBSYSTEMS MATRIX (MESM)

CH-46E SIMULATOR MISSION ESSENTIAL SUBSYSTEM MATRIX (MESM)		
Failed Sub-System	**NMC for:**	**PMC for:**
AFCS Panel/Functions	Any event.	
Any Flight Controls	Any event.	
Aural	Any event involving introduced/evalutated emergencies.	Any event with reviewed emergencies.
Basic Moving Models	Any SFORM, SEXT, SCQ except SINST.	
Basic RI Controls/Displays	Any SINST.	
Caution System	Any event involving introduced/evaluated emergencies.	Any event with reviewed emergencies.
Cockpit Lighting	Any 1000-2000 Phase event designated as N or NS.	Any non-1000 Phase N or NS event.
COMM/ICS	Any SFORM, networked event.	Any 1000 Phase SFAM event.
Copilot Basic Flight Instruments	Any event requiring the PUI in the left seat.	Any event.
Debrief Station		Any event.
Electronic Warfare Suite	Any STAC, SEW, SDM.	
Engine Controls	Any events involving engine start/shutdown or related EP's.	Any 1000-2000 Phase SFAM event.
Engine Instruments	Any events involving engine start/shutdown or related EP's.	Any 1000-2000 Phase SFAM event.
External Load Controls/Displays	Any EXT.	
Fuel Control/Displays	Any events involving fueling procedures or related EPs.	

IOS	Any event.	
Leadership/Demo, Record Playback		Any event.
Motion	Any 1000-2000 Phase SFAM involving flight.	Any 1000-2000 Phase SCAL, SFORM, SEXT.
Network Players	Any event designated TEN+ and any event scheduled as a section.	
NVG Visual	Any event designated N or NS.	
NVG HUD	Any event designated N or NS.	
Other Designated by COR	As designated.	As designated.
Overall Device	All events.	
Pilot Basic Flight Instruments	Any event requiring the PUI in the right seat.	Any event.
Radar Altimeter	Any 1000-2000 Phase SCAL, STERF, SINST, SNS.	Any SFAM.
Tactical Environment	Any STAC and any event designated TEN+.	
Utility Hydraulics Controls/Displays	Any events involving hydraulics procedures or related EP's.	
Visual	Any event other than SFAM SINST.	Any event.
VOR/TACAN	Any SINST.	Any event.

NOTES:
1. Loss of any two of the systems listed in the first column make the trainer PMC for any event.

2. Devices that were not designated to provide the subsystems listed are obviously exempt from that portion of the matrix.

3. Squadrons reserve the right to fly any event in any trainer regardless of NMC/PMC status. This policy is intended to provide squadrons maximum flexibility, not to waive penalties or consideration required by the contract due to a failed subsystem.

CHAPTER 3
CH-46E CREW CHIEF/6172

CH-46E AERIAL GUNNER/OBSERVER (AG/O)/6199

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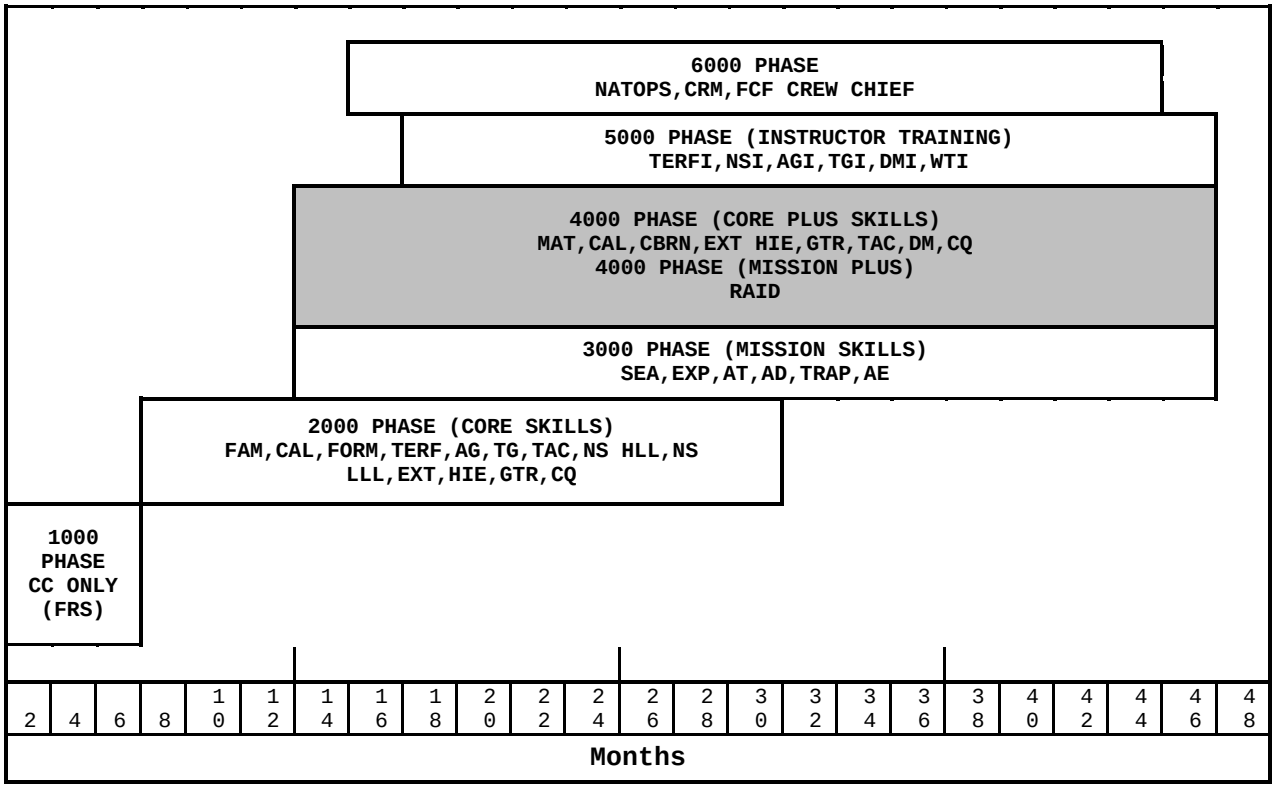
CHAPTER 3

CH-46E CREW CHIEF/AERIAL GUNNER/OBSERVER INDIVIDUAL TRAINING AND READINESS REQUIREMENTS

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

301. CH-46E CREW CHIEF/AERIAL GUNNER/OBSERVER TRAINING PROGRESSION MODEL This model represents the recommended training progression for the average CH-46E crew chief/aerial gunner observer (AG/O) crewmember. Units should use the model as a point of departure to generate individual training plans.



302. 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.

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 2000 phase T&R events listed for that Core Skill.

INDIVIDUAL CORE SKILL PROFICIENCY (CSP) ATTAIN TABLE CH-46E Crew Chief AG/O												
T&R events required to Attain CSP (2000 Phase)												
FAM	**CAL**	**FORM**	**TERF**	**AG**	**TG**	**TAC**	**NS HLL**	**NS LLL**	**EXT**	**HIE**	**GTR**	**CQ**
S2100	2201	2301R	2303	S2400	2410R	2501	2601R	2651R	2701R	2705R	2801R	2901R
2101R	2202		2304	2401	2411R	2502R	2602	2652R	2703R	2706		2902R
	2203R		2305R	2402R			2603R	2653R		2707R		2903R
				2403R			2604	2654R				2904R
				S2404			2605					
				2405			2606					
				2406R			2607R					
Gray highlight & an R suffix on the event code = Refresher POI												
An S prefix on the event code = Event conducted in a simulator												

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:

NOTE

Maintaining proficiency in these select events will ensure the individual will never go delinquent in that corresponding skill in the Attain table.

INDIVIDUAL CORE SKILL PROFICIENCY (CSP) MAINTAIN TABLE CH-46E Crew Chief AG/O												
T&R events required to Attain CSP (2000 Phase)												
FAM	**CAL**	**FORM**	**TERF**	**AG**	**TG**	**TAC**	**NS HLL**	**NS LLL**	**EXT**	**HIE**	**GTR**	**CQ**
2101R	2203R	2301R	2305R	2402R	2410R	2502R	2607R	2653R	2701R	2705R	2801R	2904R
				2403R	2411R			2654R	2703R	2707R		
				2406R								
Gray highlight & an R suffix on the event code = Refresher POI												
An S prefix on the event code = Event conducted in a simulator												

303. 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.

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 CH-46E Crew Chief AG/O					
T&R events required to Attain MSP (3000 Phase)					
SEA	**EXP**	**AT**	**AD**	**TRAP**	**AE**
3101R	3102R	3103	3105R	3106R	3107R
		3104R			
Gray highlight & an R suffix on the event code = Refresher POI					
An S prefix on the event code = Event conducted in a simulator					

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:

NOTE

Maintaining proficiency in these select events will ensure the individual will never go delinquent in that corresponding skill in the Attain table.

INDIVIDUAL MISSION SKILL PROFICIENCY (MSP) MAINTAIN TABLE CH-46E Crew Chief AG/O					
T&R events required to Maintain MSP (3000 Phase)					
SEA	EXP	AT	AD	TRAP	AE
3101R	3102R	3104R	3105R	3106R	3107R
Gray highlight & an R suffix on the event code = Refresher POI					
An S prefix on the event code = Event conducted in a simulator					

304. INDIVIDUAL CORE PLUS SKILL/MISSION PLUS SKILL PROFICIENCY REQUIREMENTS. 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 be considered proficient in a Core Plus Skill/Mission Plus Skill, an individual must attain and maintain proficiency in Core Plus Skill/Mission Plus Skill events as delineated in the below paragraphs.

1. Events Required to Attain Individual Proficiency in Core Plus Skills and Mission Plus Skills. 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 CH-46E Crew Chief AG/O									
T&R events required to Attain CSP+ (4000 Phase)									
CORE PLUS SKILLS									MISSION PLUS
MAT	CAL	CBRN	EXT	GTR	TAC	HIE	DM	CQ	RAID
4201R	4202R	4206	4301R	4401R	4501	4701R	4801R	4901	4503
4203R		4207R			4502R	4702R	4802R	4902R	4504R
4204R						4703R			
Gray highlight & an R suffix on the event code = Refresher POI									
An S prefix on the event code = Event conducted in a simulator									

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 CH-46E Crew Chief AG/O									
T&R events required to Maintain CSP+ (4000 Phase)									
CORE PLUS SKILLS									MISSION PLUS
MAT	CAL	CBRN	EXT	GTR	TAC	HIE	DM	CQ	RAID
4201R 4203R 4204R	4202R	4207R	4301R	4401R	4502R	4701R 4702R 4703R	4801R 4802R	4902R	4504R
Gray highlight & an R suffix on the event code = Refresher POI									
An S prefix on the event code = Event conducted in a simulator									

305. QUALIFICATION AND DESIGNATION REQUIREMENT TABLES. The tables below delineate T&R events required to be completed to attain proficiency, and 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. Qualification and designation letters signed by the commanding officer shall be placed in Aircrew Performance Records (APR), NATOPS jackets and annotated in flight log books. 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.

Qualification	Initial Event Qualification Requirements
NATOPS	IAW OPNAVINST 3710.7.
CRM	IAW OPNAVINST 1542.7
TERFQ	2303, 2304, 2305R
NSQ HLL	2601R, 2602, 2603R, 2604, 2605, 2606, 2607R
NSQ LLL	2651R, 2652R, 2653R, 2654R
CQ	2901R, 2902R, 2903R, 2904R
DMQ	4801R, 4802R
AGQ	S2400, 2401, 2402R, 2403R, S2404, 2405, 2406R
TGQ	2410R, 2411R
FCFQ	6131, 6132, 6133, 6134, 6137
FRS TERQ	2303
FRS NSQ	2601R
CC	FRS
AGO	NSQ LLL, AGQ, NATOPS, CRM
TERFI	IAW MAWTS-1 CH-46E Course Catalog
NSI	IAW MAWTS-1 CH-46E Course Catalog
AGI	IAW MAWTS-1 CH-46E Course Catalog
TGI	IAW MAWTS-1 CH-46E Course Catalog
DMI	IAW MAWTS-1 CH-46E Course Catalog
WTI	IAW MAWTS-1 CH-46E Course Catalog
NSFI	IAW MAWTS-1 CH-46E Course Catalog
NSSI	IAW MAWTS-1 CH-46E Course Catalog

306. CH-46E PROGRAMS OF INSTRUCTION (POI) FOR BASIC CREW CHIEF

1. POI For Basic Crew Chief. Transition and Conversion crew chief will fly the Basic POI.

WEEKS	COURSE/PHASE	ACTIVITY
1-22	Core Skill Introduction	FRS
23-29	Core Skill	Tactical Squadron
30-38	Mission Skill	Tactical Squadron
39-48	Core Plus Skill	Tactical Squadron

2. POI For Basic Aerial Gunner/Observer. Transition and Conversion Aerial Gunner/Observers will fly the basic POI.

WEEKS	COURSE/PHASE	ACTIVITY
1-16	Core Skill	Tactical Squadron
17-20	Mission Skill	Tactical Squadron
21-24	Core Plus Skill	Tactical Squadron

3. POI For Refresher Crew Chief

WEEKS	COURSE/PHASE	ACTIVITY
0	Core Skill Introduction	Tactical Squadron
1-10	Core Skill	Tactical Squadron
11-18	Mission Skill	Tactical Squadron
19-26	Core Plus Skill	Tactical Squadron

4. POI For Refresher Aerial Gunner/Observer

WEEKS	COURSE/PHASE	ACTIVITY
1-13	Core Skill	Tactical Squadron
14-18	Mission Skill	Tactical Squadron
19-22	Core Plus Skill	Tactical Squadron

307. ACADEMIC TRAINING

1. General. The Academic syllabus is designed to ensure CC/AGO are receiving the proper academic training prior to starting a new phase and stage of training. Within each phase of training (1000-6000) 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. 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 CC/AGO. A summary of academic classes that is required for all of the phases of training (0000-6000) are listed below with their corresponding T&R code.

T&R CODE	ACADEMIC SYLLABUS
	FRS ACADEMIC PHASE (0000)
ACAD-0050	(U) FRS WELCOME ABOARD
ACAD-0051	(U) CBT'S (ALL COURSEWARE COMPLETE)
ACAD-0053	(U) NAV CLASS
ACAD-0054	(U) TERF
ACAD-0055	(U) CONFINED AREA LANDING
ACAD-0056	(U) FORMATION FLIGHT
ACAD-0057	(U) EXTERNAL FLIGHT
ACAD-0058	(U) INTERNAL CARGO LOADING/UNLOADING
ACAD-0059	(U) FLIGHT EQUIPMENT
ACAD-0060	(U) NIGHT SYSTEMS CLASS
ACAD-0062	(U) NS LAB
ACAD-6001	(U) NATOPS OPEN BOOK EXAM
ACAD-6002	(U) NATOPS CLOSED BOOK EXAM
ACAD-6007	(U) CREW RESOURCE MANAGEMENT (CRM)

T&R CODE	ACADEMIC SYLLABUS
	CORE SKILL PHASE (2000)
ACAD-2015	(S) RF SAMS
ACAD-2016	(S) IR SAM THREAT TO ROTARY WING AIRCRAFT
ACAD-2017	(S) AAA THREAT TO ROTARY WING AIRCRAFT
ACAD-2018	(S) ALE 47 AND AAR 47 V2*
ACAD-2019	(S) AN/APR 39 V1*
ACAD-2020	(S) ALQ-157*
ACAD-2021	(U) RULES OF ENGAGEMENT
ACAD-2026	(U) ASSAULT SUPPORT ESCORT TACTICS
ACAD-2028	(U) EXECUTION CHECKLIST
ACAD-2050	(U) EA TACTICAL AIRCREW CONSIDERATIONS AND RESPONSIBILITIES
ACAD-2051	(U) TERRAIN FLIGHT FOR ENLISTED AIRCREW
ACAD-2052	(U) EA NIGHT VISION TRAINING
ACAD-2053	(U) EA FUNDAMENTALS OF AERIAL GUNNERY*
ACAD-2054	(U) EA XM-218/GAU-16 MACHINE GUN
ACAD-2055	(U) EA LASER AIMING DEVICES*
ACAD-2056	(U) EA LASER BORE SIGHTING
ACAD-2057	(U) EA BASIC PRINCIPLES OF ELECTRONIC WARFARE
ACAD-2058	(S) EA CH-46E AIRCRAFT SURVIVABILITY EQUIPMENT*
ACAD-2059	(U) EA CH-46E GROUND THREAT REACTION*
ACAD-2060	(U) EA HELICOPTER INSERTION AND EXTRACTION (HIE)
ACAD-2061	(U) EA BASIC PRINCIPLES OF ESCORT OPERATIONS
ACAD-2062	(U) EA CH-46E TAIL GUNNERY
ACAD-2063	(U) EA TRAINING THE AERIAL GUNNER

*Denotes annual training requirement.

T&R CODE	ACADEMIC SYLLABUS
	MISSION SKILL PHASE (3000)
ACAD-3000	(S) TRAP
ACAD-3001	(S) MOUT
ACAD-3002	(U) CASEVAC
ACAD-3003	(S) NEO EXECUTION

T&R CODE	ACADEMIC SYLLABUS
	CORE PLUS SKILL PHASE (4000)
ACAD-4003	(U) RW OAS
ACAD-4004	(U) FW OAS CAPABILITIES
ACAD-4007	(S) ATTACK HELICOPTER THREAT TO RW AIRCRAFT
ACAD-4008	(S) FW THREAT TO RW AIRCRAFT
ACAD-4014	(S) LASER THREAT
ACAD-4017	(U) GCE RAID PLANNING
ACAD-4050	(U) EA INTRODUCTION TO HELICOPTER DEFENSIVE MEASURES*
ACAD-4051	(U) EA CH-46E DEFENSIVE MEASURES PART II*

*Denotes annual training requirement.

308. SYLLABUS NOTES

1. General. 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 T&R 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.	

a. Waived/Deferred events. Commanding officers may waive or defer events per the Aviation T&R Program Manual. If the commanding officer has waived/deferred a syllabus event, the enlisted WTI shall place a waiver/deferral letter in section 3 of the APR.

b. Designation as Aerial Gunner/Observer. After being qualified NSQ LLL, AGQ and completion of NTPS-6101 an AGOUI may be designated an Aerial Gunner/Observer by the commanding officer. A designation letter, signed by the commanding officer is required. The original shall be placed in the AGO's NATOPS jacket, and a copy in his APR with a corresponding logbook entry. A designation code of 6199 should be run on AGOs thru the unit S-1.

c. Aerial Gunnery Simulator Training. Although a current simulator does not exist, a request for an Aerial Gunner simulator has been forwarded. The commanding officer may defer AG simulator codes until a simulator becomes available.

d. Aircraft And 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. Until an aircraft simulator becomes operational, unit commanders may waive appropriate syllabus per paragraph 207 of the Aviation T&R Program Manual.

2. Evaluation Sorties. These events shall be flown with an experienced crew chief instructor (TERFI, NSI, AGI, TGI, DMI, WTI) designated for the specific flight instruction required.

a. A designated NATOPS Instructor/Assistant NATOPS Instructor shall evaluate NTPS-6101 for both the crew chief and aerial gunner/observer. AGOUI shall fly NTPS-6101 prior to being designated an aerial gunner/observer and after being qualified NSQ LLL and AGQ.

b. A crew chief instructor (TERFI, NSI, AGI, TGI, DMI, WTI) proficient in a given event shall evaluate any initial event required for a Basic, Conversion, Transition, or Refresher crew chief or aerial gunner/observer. A qualified and designated crew chief instructor shall complete an Aviation Training Form (ATF). Pilots will not sign off crew chief ATFs with the exception of initial SFAM-2100 and Mission Skill/Mission Skill plus events. Aerial gunner/observers will not sign off crew chief's in any event.

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

d. The Enlisted Aircrew Training Chief (Squadron WTI) shall ensure all ATFs are entered in section 3 of the APR for all initial/refresher events flown. These ATFs shall remain until a more current ATF replaces it.

e. Refresher aircrews shall have ATFs entered in section 3 of the APR for all flights designated by an R in the flight description. These ATFs will replace ATFs previously entered in section 3.

f. All 2000-6000 level ATFs will be developed and maintained by the Syllabus Sponsor (MAWTS-1 CH-46E division). Updated ATFs will be disseminated in conjunction with publication of Interim Approved T&Rs.

3. Syllabus Assignment

a. Basic, Conversion and Transition crew chiefs will be assigned to fly the entire syllabus. Refresher crew chiefs will fly those flights designated by an 'R' in the T&R matrix. Basic, Conversion and Transition aerial gunner/observers will fly the same syllabus as the respective crew chief except as noted in the crew requirements for each stage. AGOs training to

become Secondary MOS Crew Chiefs shall fly those events designated by an 'O' in the T&R matrix.

b. Refresher Syllabus. Aircrew who have been previously assigned to the Basic POI, but are not proficient shall be assigned to fly the Refresher POI per the Aviation T&R Program Manual. The refresher syllabus is predicated on the experience of the refresher crew chief or aerial gunner/observer. A refresher crew chief or aerial gunner/observer need not fly every event within a stage of training to be re-qualified in that stage. A crew chief or aerial gunner/observer in the refresher syllabus should fly all R coded events. The commanding officer may tailor the refresher syllabus to fit the experience of the refresher crew chief or aerial gunner/observer per the T&R Program Manual. When the R coded events within a stage of training are complete, the crew chief or aerial gunner/observer may be credited with the CSP for the entire stage of training. This assumes that the refresher has previous proficiency in that stage of training. If the refresher crew chief or aerial gunner/observer has no previous proficiency in a stage or particular event, then the refresher shall fly the entire stage or all events not previously flown.

c. Secondary MOS Crew Chief. All efforts shall be made with MMEA-84 to receive assignment of Primary MOS crew chiefs prior to utilizing secondary AMOS program. If inventory shortages cannot be filled through MMEA-84, authorization is granted to individual unit COs to train secondary AMOS 6172 under the following Guidelines:

(1) The number of secondary MOS crew chiefs that an individual unit Commander may train is limited to the current staffing formula; 1.6 CC x primary assigned aircraft (PAA) = number of crew chiefs minus primary/additional MOS crew chiefs on hand. For example, if a squadron has 14 primary/additional MOS crew chiefs assigned, and the staffing formula computes to 19 total crew chiefs, unit commanders may only request to train a maximum of 5 secondary AMOS crew chiefs to equal PAA.

(2) To ensure standardization of training and aviation adaptability, all requested trainees shall be designated an aerial gunner/observer prior to starting secondary AMOS training.

(3) The source population shall be restricted to aviation maintenance MOS of 611x, 615x, and 632x only. All requests shall be submitted via DMS format to CGG TECOM ATB (C4610) for approval prior to trainee starting flight syllabus. MSG shall include:

(a) Organization requesting training of secondary AMOS crew chief.

(b) Name, rank, MOS, and SSN of trainee.

(c) Total number of crew chiefs rated by PAA.

(d) Total number of primary and secondary AMOS crew chiefs assigned to requesting MCC.

(e) Adequate justification for training a secondary AMOS crew chief.

(f) Faxed copy of initial AGO NATOPS evaluation report (OPNAV 3710/7 form).

(4) Upon receipt of request, ATB will approve/disapprove request via ASL/ASM and notify requesting command through DMS format. Approved training will be conducted in strict compliance with this manual and MCO P1200.7, Military Occupational Specialties Manual. Additional requirements are outlined below:

(a) To ensure MOS standardization all Core Skill introduction (1000 Level series) codes shall be flown with a current Enlisted Weapons and Tactics Instructor (MOS 6177) or NATOPS Evaluator/Instructor (NI) holding a primary MOS of 6172. Only a currently assigned and designated FRS crew chief instructor (CCI) shall administer the Core Skill introduction evaluation flight (CSIX 1902).

(b) The Total Time to Train (TTT) secondary AMOS crew chiefs shall not exceed six months. The date of initial flight and completion of evaluation flight define the TTT.

(c) Core Skill Basic, Advanced and Plus flights previously flown as an aerial gunner/observer shall not transfer to the training of the secondary AMOS crew chief. All flights shall be flown with CCUI acting in the capacity of a crew chief.

(5) Only the FRS COs have the authority to designate the secondary AMOS of 6172. The evaluation flight may be flown at the respective FRS or individual requesting squadron. Requesting commands shall coordinate with FRS for scheduling of the evaluation flight. TAD funding for either the trainee or FRS Crew Chief Instructor (CCI) shall be the responsibility of the requesting squadron.

(6) The FRS CCI shall administer the oral and Core Skill Introduction evaluation flight and closed book NATOPS examination. Prior to Core Skill introduction evaluation flight parent commands shall ensure:

(a) Nominees complete squadron approved open book NATOPS examination.

(b) Nominees are designated a plane captain by unit CO.

(c) Prior to designation, nominees shall attend SERE training.

(7) Upon completion of Core Skill introduction evaluation flight, copies of all certifications and evaluations shall be submitted to respective FRS COs for secondary AMOS certification/approval. Documents to be submitted are:

(a) Copy of current flight physical.

(b) Copy of physiology/water survival Form 3760/32.

(c) Copy of all crew chief 1000 series ATFs.

(d) Copy of current flight orders.

(e) Copy of section III(c), examination record, OPNAV 3760/32G.

(f) Copy of current plane captain designation.

(g) Copy of initial AGO evaluation form, OPNAV 3710/7.

(h) Original crew chief evaluation form, OPNAV 3710/7.

(i) Copy of SERE completion certificate.

(j) Marines listed as instructor on 1000 Phase ATFs must submit a copy of respective WTI certificate or NATOPS Evaluator/Instructor designation. The primary purpose of this documentation is to assist the model manager in tracking the certification process and identifies positive/negative trends in the training process. Evaluation standards applicable to primary MOS crew chiefs shall be strictly adhered to.

(8) The FRS CCI shall forward original OPNAV 3710/7 form to FRS CO for approval. The FRS CO shall sign the NATOPS evaluation and a crew chief designation letter and forward to the originating command for insertion into trainees NATOPS jacket.

(9) In order to facilitate management of the MOS end strengths, secondary AMOS crew chiefs desiring a primary 6172 MOS, will forward the appropriate AA form to MMEA-6 requesting a lateral move from a secondary AMOS crew chief to a primary MOS crew chief.

(10) On hand primary designated MOS crew chiefs shall have priority for crewmember flight orders IAW MCO 1326.2G.

(11) This policy applies to Marines currently in training and is effective immediately. This is not applicable to Marines designated prior to this revision, or Marines currently assigned to the Executive Flight Detachment of HMX-1.

4. Refly Interval. Paragraph 321 of this publication shows the refly interval for all events.

5. Crew Resource Management (CRM). CRM shall be briefed for all flights and/or events.

6. Definitions

a. Demonstrate. The description and performance of a particular procedure by the instructor, observed by the CCUI. The CCUI is responsible for knowledge of the procedures prior to the demonstration.

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

c. Evaluate. Any flight designed to evaluate aircrew standardization.

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

e. Review. Demonstrated proficiency by the CCUI/AGOUI.

309. FRS ACADEMIC PHASE (0000)

1. Purpose. To ensure Crew Chiefs Under Instruction (CCUIs) assigned to the Fleet Replacement Squadron (FRS) are given the proper academic instruction prior to beginning the Core Skill Introduction Phase.

2. General. Each CCUI assigned to the FRS shall receive all of the academic classes listed in the matrix below during the various stages within the (1000 level) stage of training. All academic classes ACAD-0050 through ACAD-0063 will be complete prior to conducting the CSIX-1902 flight. The academic classes have corresponding T&R codes associated with them and will be tracked and logged in M-SHARP.

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

T&R CODE	ACADEMIC SYLLABUS
	FRS ACADEMIC PHASE (0000)
ACAD-0050	(U) FRS WELCOME ABOARD
ACAD-0051	(U) CBT'S (ALL COURSEWARE COMPLETE)
ACAD-0053	(U) NAV CLASS
ACAD-0054	(U) TERF
ACAD-0055	(U) CONFINED AREA LANDING
ACAD-0056	(U) FORMATION FLIGHT
ACAD-0057	(U) EXTERNAL FLIGHT
ACAD-0058	(U) INTERNAL CARGO LOADING/UNLOADING
ACAD-0059	(U) FLIGHT EQUIPMENT
ACAD-0060	(U) NIGHT SYSTEMS CLASS
ACAD-0062	(U) NS LAB

310. CORE SKILL INTRODUCTION PHASE (1000)

1. General

a. 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.

b. FRS Instructors shall log 2000 level codes as appropriate that are comparable in performance standards of a 1000 level code.

c. Within the aircrew Core Skill Introduction Phase (1000) there are (9) stages. Those stages are as follows:

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

311. CORE SKILL INTRODUCTION STAGES (1000)

1. Familiarization (FAM)

a. Purpose. To develop preliminary skills as a crew chief in the CH-46E and become familiar with flight characteristics, aircraft systems, limitations, and emergency procedures. To develop proficiency in assisting pilots in all aspects of FAM flight, both day and night.

b. General

(1) These flights may be flown with any flight of the basic Crew Chief POI.

(2) The newly designated crew chief assigned to the FRS may fly a TERF-2301 with a CCI and receive a FRS TERFQ only when determined proficient by the CCI. This qualification will allow the crew chief to fly only with a Pilot Under Instruction (PUI) during a TERF-1701.

(3) The newly designated crew chief assigned to the FRS may fly a NS-2601 with a NSFI and receive a FRS NSQ only when determined proficient by the NSFI. This qualification will allow the crew chief to fly only with a PUI during a NS-1801, NS-1802, and NS-1803.

(4) On FAM-1109 the CCUI will act as an observer. Subsequent to FAM-1109 the CCUI will act in the capacity of crew chief.

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

(6) All initial Night system FAM flights require a NSFI.

c. Crew Requirement. CCI/CCUI, NSFI/CCUI/CCUI.

d. Ground/Academic Training. Prior to FAM-1110, FRS welcome aboard class (ACAD-0050), CBTs (all courseware complete- ACAD-0051), aviation physiology and flight physical, swim qualifications, and applicable ground training must be completed.

FAM-1109 2.0 * O,E 1 CH-46E A D

Goal. Introduce ground and normal flight procedures.

Requirement

Discuss:
- Use of ICS.
- Standard terminology.
- Voice procedures.
- Interaction with pilots.
- Lookout doctrine.
- Estimating distances.
- Emergency procedures.
- Fuel surveillance.
- Crew comfort levels.
- Vertigo.
- Takeoff and landing emergencies.
- CRM.
  - Communication.
  - SA.

Introduce:
- Basic crew duties.
- Daily/turnaround inspections.
- Servicing requirements.
- Startup/shutdown procedures.
- Hotseat procedures.
- Takeoff.
- Operation of communications equipment.
- Inflight lookout.
- Headwork.
- Aft station check procedures.
- Aircraft fueling procedures.
- Crew comfort levels.
- Depth perception.
- Taxiing/directing procedures.
- Back taxi procedures.
- Hot fuel procedures.

Review:
- Limitations.
- SOPs.
- Crew chief duties.
  - Startup/shutdown procedures.
  - Aircraft security: Ship/shore based procedures.
  - Daily/Turnaround inspections.
  - Hotseat procedures.

Performance Standards. Exhibit basic understanding of crewchief duties.

FAM-1110 1.5 * O,E 1 CH-46E A D

Goal. Introduce communications, passenger briefing, normal and emergency procedures.

Requirement

Discuss:
- Standard terminology.
- Interaction with pilots.
- Takeoff and landing emergencies.
- Engine limitations.
- Transmission limitations.
- Inflight fire.
- Smoke elimination.
- CRM.
  - SA.
  - Leadership.
- Ditching procedures.

Introduce:
- Precautionary landings.
- Emergency landings.
- Autorotations.
- Situational Awareness.
- Ground handling procedures.
- Crew chief responsibilities during loading.
- T&R Program Manual.
- Aft station check procedures.

Review:
- ICS usage.
- Taxi procedures.
- AFT station check procedures.
- Hot fuel procedures.

Performance Standards. Demonstrate application of crew chief duties.

Prerequisite. FAM-1109

FAM-1111 2.0 * O,E 1 CH-46E A D

Goal. Introduce communications, passenger briefing, normal and emergency procedures.

Requirement

Discuss:
- Standard terminology.
- Interaction with pilots.
- Takeoff and landing emergencies.
- Engine limitations.
- Transmission limitations.
- Inflight fire.
- Smoke elimination.
- CRM.
  - SA.
  - Leadership.
- Ditching procedures.

Introduce:
- Precautionary landings.
- Emergency landings.
- Autorotations.

SA.
Ground handling procedures.
Crew chief responsibilities during loading.
T&R Program Manual.
Aft station check procedures.
Introduce MCO P3500.14
Introduce MCO P3500.50 chapter 2

Review:
ICS usage.
Taxi procedures.
AFT station check procedures.
Hot fuel procedures.

Performance Standards. Demonstrate application of crew chief duties.

Prerequisite. FAM-1110.

FAM-1116 1.5 * O,E 1 CH-46E A D

Goal. Introduce communications, aircraft procedures, normal and emergency procedures.

Requirement

Discuss:
Standard terminology.
Use of ICS.
Interaction with pilots.
Takeoff and landing emergencies.
Engine limitations.
Transmission limitations.
Inflight fire.
Smoke elimination.
CRM.
Aft station check procedures.
Aircraft fueling procedures.

Introduce:
Daily/Turnaround inspections.
Blade fold/unfold procedures.
APU start-up/shut-down procedures.
Aircraft power checks.

Review:
ICS usage.
Taxi procedures.
AFT station check procedures.
Hot fuel procedures.
Standard terminology.
Emergency procedures.
Basic crew duties.
Aircraft limitations.

Performance Standards. Demonstrate application of crew chief duties.

Prerequisite. FAM-1111.

FAM-1117 1.5 * O,E 1 CH-46E A N*

Goal. Introduce night operations.

Requirement

Discuss:
- Lighting systems.
- Night operations.
- Estimating distances.
- CRM.
  - Adaptability/flexibility.
  - Decision making.

Introduce:
- Daily at night.
- Turnaround at night.
- Light discipline.
- Aircraft lighting.
- Airfield lighting.
- Night lookout doctrine.

Review:
- Night precautionary Landings.
- Night emergency landings.
- Overview of duties.
- Situational Awareness.
- Night startup/shutdown procedures.
- Limitations.
- Hot seat procedures.

Performance Standards. Demonstrate a basic knowledge of night operations IAW NATOPS.

Prerequisite. FAM-1116.

2. Navigation (NAV)

a. Purpose. To familiarize the CCUI with navigation responsibilities while navigating primarily using charts and maps.

b. General. At the completion of this stage, the CCUI will be able to demonstrate the ability to assist the pilots in all aspects of navigation.

c. Crew Requirement. CCI/CCUI.

d. Academic Training. FRS Navigation class (ACAD-0053).

NAV-1301 1.5 * O,E 1 CH-46E A D

Goal. Introduce aircrew duties during navigation.

Requirement

Discuss:
- Fuel management checks.
- Crew participation.
- CRM.
  - Communication.

Decision making.

Introduce:
- Use of appropriate maps and checkpoints.
- Time distance checks.
- Barrier features.
- Prominent terrain features.
- Additional crew chief responsibilities over unfamiliar terrain.
- Navigation procedures.

Review:
- Communication.
- SA.
- Night startup/shutdown.
- Aircraft lighting.
- Taxiing at night.
- Light discipline.
- Crew duties.
- Night lookout doctrine.

Performance Standards. Demonstrate ability to assist the pilots during navigation.

Prerequisite. FAM-1116, ACAD-0053.

3. Confined Area Landings (CAL)

a. Purpose. To develop crew chief responsibilities during CALs.

b. General. At the completion of this stage, the CCUI will be able to demonstrate the ability to assist in all aspects of CALs.

c. Crew Requirement. CCI/CCUI.

d. Academic Training. FRS Confined Area Landing class (ACAD-0055).

CAL-1401 1.5 * O,E 1 CH-46E A D

Goal. Introduce CAL responsibilities.

Requirement

Discuss:
- Obstacle clearance.
- Standard terminology.
- Crew comfort levels.
- Clearance in confined areas.
- Emergencies during low level operations.
- CRM.
  - Assertiveness.
  - Leadership.

Introduce:
- Aircraft clearance while operating in confined areas.
- Terrain suitability.
- Main-mount landings.
- Slope landings.
- Wave off.
- Low level operations.

Review:
Crew responsibilities.
Clearance calls.

Performance Standards. Demonstrate the ability to successfully crew the aircraft to the deck for a minimum of 5 landings.

Prerequisite. FAM-1116, ACAD-0055.

External Syllabus Support. Various CAL sites.

CAL-1402 1.5 * O,E 2 CH-46E A D

Goal. Introduce section CAL responsibilities.

Requirement

Discuss:
CRM.
Lookout doctrine.
Obstacle clearance.
Distance estimation.
Wingman position.
Wave off/brownout procedures.

Introduce:
Crew responsibilities during section CAL operations.

Review:
Formation and lookout procedures emphasizing responsibilities during section operations.

Performance Standards. Demonstrate the ability to clear the aircraft for landing into confined areas while recognizing closure rate, drift error and effectively utilizing proper distance estimation and depth perception. Maintaining SA of wingman throughout the evolution.

Prerequisite. CAL-1401.

External Syllabus Support. Availability of large LZ.

4. Formation (FORM)

a. Purpose. To familiarize the CCUI with functions and responsibilities during formation flying.

b. General. At the completion of this stage, the CCUI will be able to demonstrate the ability to assist pilots in all aspects of formation flight.

c. Crew Requirement. CCI/CCUI.

d. Academic Training. FRS Formation Flying class (ACAD-0056).

FORM-1501 1.5 * O,E 2 CH-46E A D

Goal. Introduce formation flight responsibilities.

Requirement

Discuss:
- Lost communications procedures.
- Crew chief responsibilities during inadvertent IMC.
- CRM.
  - Communication.
  - Leadership.

Introduce:
- Lookout procedures for wingman.
- Turn patterns.
- Breakup and rendezvous.

Review:
- Crew responsibilities.
- SA.
- Section takeoffs and landings to an unimproved surface.
- Distance estimation.
- Crew coordination.
- Lookout doctrine.

Performance Standards
Maintain SA of wingman throughout evolution.
Demonstrate proper crew chief duties.
Utilize standard terminology.
Demonstrate proper distance estimation within two feet of actual height.

Prerequisite. CAL-1402, ACAD-0056.

External Syllabus Support. Availability of large LZ.

5. External Loads (EXT)

a. Purpose. To develop CCUI skills necessary for external cargo operations.

b. General. At the completion of this stage, the CCUI will be able to demonstrate the ability to assist the pilot during day external operations.

c. Crew Requirement. CCI/CCUI/CCUI.

d. Academic Training. Review of NAVAIR 01-250-HDA-9, External Flight Class (ACAD-0057), Internal Cargo Loading/unloading (ACAD-0058)

EXT-1601 1.5 * O,E 1 CH-46E A D

Goal. Introduce external cargo operations.

Requirement

Discuss:
- Standard terminology.
- Static discharge precautions.
- Lost communications.
- Hand signals.
- Emergency procedures.
- Emergency release procedures.

Crew duties.
CRM.
Decision making.
Communication.

Introduce:
Communications.
External operations.
Hook and pendant preflight.
Load release procedures.

Review:
Obstacle clearance.
SA.

Performance Standards
Properly configure aircraft.
Successfully complete five pickups and dropoffs.
Demonstrate standard terminology.
Execute proper safety precautions.

Prerequisite. CAL-1401, ACAD-0057, ACAD-0058.

External Syllabus Support. External load, HST.

6. Terrain Flight (TERF)

a. Purpose. To introduce the CCUI to TERF maneuvers and to emphasize the importance of crew coordination, crew comfort level, and standard terminology.

b. General. At the completion of this stage of flight, the CCUI will be able to demonstrate the ability to assist the pilots during day TERF maneuvers.

c. Crew Requirement. CCI/CCUI/CCUI.

d. Academic Training. FRS TERF class (ACAD-0054).

TERF-1701 1.5 * O,E 1 CH-46E A D

Goal. Introduce TERF maneuvers.

Requirement

Discuss:
Obstacle clearance.
Standard terminology.
Crew comfort levels.
Wave off.
Clearance in confined areas.
Emergencies during low level operations.
CRM.
Assertiveness.
Communication.

Introduce:
Blade walk.
Hover check theory.

TERF maneuvers.
Bunts.
Rolls.
Masking and unmasking.
Spiral approach.
Low level quick stop.
Zoom climb.

Review:
Crew responsibilities.
Clearance calls.

Performance Standards. Demonstrate a basic understanding of TERF maneuvers.

Prerequisite. FAM-1116, ACAD-0054.

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

7. Night Systems (NS), High Light Level (HLL)

a. Purpose. To introduce skill in the use of NS under light levels greater than or equal to .0022 LUX (HLL) as predicted by the computer generated light level calendar.

b. General

(1) All initial and Refresher flights require a Night Systems Instructor (NSI)or a Night Systems Familiarization Instructor (NSFI).

c. Crew Requirement. NSFI/CCUI/CCUI.

d. Academic Training. Night Systems Class (ACAD-0060), Night Systems Lab (ACAD-0062).

NS-1801 1.5 * O,E 1 CH-46E A NS

Goal. Introduce NS flight.

Requirement

Discuss:
Crew comfort levels.
NS failures.
Depth perception.
Aircraft lighting.
Emergency procedures.
CRM.
Mission analysis.
Assertiveness.

Introduce:
Use of NS during low level operations.
Aircraft configuration.
Taxiing on NS.
Use of NS at an unlit field.
Ground relationships.

Review:
- Communication.
- Lookout doctrine.
- Night startup/shutdown.
- Aircraft lighting.
- Taxiing signals.
- Light discipline.
- Crew duties.
- Vertigo.

Performance Standards. Apply basic NS skills as outlined in the MAWTS-1 NVD manual.

Prerequisite. FAM-1117, ACAD-0060, ACAD-0062.

NS-1802 1.5 * O,E 1 CH-46E A NS

Goal. Introduce flight duties during NS navigation.

Requirement

Discuss:
- Fuel management checks.
- Crew comfort Levels.
- NS failures.
- Emergency procedures.
- CRM.
  - Adaptability/flexibility.
  - Mission analysis.

Introduce:
- Additional crew chief responsibilities over unfamiliar terrain on NS.

Review:
- Use of appropriate maps and checkpoints.
- Time distance checks.
- Barrier features.
- Prominent terrain features.
- Assisting pilots.
- Light discipline.
- Aft station checks.

Performance Standards. Demonstrate ability to assist pilots during NS navigation.

Prerequisite. NAV-1301 and NS-1801.

NS-1803 1.5 * O,E 1 CH-46E A NS

Goal. Introduce NS CALs.

Requirement

Discuss:
- Obstacle clearance.
- Task saturation.
- Crew comfort levels.
- Wave off.

Distance estimation.
Clearance in confined areas.
Emergency procedures.
CRM.
Situational Awareness.
Assertiveness.

Introduce:
LZ lighting.
Aircraft clearance on NS.
LZ suitability.

Review:
Headwork.
Crew responsibilities.
Light discipline.
Clearance calls.
NS failures.
Depth perception.

Performance Standards. Demonstrate the ability to successfully call the aircraft to the deck utilizing NS a minimum of five times using standardized terminology.

Prerequisite. NS-1801 and CAL-1401.

External Syllabus Support. CAL sites suitable for NS use.

8. Crew Chief Review (REV)

a. Purpose. To review all duties and emergency procedures of a Core Skill Introduction crew chief per this syllabus and NATOPS publications.

b. Crew Requirement. CCI/CCUI.

c. Academic Training. Completion of FRS Academic phase which includes (ACAD-0050 through ACAD-0062).

REV-1901 1.5 * O,E 1 CH-46E A (N)

Goal. Review duties, limitations, responsibilities, taxiing procedures, and emergency procedures.

Requirement

Discuss:
Preparation.
Time management.
Daily/turnaround procedures.
Startup/shutdown.
Taxi procedures.
Back taxi procedures.
Application of CRM.

Introduce:
Total crew chief responsibility for the aircraft.
Plane captain responsibilities.

Review:
Crew/passenger brief.
Aircraft configuration.
Emergency procedures.
Limitations.
ICS usage.
Estimating distances.
Safety precautions.
Systems knowledge.
Crew duties.
Lookout doctrine.

Performance Standards. Demonstrate proficiency as a crew chief as stated in the NATOPS and OPNAV 3710.7.

Prerequisite. FAM-1117, ACAD-0050 through ACAD-0062.

9. Core Skill Introduction Check (CSIX)

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

b. General

(1) Completion of this stage meets the requirements for designation as a crew chief.

(2) The CCI shall be a designated NATOPS Evaluator and CRM Facilitator/Instructor.

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

d. Academic Training

(1) Completion of open, closed book and oral exams (NTPS-6001, NTPS-6002 and NTPS-6003), CRM class (CRM-6007) and 12-week evaluations.

(2) Completion of plane captain syllabus.

CSIX-1902 1.5 * O,E 1 CH-46E A (NS)

Goal. Evaluate CCUI's systems knowledge of the CH-46E and the capability to perform duties as a Core Skill Introduction complete crew chief.

Requirement

Discuss:
Preparation.
Time management.
Daily/turnaround procedures.
Taxi procedures.
Aircraft systems.

Review
Crew/passenger brief.
Aircraft configuration.
Emergency procedures.

Limitations.
ICS usage.
Estimating distances.
Safety precautions.
Systems knowledge.
Crew duties.
Lookout doctrine.

Performance Standards. Demonstrate proficiency as a crew chief as stated in the NATOPS and OPNAV 3710.7.

Prerequisite. NTPS-6001, NTPS-6002, NTPS-6003, CRM-6007 and all prior 1000-phase flights.

312. CORE SKILL PHASE (2000)

1. Purpose. To introduce and develop proficiency in the execution of the Core Skills required as a crew chief/aerial gunner observer within a Marine Medium Helicopter Squadron (HMM). The Core Skill phase represents the basic skill sets required, upon completion of the phase, to eventually conduct the Mission Skills (3000 Phase). In order for a crew chief/aerial gunner observer 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, simulator and flight events to train that individual crew chief/aerial gunner observer to the level required to conduct the assigned Mission Skills.

2. General. Within the Core Skill Phase (2000) there are (13) stages. The following events require a crew chief instructor for any initial/Refresher flights. A crew chief instructor is defined by having one of the following designations: NI/ANI/TERFI/NSI/AGI/TGI/DMI/WTI. These stages are as follows:

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

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

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.

313. CORE SKILL STAGES(2000)

1. Familiarization (FAM)

a. Purpose. To enhance skills of crew functions and responsibilities during day or night flights.

b. General

(1) At the completion of this stage, the CCUI/AGOUI will demonstrate the ability to assist the entire crew during day or night flights.

(2) FAM-2101 is the initial FAM flight for the AGOUI.

(3) If FAM-2101 is flown on NS the aircrew shall be NSQ for the appropriate light level or be under the supervision of an NSI. Initial events shall be conducted during the day.

c. Minimum Crew Requirement. CC, CC/AGO if flown at night, CCI/CCUI or CCI/AGOUI.

d. Ground/Academic Training. Prior to beginning this stage, the CCUI or AGOUI shall be presented the courses listed in the MAWTS-1 CH-46E course catalog.

e. Prerequisites. The following events/designations are prerequisites prior to the commencement of the (FAM) stage:

EVENT TYPE	T&R CODE / QUALIFICATION PREREQUISITES
ACADEMIC	ACAD-2050
FLIGHT	CSIX-1902
QUALIFICATION	NONE

SFAM-2100 2.0 B WST D S/A

Goal. To better assist the pilots during aircraft emergency and multi-task situations.

Requirement

Discuss:
- CNCS Operation and programming procedures.
- Pilot EPs.
- Cockpit procedures.
- Aircraft flight characteristics.
- Aircraft system procedures.
- CRM.

Introduce:
- Pilot EPs.
- CNCS operations and procedures.

Hover, forward flight and landing profiles.

Review:
NATOPS limitations.
Crew chief emergency procedures.

Performance Standards. The crew chief shall demonstrate the ability to assist pilots during emergency procedures, CNCS operation, ASE operation and basic air work.

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

Goal. Develop lookout doctrine during FAM flights.

Requirement

Discuss:
Lookout doctrine.
ICS procedures.
CRM.
Crew comfort levels.
Local course rules.
Squadron flight SOPs.
Engine start up/shut down.
Rotor engagement/disengagement.
Plane captain responsibilities.

Introduce:
Assisting the pilot during FAM operations.

Review:
Standard terminology and lookout doctrine.

Performance Standards. Demonstrate the ability to carry out basic responsibilities of a CC/AGO.

Prerequisite. ACAD-2050, SFAM-2100.

External Syllabus Support. Landing areas.

2. Confined Area Landings (CAL)

a. Purpose. To develop crew coordination during confined area operations.

b. General. At the completion of this stage, the CCUI/AGOUI will be able to demonstrate the ability to assist the pilots in day CALS.

c. Crew Requirement. CC/AGO, CCI/CCUI or CCI/AGOUI.

d. Ground/Academic Training. Prior to beginning this stage, the CCUI or AGOUI shall be presented the courses listed in the MAWTS-1 CH-46E course catalog.

e. Prerequisites. The following events/designations are prerequisites prior to the commencement of the (CAL) stage:

EVENT TYPE	T&R CODE / QUALIFCATION PREREQUISITES
ACADEMIC	NONE
FLIGHT	FAM-2101
QUALIFICATION	NONE

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

Goal. Introduce/review single aircraft CAL operations; develop skills with tactical approaches and departures.

Requirement

Discuss:
- CRM.
- Obstacle clearance.
- Standard terminology.
- Distance estimation.
- Low altitude emergencies.
- Rotor blade clearances (blade walk).
- LZ evaluation.
- Wave off/brownout procedures.

Review:
- Lookout doctrine.
- ICS procedures.
- Aircraft clearance and terrain suitability.
- Distance estimation.

Performance Standards. Demonstrate the ability to clear the aircraft for landing into confined areas while recognizing closure rate, drift error and effectively utilizing proper distance estimation and depth perception

Prerequisite. FAM-2101.

External Syllabus Support. CAL zone.

CAL-2202 1.5 180 B 2 CH-46E A D

Goal. Conduct section CAL operations.

Requirement

Discuss:
- CRM.
- Lookout doctrine.
- Obstacle clearance.
- Distance estimation.
- Wingman position.
- Wave off/brownout procedures.
- Section formation.

Introduce:
- Crew responsibilities during section CAL operations.

Review:
- Lookout doctrine emphasizing responsibilities during section operations.

Performance Standards. Demonstrate the ability to clear the aircraft for landing into confined areas while recognizing closure rate, drift error and effectively utilizing proper distance estimation and depth perception. Maintain SA of wingman throughout the evolution.

Prerequisite. CAL-2201.

External Syllabus Support. CAL zone that supports multiple aircraft.

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

Goal. Conduct division CAL operations.

Requirement

Discuss:
CRM.
Lookout doctrine.
Obstacle clearance.
Distance estimation.
Division formations.
Wave off/brownout procedures.
Standard terminology

Introduce:
Crew responsibilities during division CAL operations.

Review:
Lookout doctrine emphasizing responsibilities during division operations.

Performance Standards. Demonstrate the ability to clear the aircraft for landing into confined areas while recognizing closure rate, drift error and effectively utilizing proper distance estimation and depth perception. Maintain SA of the division throughout the evolution.

Prerequisite. CAL-2202.

External Syllabus Support. CAL zone that supports multiple aircraft.

3. Formation Flight (FORM)

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

b. General. At completion of this stage, the CCUI/AGOUI will demonstrate the ability to assist the pilot during day or night formation flight operations.

c. Crew Requirement. CC/AGO, CCI/CCUI or CCI/AGOUI.

d. Ground/Academic Training. Prior to beginning this stage, the CCUI or AGOUI shall be presented the courses listed in the MAWTS-1 CH-46E course catalog.

e. Prerequisites. The following events/designations are prerequisites prior to the commencement of the (FORM) stage:

EVENT TYPE	T&R CODE / QUALIFICATION PREREQUISITES
ACADEMIC	NONE
FLIGHT	FAM-2101
QUALIFICATION	NONE

FORM-2301 1.5 180 B,R 2 CH-46E A (NS)

Goal. Review formation and introduce tactical formation maneuvering.

Requirement

Discuss:
- CRM.
- Crew comfort levels.
- Lead changes.
- Tactical lead considerations.
- Standard terminology.
- Tactical formation maneuvering.
- Aircraft clearance.
- Appropriate formation maneuvers against an aerial and ground based threat.
- Intra and inter aircraft communications.
- Distance estimation.

Introduce:
- Pinch/dig/resume/cover, break turns, center turns, TAC turns, in-place turns, and cross turns.
- Combat spread and combat cruise formations.

Review:
- Lookout doctrine.
- ICS procedures.

Performance Standards. Demonstrate the ability to perform and understand TAC FORM maneuvering, utilize standard terminology while maintaining a high level of situational awareness and maintain awareness of friendly aircraft while maintaining a proper scan and lookout doctrine.

Prerequisite. FAM-2101.

5. Terrain Flight (TERF)

a. Purpose. To qualify the CCUI/AGOUI in TERF and TERF navigation and to emphasize the importance of crew coordination, crew comfort level, and standard terminology.

b. General

(1) For all CCUI/AGOUI initial and refresher events within the TERF stage (TERF-2303-2305), a TERFI is required.

(2) Successful completion of TERF-2305 constitutes TERF qualified. A qualification letter signed by the commanding officer stating the CCUI/AGOUI

is TERFQ is required. The original shall be placed in the CCUI/AGOUI NATOPS jacket, and a copy in the APR with a corresponding logbook entry.

(3) T&R Program Manual establishes TERF altitude restrictions and currency requirements.

c. Crew Requirement. CC/AGO, TERFI/CCUI, TERFI/AGOUI.

d. Ground/Academic Training. Prior to beginning this stage, the CCUI or AGOUI shall be presented the courses listed in the MAWTS-1 CH-46E course catalog.

e. Prerequisites. The following events/designations are prerequisites prior to the commencement of the (TERF) stage:

EVENT TYPE	T&R CODE / QUALIFICATION PREREQUISITES
ACADEMIC	ACAD-2051
FLIGHT	FAM-2101
QUALIFICATION	NONE

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

Goal. Introduce TERF maneuvers and crew responsiblities in the TERF environment.

Requirement

Discuss:
- CRM.
- Crew comfort levels.
- Obstacle clearance.
- Lookout doctrine.
- Emergencies during low level operations.
- TERF maneuvers.

Introduce:
- TERF maneuvers/blade walk procedures.
- TERF flight regimes.

Review:
- TERF maneuvers and aircraft clearance.

Performance Standards. Demonstrate knowledge of TERF maneuvers in tactical situations.

Prerequisite. FAM-2101, ACAD-2051.

External Syllabus Support. TERF area (restricted area preferred).

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

Goal. Assist the pilots in navigation of a TERF route in the low level and contour profile.

Requirement

Discuss:
CRM.
Crew comfort level.
Communication.
Map/NAV procedures.
Terrain recognition.
Obstacle clearance.

Introduce:
Assist pilots in navigation, use of checkpoints, barrier features and prominent terrain features.

Review:
Emergency procedures during low level operations, and blade walk procedures.

Performance Standards. Assist pilots in navigation of a minimum of five checkpoints at or below 200’ AGL remaining oriented on the route utilizing terrain recognition.

Prerequisite. TERF-2303.

External Syllabus Support. TERF route (restricted area preferred).

TERF-2305 1.5 180 B,R 2 CH-46E A D

Goal. Review TERF/Nav procedures and demonstrate the ability to navigate a TERF route in the contour and low level profiles. This is the TERF evaluation flight.

Requirement

Discuss:
CRM.
Responsibilities during low altitude flight.
Communication.
Navigational assistance.
Lookout doctrine.
Low altitude emergency procedures.
Multi-aircraft operations.
Threat awareness.
Lead changes.
Tactical formation maneuvering.
Crew comfort level.
Map and navigation procedures.

Review:
TERF-2303 and TERF-2304.

Performance Standards. Demonstrate knowledge of terrain flight as it applies to the CH-46E and assist pilots in navigation of a minimum of five checkpoints at or below 200’ AGL remaining oriented on the route utilizing terrain recognition.

Prerequisite. TERF-2304.

External Syllabus Support. TERF route (restricted area preferred).

5. Aerial Gunnery (AG)

a. Purpose. To qualify CCUI/AGOUI and develop proficiency with day and NS crew served weapon aerial gunnery procedures.

b. General

(1) An AGI is required for all flights during this stage until successful completion of AG-2406.

(2) At the completion of this stage, the aircrew will demonstrate knowledge of weapons systems and proficiency during day and NS weapons delivery.

(3) Academic training will be conducted by an WTI or AGI.

(4) Successful completion of AG-2406 constitutes Aerial Gunnery Qualified (AGQ). A qualification letter signed by the commanding officer stating the CCUI/AGOUI is AGQ is required. The original shall be placed in the CCUI/AGOUI's NATOPS jacket and APR with a corresponding logbook entry.

(5) The CCUI or AGOUI must be NSQ for the appropriate light level being flown before flying any NS aerial gunnery flights.

(6) LASER aiming devices shall be utilized for AG-2405 and AG-2406.

c. Crew Requirement. CC/AG0, AGI/CCUI or AGI/AGOUI, NSI-AGI/CCUI or NSI-AGI/AGOUI.

d. Ground/Academic Training. Prior to beginning this stage, the CCUI or AGOUI shall be presented the courses and complete the required readings listed in the MAWTS-1 CH-46E Course Catalog.

e. Prerequisites. The following events/designations are prerequisites prior to the commencement of the (AG) stage:

EVENT TYPE	T&R CODE / QUALIFICATION PREREQUISITES
ACADEMIC	ACAD-2021, ACAD-2053, ACAD-2054, ACAD-2055, ACAD-2056, ACAD-2063
FLIGHT	FAM-2101
QUALIFICATION	NONE

SAG-2400 2.0 * B WST D

Goal. Introduce the CCUI/AGOUI to aerial gunnery procedures.

Requirement

Discuss:
- CRM.
- ICS procedures.
- Safety.
- Weapons conditions.
- Weapons commands.
- Weapons malfunctions/stoppages/emergencies.

Crew served weapons checklist application.
Muzzle awareness.
Weapons preparation/nomenclature.
Balistics.

Introduce:
Day aerial gunnery while firing on pre-briefed targets.

Review:
MAWTS-1 Assault Support Aerial Gunnery Manual and the ANTTP series publications.

Performance Standards. Demonstrate the ability to conduct day aerial gunnery procedures.

Prerequisite. Completion of Academics; ACAD-2021, ACAD-2053, ACAD-2054, ACAD-2055, ACAD-2056, ACAD-2063, FAM-2101.

External Syllabus Support. Crew served aerial gunnery simulator capable of demonstrating day air-to-ground/air-to-air gunnery. The trainer must be capable of being tied to the pilot simulator.

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

Goal. Introduce the CCUI/AGOUI to day aerial gunnery procedures.

Requirement

Discuss:
CRM.
ICS procedures.
Safety.
Weapons conditions.
Weapons commands.
Weapon malfunctions/emergencies.
Crew served weapons checklist.
Aiming techniques.
Muzzle awareness.
Weapons preparation/nomenclature.
Balistics.

Introduce:
Preparation of weapons and aircraft.
Aerial gunnery employment.
Firing on pre-briefed targets.

Review:
MAWTS-1 Assault Support Aerial Gunnery Manual.

Performance Standards. Demonstrate the ability to properly employ the XM-218 during day aerial gunnery.

Prerequisite. SAG-2400.

Ordnance. 500 rounds .50 cal.

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

AG-2402 1.5 365 B,R 2 CH-46E A D

Goal. Introduce day multi-aircraft weapons employment considerations.

Requirement

Discuss:
- CRM.
- ICS procedures.
- Safety.
- Weapons conditions.
- Weapons commands.
- Weapon malfunctions/emergencies.
- Crew served weapons checklist.
- Aiming techniques.
- Muzzle awareness.
- Weapons preparation/nomenclature.
- Formation flight during aerial gunnery.
- Balistics.

Introduce:
- Multi-aircraft operations.
- Sectors of fire.
- Firing on pre-briefed targets while aircraft is maneuvering to include running and hover fires utilizing pre-briefed line numbers.

Review:
- Preparation of weapons and aircraft.
- Aerial gunnery procedures.

Performance Standards. Demonstrate ability to properly employ the XM-218 during day aerial gunnery within a section of aircraft.

Prerequisite. AG-2401.

Ordnance. 500 rounds .50 cal.

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

AG-2403 1.5 365 B,R 1 CH-46E A D

Goal. Introduce day aerial gunnery against a moving target.

Requirement

Discuss:
- CRM.
- ICS procedures.
- Safety.
- Weapons conditions.

Weapons commands.
Weapons malfunctions/emergencies.
Crew served weapons checklist.
Aiming techniques.
Muzzle awareness.
Weapons preparation/nomenclature.
Range estimation.
Lead techniques.

Introduce:
Preparation of weapons and aircraft.
Aerial gunnery against a moving target.
Firing on pre-briefed targets.
Lead techniques at a moving target.

Review:
MAWTS-1 Assault Support Aerial Gunnery Manual and the CH-46E ANTTP series publications.

Performance Standards. Demonstrate the ability to employ the XM-218 at a moving target.

Prerequisite. AG-2402.

Ordnance. 500 rounds .50 cal.

External Syllabus Support. Appropriate aerial gunnery range configured with a scored moving target.

SAG-2404 2.0 B WST NS

Goal. Introduce the CCUI/AGUI to NS aerial gunnery procedures.

Requirement

Discuss:
CRM.
ICS procedures.
Safety.
Weapons conditions.
Weapons commands.
Weapons malfunctions/stoppages/emergencies.
Crew served weapons checklist application.
Muzzle awareness.
Weapons preparation/nomenclature.
Effects of NVGs.
LASER aiming devices/procedures.

Introduce:
NS aerial gunnery while firing on pre-briefed targets.

Review:
MAWTS-1 Assault Support Aerial Gunnery Manual and the CH-46E ANTTP series publications.

Performance Standards. Demonstrate the knowledge and ability to conduct NS aerial gunnery.

Prerequisite. SAG-2400.

External Syllabus Support. Crew served aerial gunnery simulator capable of demonstrating NS air-to-ground/air-to-air gunnery. The trainer must be a .50 caliber range with static LASER safe weapons trainer capable of being tied to the pilot simulator.

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

Goal. Introduce NS aerial gunnery.

Requirement

Discuss:
- CRM.
- ICS procedures.
- Safety.
- Weapons conditions.
- Weapons commands.
- Weapons malfunctions/stoppages/emergencies.
- Crew served weapons checklist application.
- Muzzle awareness.
- Weapons preparation/nomenclature.
- Effects while utilizing NVGs.
- LASER aiming devices/procedures.

Introduce:
- NS weapons employment techniques.
- Firing on pre-briefed targets while wearing NVGs.
- LASER operations and considerations.

Review:
- MAWTS-1 Aerial Gunnery Manual, MAWTS-1 NVD Manual and the ANTTP series publications.

Performance Standards. Demonstrate knowledge of the cycle of operation, nomenclature, employment of the XM-218 .50 cal machine gun. Demonstrate the ability to fire at pre-briefed targets while utilizing NVGs and hit the target.

Prerequisite. AG-2403 and SAG-2404.

Ordnance. 500 rounds .50 cal, LASER aiming device with mount.

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

AG-2406 1.5 365 B,R 2 CH-46E A NS

Goal. Demonstrate proficiency with NS aerial gunnery in a multi-aircraft flight. This is the aerial gunner evaluation/review flight.

Requirement

Evaluate/Review:
- ICS procedures.
- Safety.
- Weapons conditions.
- Weapons commands.

Weapons malfunctions/stoppages/emergencies.
Crew served weapons checklist application.
Muzzle awareness.
Weapons preparation/nomenclature.
Effects while utilizing NVGs.
LASER aiming devices/procedures.

Introduce:
Firing on pre-briefed targets while aircraft is maneuvering; e.g. running and hover fires (while wearing NVGs).

Review:
AG-2405.

Performance Standards. Demonstrate knowledge of ballistics, the cycle of operation, nomenclature and employment of the XM-218 .50 cal machine gun. Demonstrate the ability to fire at pre-briefed targets while utilizing NVGs and a LASER aiming device to hit the target.

Prerequisite. AG-2405.

Ordnance. 500 rounds .50 cal, LASER aiming device with mount.

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

6. Tail Gunnery (TG)

a. Purpose. To conduct tail gunnery training utilizing the M240 7.62mm machine gun.

b. General

(1) Successful completion of AG-2411 constitutes Tail Gunnery Qualification (TGQ). A qualification letter signed by the commanding officer stating the CCUI/AGOUI is TGQ is required. The original shall be placed in the CCUI/AGOUI's NATOPS jacket and APR with a corresponding logbook entry.

(2) Unqualified individuals (Tail Gunners Under Instruction (TGUIs)) shall be supervised by a TGI.

(3) Individuals shall be NSQ for the appropriate light level condition. AGQ is a prerequisite for TG-2410.

(4) LASER aiming devices are required for TG-2411.

(5) Tail gunnery introductory lectures and initial instructional flights shall be conducted by a TGI.

(6) Completion of the entire AG stage cannot be waived or deferred.

c. Crew Requirement. TG-2410 CC/AGO/TG or CC/TGI/TGUI; TG-2411 CC/AGO/TG or CC/AGO/TGI/TGUI.

d. Ground/Academic Training. Utilize the academic courseware as outlined in the MAWTS-1 CH-46E Course Catalog.

e. Prerequisites. The following events/designations are prerequisites prior to the commencement of the (TG) stage:

EVENT TYPE	T&R CODE / QUALIFICATION PREREQUISITES
ACADEMIC	ACAD-2062
FLIGHT	AG-2406
QUALIFICATION	AGQ

TG-2410 1.5 365 B,R 1+CH-46E A D

Goal. Introduce day tail gunnery utilizing the M240 7.62mm machine gun from the ramp to provide rear defensive fires.

Requirement

Discuss:
- CRM.
- ICS procedures.
- Safety.
- Weapons conditions.
- Weapons commands.
- Weapons malfunctions/stoppages/emergencies.
- Crew served weapons checklist application.
- RMWS nomenclature/preparation.
- Muzzle awareness.
- Emergency egress procedures.
- Section tactics.

Introduce:
- Tail gunnery employment techniques.
- Firing on pre-briefed targets.
- Preparation of weapons and aircraft.

Review: MAWTS-1 Aerial Gunnery Manual and the ANTTP series publications.

Performance Standards. Demonstrate knowledge of the cycle of operation, nomenclature, employment of the M240 7.62mm machine gun while fired from the ramp. Demonstrate the ability to engage pre-briefed targets in either the Dash one or Dash two position.

Prerequisites. Aerial Gunnery Qualification (AGQ), ACAD-2062.

Ordnance. 1000 rounds 7.62mm.

External Syllabus Support. Authorized aerial gunnery range.

TG-2411 1.5 365 B,R,E 1+CH-46E A NS

Goal. Introduce NS tail gunnery utilizing the M240 7.62mm machine gun with LASER and mount from the ramp to provide rear defensive fires. This is the tail gunnery evaluation flight.

Requirement

Discuss:
- CRM.
- ICS procedures.
- Safety.
- Weapons conditions.
- Weapons commands.
- Weapons malfunctions/stoppages/emergencies.
- Crew served weapons checklist application.
- Muzzle awareness.
- RMWS preparation/nomenclature.
- Emergency egress procedures.
- LASER aiming devices/procedures.
- NS operations and emergency procedures.
- Section tactics.

Introduce:
- NS tail gunnery weapons employment techniques.
- Firing on pre-briefed targets from the ramp.
- LASER aiming device utilized on the M240.
- Sectors of fire.
- Weapon effects on NVGs.

Review:
- TG-2410.

Performance Standards. Demonstrate knowledge of the cycle of operation, nomenclature, employment of the M240 7.62mm machine gun while fired from the ramp. Demonstrate the ability to engage pre-briefed targets while utilizing NVGs and LASER aiming devices in any position within the flight.

Prerequisites. TG-2410, NS-2607 HLL, NS-2654 LLL.

Ordnance. 1000 rounds 7.62mm, LASER aiming device with mount.

External Syllabus Support. LASER authorized aerial gunnery range.

7. Tactics (TAC) Low and Medium Threat

a. Purpose. To introduce and develop proficiency in the execution of assault support operations in the following mission areas in a low and medium threat environment.

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

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

(3) Combat Assault Transport (MCT 1.3.4.1).

(4) Air Delivery (MCT 4.3.4).

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

(6) Air Evacuation (MCT 6.2.2).

b. General

(1) CCUI/AGOUI shall attend the mission brief.

(2) Squadron ordnance shall mount XM-218 machine guns and should mount M240 machine guns for all tactical flights. Every attempt should be made to expend the required ordnance, however, this should not restrict the completion of the event.

(3) CCUI/AGOUI should be AGQ prior to beginning this stage.

(4) CCUI/AGOUI should be NSQ for the light level being flown.

(5) If CCUI/AGOUI attains TAC flights prior to being AGQ or NSQ he/she shall fly TAC codes with a WTI until AGQ or NSQ is attained.

(6) Aircrews shall discuss CRM as applicable to each event.

(7) Enlisted WTIs should be required for initial flights if CCUI/AGOUI is not AGQ he/she shall fly with a AGI. IF he/she is not NSQ for NSTAC he/she shall fly with a NSI/AGI.

c. Crew Requirement. CC/AGO, CCI/CCUI, CC/AGO/TG or CCI/AGOUI.

d. Ground/Academic Training. Utilize the academic courseware as outlined in the MAWTS-1 CH-46E Course Catalog.

e. Prerequisites. The following events/designations are prerequisites prior to the commencement of the (TAC) stage:

EVENT TYPE	T&R CODE / QUALIIFICATION PREREQUISITES
ACADEMIC	ACAD-2015, ACAD-2016, ACAD-2017, ACAD-2026,ACAD-2028, ACAD-2061
FLIGHT	CAL-2203,GTR-2801
QUALIFICATION	TERFQ

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:
Cabin preparation.
CRM during an assault support mission.
Crew comfort level.

Flight counter-tactics for air and ground threats.
ASE utilization.
Escort considerations.
CBRN considerations.
TERF considerations.
Aerial gunnery procedures.
EMCON procedures
Passenger brief and safety regulations.
Loading/unloading of passengers and/or internal/external cargo.
ICS procedures.
Lookout doctrine.
Penetration checklist.
Rules of engagement.

Introduce:
Multi-plane aerial gunnery in an objective area/LZ.
Aircrew responsibilities during tactical insert/extract of troops and/or cargo.
Tactical formations and approaches.

Review:
A1-H46AE-CLG-000 Cargo Loading Manual. Navigation, timing, formation, defensive weaponry, communication discipline, authentication procedures, escort utilization, and weapons control procedures.

Performance Standards. Demonstrate the ability to perform crew responsibilities in a day low or medium threat environment.

Prerequisite. CAL-2203, TERF qualified, GTR-2801, ACAD-2015, ACAD-2016, ACAD-2017, ACAD-2026, ACAD-2028, ACAD-2061.

Ordnance. 500 rounds .50 cal, 400 rounds 7.62.

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, (live fire range preferred).

TAC-2502 1.5 180 B 2+ ACFT A NS

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

Requirement

Discuss:
Cabin preparation.
CRM during an assault support mission.
Crew comfort level.
Flight counter-tactics for air and ground threats.
ASE utilization.
Escort considerations.
CBRN considerations.
TERF considerations.
Aerial gunnery procedures utilizing LASER aiming devices.

EMCON procedures
Passenger brief and safety regulations.
Loading/unloading of passengers and/or internal/external cargo.
ICS procedures.
Lookout doctrine.
Penetration checklist.
Rules of engagement.
NVG operations and emergency procedures.

Introduce:
Aircrew responsibilities during NS tactical insert/extract of troops and/or cargo. Tactical assault support mission at night using NS.
Escort aircraft utilization if available.
Multi-aircraft NS aerial gunnery in an objective area.
Tactical aircraft lighting.

Performance Standards. Demonstrate ability to perform crew responsibilities during NS operations in a low/medium threat environment.

Prerequisite. TAC-2501, NS-2607 HLL, NS-2654 LLL

Ordnance. 500 rounds .50 cal, 400 rounds 7.62, LASER with mounts.

Range requirements. Appropriate LASER authorized aerial gunnery range equipped with multiple scored static/moving targets ranging from personnel to APC size.

External Syllabus Support. Authorized TERF area, CAL site (live fire range preferred).

8. Night Systems (NS), High Light Level (HLL)

a. Purpose. To develop skill in the use of NS under light levels greater than or equal to .0022 LUX (HLL) as predicted by the computer generated light level calendar and to qualify the CCUI/AGOUI in NS HLL operations.

b. General

(1) All initial and Refresher flights require a Night Systems Instructor (NSI).

(2) Successful completion of NS-2607 constitutes Night Systems Qualified (NSQ HLL). A qualification letter, signed by the commanding officer stating the CCUI/AGOUI is NSQ HLL is required to be qualified to carry troops under HLL conditions. The original shall be placed in the CCUI/AGOUI's NATOPS jacket, and a copy in his APR with a corresponding logbook entry.

c. Crew Requirement. CC/AGO, NSI/CCUI or NSI/AGOUI.

d. Ground/Academic Training. Prior to beginning this stage, the CCUI or AGOUI shall be presented the courses listed in the MAWTS-1 CH-46E course catalog.

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

EVENT TYPE	T&R CODE / QUALIFICATION PREREQUISITES
ACADEMIC	ACAD-2052
FLIGHT	CAL-2201
QUALIFICATION	NONE

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

Goal. Introduce NS single aircraft CALs in HLL.

Requirement

Discuss:
- CRM.
- Crew comfort levels.
- NVG use and limitations.
- NVG failures.
- Emergencies.
- Inadvertent IMC.
- Aircraft lighting.
- Light discipline
- Use of IR searchlight.
- Depth perception.
- Obstacle clearance.

Introduce:
- CALs at various unlit CAL sites.

Review:
- CAL-2201.

Performance Standards. Utilizing NVGs, demonstrate the ability to clear the aircraft for landing into confined areas while recognizing closure rate, drift error and effectively utilizing proper distance estimation and depth perception.

Prerequisite. CAL-2201.

External Syllabus Support. Landing zones.

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

Goal. Conduct NS formation flight in HLL.

Requirement

Discuss:
- CRM.
- Crew comfort levels.
- Lead changes.
- Aircraft lighting.
- Closure rate.
- Distance estimation.
- NVG procedures and emergencies.
- Relative motion and depth perception problems at night.
- Lookout doctrine.

Introduce:
NS formation flight.

Review:
FORM-2301 NS-2601.

Performance Standards. Demonstrate the ability to conduct formation flight while utilizing NVGs.

Prerequisite. FORM-2301 and NS-2601.

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

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

Requirement

Discuss:
CRM.
Crew comfort levels.
NVG navigation techniques.
NVG failures.
Emergencies.
Inadvertent IMC.
Aircraft lighting.
Use of IR searchlight.
Depth perception.
Obstacle clearance.

Review:
Section takeoffs/landings at various unlit CAL sites.

Performance Standards. Utilizing NVGs, demonstrate the ability to clear the aircraft for landing into confined areas while recognizing closure rate, drift error and effectively utilizing proper distance estimation and depth perception. Maintain SA of wingman throughout the evolution.

Prerequisite. CAL-2202 and NS-2602.

External Syllabus Support. Landing zones that accommodate multiple aircraft.

NS-2604 1.5 * B 3+ ACFT A NS

Goal. Conduct NS HLL division formation and CALs.

Requirement

Discuss:
CRM.
Crew comfort levels.
NVG division takeoffs and landings.
NVG formation techniques.
Inadvertent IMC.
Obstacle clearance.
Lookout doctrine.
Standard terminology.

Introduce:
NS division CALs.

Review:
NS-2603 and TERF-2303.

Performance Standards. Utilizing NVGs, demonstrate the ability to clear the aircraft for landing into confined areas while recognizing closure rate, drift error and effectively utilizing proper distance estimation and depth perception. Maintain SA of the division throughout the evolution.

Prerequisites. NS-2603, TERFQ, CAL-2203.

External Syllabus Support. Landing zones that accommodates multiple aircraft.

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

Goal. Conduct NS HLL TERF navigation.

Requirement

Discuss:
CRM.
Crew comfort levels.
Obstacle clearance.
Lookout doctrine.
NS navigation techniques.
Emergencies during low level operations.
Introduce:
NS TERF NAV procedures.

Review:
Map orientation and NS navigation techniques.
Navigation along a predetermined route of at least 5 checkpoints remaining oriented along the route.

Performance Standards. While using terrain recognition, demonstrate the ability to assist the pilots in navigation to a minimum of 5 checkpoints, remaining oriented on the route while utilizing NVGs.

Prerequisite. TERF qualified and NS-2601.

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

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

Goal. Conduct NS HLL TERF formation flight.

Requirement

Discuss:
Crew comfort levels.
CRM.
NS navigation techniques.
NS formation techniques.
Emergency procedures during night low level operations.

NVG failures.
Inadvertent IMC.
Lookout doctrine.

Introduce:
NS TERF navigation.

Review:
NS formation techniques to include cruise principles, crossovers, breakup and rendezvous and lead changes.
NS navigation techniques.

Performance Standards. Utilizing terrain recognition, demonstrate the ability to assist the pilots in navigation of a minimum of 5 checkpoints at or below 200’ AGL remaining oriented on route while utilizing NVGs.

Prerequisite. TERF qualified NS-2602 and 2605.

External Syllabus Support. NS TERF route (restricted area preferred).

NS-2607 1.5 180 B,R 2 CH-46E A NS

Goal. Conduct/evaluate NS HLL TERF formation, navigation, and section CALs. This is the NS HLL evaluation flight for qualification as HLL NSQ.

Requirement

Discuss:
CRM.
Crew comfort levels.
Tactical formations.
NVG procedures and emergencies.
Aircraft lighting.
NS navigation techniques.
Low altitude emergencies.
Inadvertent IMC.
NVG considerations.

Performance Standards. Demonstrate the ability to conduct NS HLL TERF, navigation, formation flight, and CALS.

Prerequisite. NS-2604 and 2606.

External Syllabus Support. NS landing zones and approved TERF route (special use airspace preferred).

9. Night Systems (NS), Low Light Level (LLL)

a. Purpose. To qualify the CCUI/AGOUI in NS LLL flight operations.

b. General

(1) Successful completion of NS-2654 constitutes NSQ LLL. A qualification letter signed by the commanding officer stating the CCUI/AGOUI is NSQ LLL is required to carry troops under any ambient light level condition. The original shall be placed in the CCUI/AGOUI’s NATOPS jacket and APR with a corresponding logbook entry.

(2) All initial/Rrefresher flights require an NSI.

(3) Aircrew shall fly all events in light levels less than .0022 lux.

c. Crew Requirement. CC/AGO, NSI/CCUI or NSI/AGOUI.

d. Ground/Academic Training. Prior to beginning this stage, the CCUI or AGOUI shall be presented the courses and complete the required readings listed in the MAWTS-1 CH-46E Course Catalog.

e. Prerequisites. The following events/designations are prerequisites prior to the commencement of the (NS LLL) stage:

EVENT TYPE	T&R CODE / QUALIFICATION PREREQUISITES
ACADEMIC	NONE
FLIGHT	NS-2607
QUALIFICATION	NSQ HLL

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

Goal. Introduce single aircraft NS LLL CALs.

Requirement

Discuss:
CRM.
Crew comfort levels.
NS failures.
Emergencies.
Inadvertent IMC.
Aircraft lighting.
Distance estimation.
Depth perception.
Effects of LLL environment on NVGs.
Wave off/brownout procedures.

Introduce:
Confined area takeoffs and landings at various unlit CAL sites under LLL conditions.

Review:
NS-2601.

Performance Standards. Demonstrate the ability to clear the aircraft for landing into confined areas while recognizing closure rate, drift error and effectively utilizing proper distance estimation and depth perception.

Prerequisite. NSQ HLL.

External Syllabus Support. CAL site.

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

Goal. Introduce NS LLL section CALs.

Requirement

Discuss:
CRM.
Crew comfort levels.
NS navigation techniques.
NS failures.
Emergencies.
Inadvertent IMC.
Aircraft lighting.
Depth perception.
Distance estimation.
Wingman position.
Wave off/brownout procedures.

Introduce:
LLL section CALS.

Review:
Section takeoffs and landings at various unlit CAL sites.

Performance Standards. Demonstrate the ability to clear the aircraft for landing into confined areas while recognizing closure rate, drift error and effectively utilizing proper distance estimation and depth perception. Maintain SA of the wingman throughout the evolution.

Prerequisite. NS-2651.

External Syllabus Support. CAL site.

NS-2653 1.5 180 B,R 3+ ACFT A NS

Goal. Conduct NS LLL formation and division CALs.

Requirement

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

Introduce:
NS LLL formation.
NS LLL division CALs.

Review:
NS-2604.

Performance Standards. Demonstrate the ability to clear the aircraft for landing into confined areas while recognizing closure rate, drift error and effectively utilizing proper distance estimation and depth perception. Maintain SA of the division throughout the evolution.

Prerequisite. NS-2652.

External Syllabus Support. CAL sites.

NS-2654 1.5 180 B,R 2 CH-46E A NS

Goal. Conduct NS LLL TERF formation, navigation and section CALS. This flight is the NS LLL evaluation flight for qualification as LLL NSQ.

Requirement

Discuss:
- CRM.
- Crew comfort levels.
- Obstacle clearance.
- Lookout doctrine.
- NS navigation techniques.
- Emergencies during low level operations.
- Depth perception.
- Distance estimation.
- Wave off/brownout procedures.

Introduce:
- LLL TERF navigation.

Review:
- Map preparation, orientation, and NS navigation techniques.
- Navigation along a predetermined route of at least 5 checkpoints remaining oriented along the route.
- Aircraft operations in a LLL environment.

Performance Standards. Demonstrate the ability to conduct NS section TERF, NAV, CALs and formation flight in a LLL environment.

Prerequisite. NS-2653.

External Syllabus Support. CAL site and approved NS navigation route.

10. External Cargo Operations (EXT)

a. Purpose. To introduce external cargo operations in confined areas with Helicopter Support Team (HST) close coordination and develop proficiency with day and Night Systems (NS) external cargo operations.

b. General

(1) At the completion of this stage, the CCUI/AGOUI will be able to demonstrate the ability to assist the pilot in day and NS external cargo operations from a confined area. CRM shall be discussed as applicable to each event.

(2) Aircrew shall be NSQ for the appropriate light level for flights conducted on NVGs.

c. Crew Requirement

(1) EXT-2701 requires CC/AGO, CCI/CCUI/AGO, CCI/AGOUI/AGO.

(2) EXT-2703 required CC/AGO, NSI/CCUI/AGO, NSI/AGOUI/AGO.

d. Ground/Academic Training. Prior to beginning this stage, the CCUI or AGOUI shall be presented the courses listed in the MAWTS-1 CH-46E course catalog.

e. Prerequisites. FAM-2101.

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

Goal. Conduct day external operations to a confined area.

Requirement

Discuss:
- CRM.
- Communication procedures.
- Aircraft emergencies during external operations.
- Load jettison procedures.
- Capabilities and limitations of the hook.
- External cargo hook preparation.
- Standard terminology.
- Lost communication procedures/hand signals.
- Cargo hook and pendant pre-flight IAW A1-H46AE-NFM-900.

Introduce:
- HST procedures.

Performance Standards. Demonstrate the ability to give commands to the pilot at the controls of the aircraft to effect hookup and delivery of the load to within 15 feet of intended point of delivery with minimal difficulty utilizing standard terminology while maintaining obstacle clearance. Successful completion of EXT-2701 requires a minimum of five hookups and drops.

Prerequisite. CAL-2201.

External Syllabus Support. HST, external load, and pickup/drop zone.

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

Goal. Introduce and conduct NS External operations.

Requirement

Discuss:
- CRM.
- Crew comfort levels.
- ICS failure/hand and arm signals.
- Low altitude emergencies.
- Cargo release procedures.
- Cargo hook/pendant illumination.
- Depth perception/rate of descent.
- HST procedures.
- NVG procedures/emergencies.
- Waveoff.

Introduce:
- NS external operations.

Review:
Drift corrections, standard terminology, Lookout procedures during takeoffs, precision approaches, and deliveries with external cargo while utilizing NVGs.

Performance Standards. While utilizing NVGs, demonstrate the ability to give commands to the pilot at the controls of the aircraft to effect hookup and delivery of the load to within 15 feet of intended point of delivery with minimal difficulty, utilizing standard terminology, while maintaining obstacle clearance. Successful completion of EXT-2703 requires a minimum of five hookups and drops.

Prerequisite. EXT-2701, NSQ for the appropriate light level.

External Syllabus Support. Single point load (1,000-4,000 pounds preferred) and HST.

11. Helicopter Insertion/Extraction (HIE)

a. Purpose. To develop proficiency in HIE procedures.

b. General

(1) Pilot, copilot, crew chief, HRST Master and HRST Safety Observer shall brief together prior to commencing fast rope, and rappelling.

(2) The HRST Master is responsible for the safe and proper rigging of the aircraft for conduct of Fast Rope and rappel. The crew chief shall preflight aircraft rigging.

(3) ICS cranials/gunner's belts required for HRST Master.

(4) Aircrew shall be NSQ for flights conducted on NVGs.

c. Crew Requirement

(1) HIE-2705 requires CC/AGO, CC/CCUI/AGO, or CC/AGOUI/AGO.

(2) HIE-2706 requires CC/AGO, NSI/CCUI/AGO, or NSI/AGOUI/AGO.

d. Ground/Academic Training. Utilize the academic courseware as outlined in the MAWTS-1 CH-46E Course Catalog.

e. Prerequisites. The following events/designations are prerequisites prior to the commencement of the (HIE) stage:

EVENT TYPE	T&R CODE / QUALIFICATION PREREQUISITES
ACADEMIC	ACAD-2060
FLIGHT	FAM-2101
QUALIFICATION	NSQ FOR THE APPROPRIATE LIGHT LEVEL

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

Goal. Conduct day airborne insertion/extraction (fast rope and rappel) procedures.

Requirement

Discuss:
HIGE/HOGE requirements.
CRM (pilots, crew chief, HRST master, and safety observer brief together).
ICS procedures and standard terminology.
ICS failure/hand and arm signals.
Current Force Order/Wing SOP.
Obstacle clearance and waveoff.
Emergency procedures.
Lookout doctrine.
Weapons employment.

Introduce:
Preflight of the fast rope/rappelling equipment and rigging.
Assisting the pilot in maintaining an extended hover.
Troop insertion via fast rope/rappelling.
Hand and arm signals.

Review:
Fast rope and rappel procedures.

Performance Standards. Demonstrate the knowledge and ability to conduct day fast rope/rappelling.

Prerequisite. EXT-2701.

External Syllabus Support. Applicable HIE support equipment.

HIE-2706 1.5 365 B 1 CH-46E A NS

Goal. Introduce NS fast rope and rappel procedures.

Requirement

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

Introduce:
NS fast rope and rappel procedures.

Review:
Preflight of associated equipment and rigging.
Skills involved for holding an extended hover.
Troop insertion/extraction techniques.

Performance Standards. Demonstrate knowledge and ability to conduct NS fast rope/rappelling.

Prerequisite. EXT-2703, HIE-2705.

External Syllabus Support. Applicable HIE support equipment.

HIE-2707 1.5 365 B,R 1 CH-46E A (NS)

Goal. Introduce day or NS aerial delivery procedures.

Requirement

Discuss:
CRM.
Standard terminology.
Tactical considerations for aerial delivery of troops/cargo.
Proper rigging and preflight of equipment for aerial delivery.
ParaOp procedures.
Sensor drop procedures.
ICS procedures.
Emergency procedures.
Movement within aircraft cabin.

Introduce:
ParaOp or sensor drop operations.

Review:
ParaOp or sensor drop procedures.

Performance Standards. Demonstrate the ability to conduct aerial delivery.

Prerequisites. FAM-2101, NSQ for the appropriate light level if flown at night.

External Syllabus Support. Certified DZ, Jumpmaster and Safety Observers.

12. Ground Threat Reaction (GTR)

a. 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.

b. General

(1) Conduct GTR-2801 against simulated surface to air fires (Smokey SAMS, MADSS, Malina/BARC, hand-held pyrotechnics, etc).

(2) Refer to the ANTTP series publications for additional information and the GTR Program Guide for GTR training standards.

(3) .50 cal machine guns shall be mounted for all GTR flights. M240 Ramp Mounted Weapon system (RMWS) may be employed in accordance with NATOPS.

(4) GTR flights shall be conducted no lower than 50ft.

(5) Enlisted Aircrew instructors shall not have lookout duties during initial training events.

(6) All initial flights shall be conducted during the daytime and require a GTR-proficient WTI or AGI.

(a) CCUI/AGOUI should be AGQ prior to GTR-2801.

(b) If a CCUI/AGOUI attains the GTR-2801 prior to being designated AGQ he/she shall fly GTR-2801 with an AGI or WTI until he/she is designated AGQ.

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

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

c. Minimum Crew Requirements. CC/AGO, CC/AGO/TG, WTI or AGI/CCUI/AGO, WTI or AGI/CC/AGOUI.

d. Ground/Academic Training. Utilize the academic courseware as outlined in the MAWTS-1 Course Catalog and Ground Threat reaction (GTR) Program Guide. Additional training should consist of:

(1) Current theater specific ROE training from a Staff Judge Advocate.

(2) Enemy situation to include threat systems and related tactics.

e. Prerequisites. The following events/designations are prerequisites prior to the commencement of the (GTR) stage:

EVENT TYPE	T&R CODE / QUALIFICATION PREREQUISITES
ACADEMIC	ACAD-2018, ACAD-2019, ACAD-2020, ACAD-2057 ACAD-2058, ACAD-2059
FLIGHT	FORM-2301, AG-2403
QUALIFICATION	TERFQ

GTR-2801 1.5 365 B,R 2 CH-46E A (NS)

Goal. Introduce ground threat reaction in a non-RADAR environment.

Requirement

Discuss:
- CRM/inter-flight coordination.
- Crew comfort level.
- Lookout doctrine.
- Situational awareness.
- Use of ALE-47, APR-39, ALQ-157, and AAR-47 and ASE Go/No-Go procedures.
- Use of terrain masking, maneuver, IR jammers, and flares to defeat threat IR missiles.
- Tactical expendables.
- Various threat signatures with emphasis on threat recognition.
- Tactical employment of .50 cal weapon system/RMWS against ground threats.
- Aerial gunnery, POO, ROE, PID, and engagement criteria.
- Intra aircraft communication.

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:
AG-2406.

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-2403, ACAD-2018, ACAD-2019, ACAD-2020, ACAD-2057, ACAD-2058, ACAD-2059.

Ordnance. 120 flares, 400 rnds .50 cal, (RMWS), (500 rnds 7.62mm).

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 division of aircraft.

13. Carrier Qualification (CQ)

a. Purpose. To qualify the CCUI/AGOUI in day and NS FCLPs and train/refresh the crewmember in day and NS shipboard landings.

b. General. Refer to LHA/LPH/LHD NATOPS Manuals and NWP-42 for Shipboard Operations.

(1) An NSI is required for initial/refresher NS FCLP flights and NS CQ flights.

(2) Night CQ Requirements:

(a) For initial/refresher/delinquent:

1 Five day FCLPs.

2 Five NS FCLPs.

3 Five day CQs.

4 Five NS CQs.

(b) Aircrew previously night CQ and proficient shall complete the following to maintain proficiency:

1 Two day FCLPs.

2 Two NS FCLPs.

3 Two day CQs.

4 Two NS CQs.

(3) CQ-2902 may be flown under any light level condition. CCUI/AGOUI must be NSQ for appropriate light level.

(4) Aircrew shall discuss CRM as applicable to each event.

(5) CQ-2904 shall be flown under HLL conditions for initial/Refresher qualification. NSI required for initial/refresher NS flights. Currency and re-qualification flights may be flown under any light level condition.

(6) CC/AGO is CQ on completion of CQ-2904. A qualification letter signed by the commanding officer stating the CCUI/AGOUI is CQ is required. The original shall be placed in the CCUI/AGOUI's NATOPS jacket and APR with a corresponding logbook entry.

(7) CC/AGOs are authorized to carry passengers to and from the ship during daylight hours when proficient in CQ-2903.

(8) CC/AGOs are authorized to carry passengers to and from the ship when proficient and current in CQ-2904 and for the appropriate light level.

c. Crew Requirement

(1) CQ-2901 requires CC/AGO, CCI/CCUI, CCI/AGOUI.

(2) CQ-2902 requires either CC/AGO, NSI/CCUI, or NSI/AGOUI.

(3) CQ-2903 requires CC/AGO, CCI/CCUI, CCI/AGOUI.

(4) CQ-2904 requires either CC/AGO, NSI/CCUI, or NSI/AGOUI.

d. Ground/Academic Training. Review appropriate LHA/LPH/LHD NATOPS Manual and NWP-42 for carrier operations.

e. Prerequisites

EVENT TYPE	T&R CODE / QUALIFICATION PREREQUISITES
ACADEMIC	NONE
FLIGHT	CAL-2201
QUALIFICATION	NSQ FOR APPROPRIATE LIGHT LEVEL

CQ-2901 1.5 365 B,R 1 CH-46E A D

Goal. Conduct day FCLPs.

Requirement

Discuss:
CRM.
Communications.
LSE signals.
Landing direction.
Water landings.
Salt encrustation.

Waveoff.
Crew comfort levels.
Lookout doctrine.

Introduce:
Day FCLP patterns, approaches, landings, and emergency procedures peculiar to shipboard operations and use LSE signals if available.

Review:
Appropriate LHA/LPH/LHD NATOPS Manual and NWP-42 for carrier operations.

Performance Standards. Demonstrate the ability/knowledge to perform shipboard flight operations to include LSE hand and arm signals.

Prerequisite. CAL-2201.

External Syllabus Support. Approved FCLP pad.

CQ-2902 1.5 365 B,R 1 CH-46E A NS

Goal. Introduce NS FCLP patterns.

Requirement

Discuss:
CRM.
Communications.
LSE signals.
Aircraft lighting.
Wave off.
Crew comfort levels.
Lookout doctrine.
NVG procedures/operations.

Introduce:
NS FCLP patterns, approaches, landings, and emergency procedures peculiar to shipboard operations. Use LSE light signals if available.

Review:
CQ-2901.

Performance Standards. Demonstrate the ability/knowledge to perform NS shipboard flight operations to include LSE hand and arm signals and be able to assist the pilot to land within 3 feet of intended point of landing.

Prerequisite. NSQ for the appropriate light level and CQ-2901.

External Syllabus Support. Approved FCLP pad.

CQ-2903 1.5 365 B,R 1 CH-46E A D

Goal. Conduct day CQ.

Requirement

Discuss:
- CRM.
- Communications.
- LSE signals.
- Shipboard procedures.
- Wave off.
- Crew comfort levels.
- Lookout Doctrine.
- Emergency procedures during shipboard operations.

Introduce:
- Day carrier landing procedures.

Review:
- Day FCLP patterns.
- Approaches.
- Landings.
- Emergency procedures specific to shipboard operations.

Performance Standards. Demonstrate the ability/knowledge to perform shipboard flight operations to include LSE hand and arm signals and be able to assist the pilot to land within 3 feet of intended point of landing.

Prerequisite. CQ-2901.

External Syllabus Support. Air capable ship deck.

CQ-2904 1.5 365 B,R 1 CH-46E A NS

Goal. Conduct NS CQ. This is the carrier qualification evaluation flight for qualification as CQ.

Requirement

Discuss:
- CRM.
- Communications.
- LSE signals.
- NS procedures/operations.
- Aircraft lighting.
- Shipboard lighting.
- Wave off.
- Crew comfort levels.
- Lookout doctrine.

Introduce:
- NS carrier landings.

Review:
- NS FCLP patterns, approaches, landings, and emergency procedures specific to shipboard operations.

Performance Standards. Demonstrate the ability/knowledge to perform NS shipboard flight operations to include LSE hand and arm signals and be able to assist the pilot to land within 3 feet of intended point of landing.

Prerequisite. CQ-2902 and CQ-2903.

External Syllabus Support. NS capable ship deck.

314. MISSION SKILL PHASE (3000)

1. Purpose

a. 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 the squadron's ability to perform its assigned missions in preparation for a deployment, during peacetime training, or while executing military operations.

b. 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 CC/AGOs proficiency in Mission Skills.

2. The focus of this phase is on the following mission areas.

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. General

a. Attainment of proficiency in Aviation Operations From Expeditionary Sea-Based Sites and Expeditionary Shore-Based Sites are not specific flight events.

b. Currency and proficiency in specific Core Skill flight and academic events by individual CC/AGOs over a certain threshold constitutes overall squadron currency and/or proficiency in these two Mission Skills. If the requisite number of squadron CC/AGOs 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 CC/AGO 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	NONE	FAM-2101, CAL-2203 FORM-2301, TERF-2305 AG-2407, NS-2607 NS-2654, CQ-2904	=	3101
EXP	NONE	FAM-2101, CAL-2203 FORM-2301, TERF-2305 AG-2407, NS-2607 NS-2654	=	3102

c. 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.

d. CCUIs shall be NSQ for the appropriate light level. AGOUIs shall be NSQ (LLL) before beginning the Mission Skill phase.

e. CCUI/AGOUIs shall be AGQ before beginning the Mission Skill phase.

f. Squadron ordnance shall mount .50 cal machine guns and should utilize the RMWS for all Mission Skill flights. Every attempt should be made to expend ordnance, however this should not restrict the completion of this event.

g. AT-3103 through AE-3107 constitute specific flight events.

h. Aircrew shall discuss CRM as applicable to each event.

i. Each Mission Skill T&R code shall be individually logged for each CC/AGO upon the completion of the respective event (except SEA-3101 and EXP-3102).

j. Mission Skill T&R codes can be combined in the same flight, and may be flown in any order.

k. 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.

l. Other applicable T&R events can be conducted in conjunction with the performance of a Mission Skill event.

m. A flight leader (section or above) flying within the Mission Skill flight event can complete an initial or refresher CCUI/AGOUI for AT-3103 through AE-3107, regardless of whether or not the CCUI/AGOUI is flying with the flight leader.

n. An ATF is required for all initial or full refresher AT-3103 through AE-3107 Mission Skill flight events.

o. Proficiency in AT-3103 through AE-3107 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 CC/AGO from flying on a Mission Skill flight event with another non-proficient CC/AGO.

p. Upon signature of this Manual, CC/AGOs that are current and proficient in TAC-2501 through TAC-2502 may log AT-3103 through AE-3107 without conducting the associated flight event(s), at the discretion of the commanding officer. Any CC/AGO that is in the basic, series conversion, or refresher syllabus that has not attained TAC-2501 through TAC-2502 must complete the flight events listed in paragraph (e).

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-3107, the following is the minimum crew: CC/AGO or CC/AGO/TG.

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 1.5 180 B 2+ ACFT 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 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. CCUI/AGOUIs shall assist pilots in remaining oriented within 500 meters, arrive at LZ or coordinated checkpoint within 30 seconds of briefed plan, land at intended point of landing within 50 meters, 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-3001
FLIGHT	CAL-2203, FORM-2301, TAC-2501, EXT-2701, GTR-2801
QUALIFICATION	TERFQ, AGQ, TGQ IF UTILIZNG RMWS

Ordnance. 500 rounds .50 cal, 400 rounds 7.62.

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. (2) RW Escorts or (2) additional Assault Support aircraft. HST (as applicable), operable ASE, cargo hook/pendant (as applicable).

AT-3104 1.5 180 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 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. CCUI/AGOUIs shall assist pilots in remaining oriented within 500 meters, arrive at LZ or coordinated checkpoint within 30 seconds of briefed plan, land at intended point of landing within 50 meters, 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-3001
FLIGHT	TAC-2502, EXT-2703, GTR-2801
QUAL	TERFQ, NSQ FOR THE APPROPRIATE LIGHT LEVEL, AGQ, TGQ IF UTILIZING RMWS

Ordnance. 500 rounds .50 cal, 400 rounds 7.62.

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. (2) RW Escorts or (2) additional Assault Support aircraft. HST (as applicable), operable ASE, cargo hook/pendant (as applicable).

AD-3105 1.5 365 B,R 2+ ACFT A (NS)

Goal. Conduct day or night systems aerial delivery 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. If AD-3105 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 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. CCUI/AGOUIs shall assist pilots with the aerial delivery profile within 50 feet and 10 kts of briefed altitude and airspeed, utilizing established pattern checkpoints, recognize proper closure to insertion point, remain oriented on insertion point/drop zone, demonstrate proper crew resource management/voice commands, and maintain SA of obstacle clearance.

Prerequisites

EVENT TYPE	T&R CODE / QUAL PREREQUISITES
ACADEMIC	NONE
FLIGHT	TAC-2501,TAC-2502(IF FLOWN AT NIGHT, NS-2607(IF FLOWN IN HLL), NS-2654 (IF FLOWN IN LLL),EXT-2701, EXT-2703 (IF FLOWN AT NIGHT),HIE-2707
QUALIFICATION	TERFQ, NSQ FOR THE APPROPRIATE LIGHT LEVEL, AGQ, TGQ IF UTILIZING RMWS

Ordnance. Optional.

Range Requirements. Authorized CAL site or drop zone, as applicable, (special use airspace preferred).

External Syllabus Support. Jump Master.

TRAP-3106 1.5 365 B,R 2+ ACFT 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 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. CCUI/AGOUIs shall assist the pilots in remaining oriented within 500 meters, arrive at LZ or coordinated checkpoint within 30 seconds of briefed plan, land at intended point of landing within 50 meters, 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-3000
FLIGHT	CAL-2203,FORM-2301 TAC-2501,TAC-2503(IF FLOWN AT NIGHT) GTR-2801
QUAL	TERFQ, AGQ, NSQ FOR APPROPRIATE LIGHT LEVEL, TGQ IF RMWS IS UTILIZED

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.

AE-3107 1.5 180 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 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. CCUI/AGOUIs shall assist pilots in remaining oriented within 500 meters, arrive at LZ or coordinated checkpoint within 30 seconds of briefed plan, land at intended point of landing within 50 meters, 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-3002, ACAD-3003
FLIGHT	CAL-2203,FORM-2301, TAC-2501, TAC-2502(IF FLOWN AT NIGHT) GTR-2801
QUAL	TERFQ, NSQ FOR THE APPRORIATE LIGHT LEVEL, AGQ, TGQ IF UTILIZING THE RMWS

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.

315. CORE PLUS SKILL PHASE (4000)

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 CCUI/AGOUI to the level required to conduct the assigned flight and/or Mission Skills.

2. General

a. Squadron commanding officers shall give due consideration to the scheduling of experienced Crew Chief Instructors to instruct Core Plus Skill phase flight events.

b. 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 and Nuclear (CBRN)
4	External Cargo Operations (EXT)
5	Ground Threat Reaction (GTR)
6	Tactics (TAC)
7	Helicopter Insertion/Extraction (HIE)
8	Defensive Measures (DM)
9	Carrier Qualification (CQ)

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.

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.

316. CORE PLUS SKILL STAGES (4000)

1. Mountain Area Training (MAT)

a. Purpose. To develop proficiency in mountainous terrain operations.

b. General

(1) 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.

(2) CRM as applicable to MAT operations.

(3) All aircrew shall be NSQ for the appropriate light level being flown.

c. Minimum Crew Requirement. CC/AGO, CCI/CCUI/AGO, or CCI/AGOUI/AGO.

d. Ground Training. Refer to appropriate chapters in the NATOPS Manual for discussion of mountain landing zone characteristics. The MAWTS-1 CH-46E Course Catalog contains the required readings and lectures which shall be completed prior to starting the (MAT) stage.

e. Prerequisites

EVENT TYPE	T&R CODE / QUALIFICATION PREREQUISITES
ACADEMIC	NONE
FLIGHT	CAL-2201
QUALIFICATION	NONE

MAT-4201 1.5 365 B,R 1 CH-46E A D

Goal. Conduct day single ship mountainous terrain operations.

Requirement

Discuss:
CRM.
Standard terminology.
Crew comfort levels.
Landing site evaluation/terrain suitability.
Effects of high altitude on aircraft performance.
Emergency procedures.
Aircraft clearances.
Main mount/pinnacle landing procedures.

Introduce:
- Effects of wind in mountainous terrain.
- Landing on pinnacles.
- Landing on slopes.
- Landing in valleys and canyons.
- Crosswind, upslope, and down slope landings with respect to aircraft clearance.

Review: CAL-2201.

Performance Standards. Demonstrate ability and knowledge of landing in mountainous terrain.

Prerequisite. CAL-2201.

External Syllabus Support. Operating 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:
- CRM.
- Crew comfort levels.
- Communication/standard terminology.
- Multi-aircraft operations.
- Lookout doctrine.
- Landing site evaluation/terrain suitability.
- Effects of high altitude on aircraft performance.
- Emergency procedures.

Introduce:
- Section operations in mountainous terrain.
- Section mountainous area landings.

Review: CAL-2202 and MAT-4201.

Performance Standards. Demonstrate the ability to conduct section landings in mountainous terrain.
Prerequisite. CAL-2202 and MAT-4201.

External Syllabus Support. Operating area that supports multiple aircraft MAT.

MAT-4204 1.5 365 B,R 1 CH-46E A NS

Goal. Introduce NS mountainous area operations.

Requirement

Discuss:
- CRM.
- Crew comfort levels.
- Standard terminology.

Landing site evaluation/terrain suitability.
Aircraft emergencies at night.
NVG failures.
NS navigation techniques.

Introduce:
NS mountainous terrain operations.
NS CALs in mountainous areas.

Review: NS-2601.

Performance Standards. Demonstrate ability to conduct NS MAT.

Prerequisites. MAT-4201, NSQ for the appropriate light level.

External Syllabus Support. Operating area that supports MAT.

2. Confined Area Landings (CAL)

a. Purpose. To develop crew coordination during unaided confined area operations.

b. General. At the completion of this stage, the CCUI/AGOUI will be able to demonstrate the ability to assist the pilots during unaided CALS.

c. Minimum Crew Requirements. CC/AGO, CCI/CCUI or CCI/AGOUI.

d. Prerequisites. The MAWTS-1 CH-46E Course Catalog contains the required readings and classes which shall be completed prior to starting the (CAL) stage.

EVENT TYPE	T&R CODE / DESIGNATION PREREQUISITES
ACADEMIC	NONE
FLIGHT	CAL-2201
QUALIFICATION	NSQ FOR APPRORIATE LIGHT LEVEL

CAL-4202 1.5 365 B,R 1 CH-46E A N*

Goal. Introduce night unaided CALs.

Requirement

Discuss:
CRM.
Obstacle clearance.
Standard terminology.
Distance estimation.
Waveoff/brownout procedures.

Introduce:
Night unaided CALs.
Closure rate while unaided.
Unaided distance estimation.

Review:

Lookout doctrine.
ICS procedures.
Aircraft clearance and terrain suitability.
Night operations.
Aircraft lighting and light discipline.

Performance Standards. Demonstrate aircrew responsibilities during night unaided CALs.

Prerequisite. CAL-2201.

Range Requirements. Approved CAL site.

AWT-4209 1.5 365 B,R 1 CH-46E A (N)

Goal. Introduce 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 considerations.
Cold temperature engine start and rotor engagement considerations.
Physiological effects.

Introduce: Snow landing techniques.

Review: NATOPS Chapter 13.

Performance Standards. Demonstrate ability to conduct aircraft operations in a cold weather environment.

Prerequisite. CAL-2201, NSQ for appropriate light level.

External Syllabus Support. Snow on the ground in the landing zone.

DES-4211 1.5 365 B,R 1 CH-46E A (N)

Goal. Introduce 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.

Physiological effects.

Introduce: Desert landing techniques.

Review: NATOPS Chapter 13.

Performance Standards. Demonstrate ability to conduct aircraft operations in a desert environment.

Prerequisites. CAL-2201, NSQ for appropriate light level.

External Syllabus Support. Desert environment.

3. Chemical, Biological, Radiological and Nuclear (CBRN)

a. Purpose. To develop proficiency with the NAVAIR approved CBRN mask protective assembly during normal and tactical flight operations to include flight operations while wearing NVGs.

b. General

(1) 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 NVGs with the NAVAIR approved CBRN mask.

(2) Initial CBRN-4207 training flight will be flown in HLL conditions. Proficiency flights may be flown in LLL.

(3) NSI required for all initial NS instructional flights.

(4) Aircrew shall be NSQ for the appropriate light level for proficiency flights.

c. Minimum Crew Requirements. CC/AO, CCI/CCUI or CCI/AGOUI.

d. Ground Training

(1) Discuss and review CBRN information contained in NWP 3-22.5-CH-46E.

(2) Discuss AR-5 hookup and operating procedures in the aircraft.

(3) Egress drills with full CBRN protective equipment simulating both overland and overwater emergencies shall be completed prior to CBRN instructional flights.

e. Prerequisites

EVENT TYPE	T&R CODE / DESIGNATION PREREQUISITES
ACADEMIC	NONE
FLIGHT	CAL-2201
QUALIFICATION	NSQ HLL

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 a 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. Demonstrate the ability to perform crew responsibilities in a CBRN environment.

Prerequisites. CAL-2201.

External Syllabus Support. An area suitable to conduct CAL operations.

CBRN-4207 1.0 365 B,R 1 CH-46E A NS

Goal. Conduct NS normal flight operations in a simulated CBRN environment.

Requirement

Discuss:
- CRM in a CBRN environment to include emergency procedures.
- Heliborne operations at night in a CBRN environment.
- NVG failures.
- Limitations of mask pertaining to flight scan and visual acuity.
- Limitations and fatigue factors imposed by CBRN protective equipment.
- Proper mask maintenance and factors which render the mask unserviceable.
- Limitations of NVGs caused by mask affecting scan and visual acuity.
- Limitations and fatigue factors imposed by CBRN protective equipment and NVGs.

Operational capabilities, limitations and compatibility of the NAVAIR approved CBRN mask and NVGs.

Introduce: (with NAVAIR approved CBRN mask and NVGs donned)
Ground operations.
Airfield pattern operations.
CALs.

Demonstrate: Donning, adjustments, and doffing of the NAVAIR approved CBRN mask with NVGs.

Performance Standards. Demonstrate knowledge and ability to perform NS CBRN operations.

Prerequisites. CBRN-4206 and NS-2654, 2607

External Syllabus Support. NS compatible CAL zone.

4. External Cargo Operations (EXT)

a. Purpose. To conduct TERF external cargo operations.

b. General

(1) CRM applicable to external cargo operations.

(2) EXT-4301 requires a TERFI for initial/refresher flight.

(3) At the completion of this stage the CCUI/AGOUI will be able to conduct TERF external operations.

c. Minimum Crew Requirements. CC/AGO, TERFI/CCUI or TERFI/AGOUI.

d. Ground/Academic Training. Utilize academic courseware as outlined in the MAWTS-1 CH-46E Course Catalog which contains the required readings and lectures which shall be completed prior to starting the (EXT) stage.

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.
External cargo hook operations/preparation.
Communication procedures.
Cargo jettison procedures.
Emergencies with external cargo in the TERF environment.
Waveoff procedures.
ICS procedures.
HST requirements.
Tactical considerations during TERF external operations.
Load clearance considerations 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. Complete a minimum of 5 hookup/drops.

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.
- Complete a minimum of 5 dips/water drops.

Review:
- TERF-2303.
- Cargo Loading Manual, A1-H46AE-CLG-000.

Performance Standards. While in the TERF environment, demonstrate the ability to give commands to the pilot at the controls of the aircraft to effect hookup and delivery the load within 15 feet of intended point of delivery with minimal difficulty utilizing standard terminology while maintaining obstacle clearance. If conducting fire bucket operations, water is dropped within 10 feet of intended point of drop.

Prerequisite. EXT-2701 and TERFQ.

External Syllabus Support. Load (1,000-4,000 pounds preferred), appropriate fire bucket equipment, HST, authorized TERF route.

5. Ground Threat Reaction (GTR)

a. 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.

b. General

(1) Conduct GTR-4401 against threat emitters (e.g. SA-8, ZSU 23-4, etc.) and use ground based threat simulation.

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

(3) .50 cal machine guns shall be mounted for all GTR flights. M240 Ramp Mounted Weapon System (RMWS) may be employed in accordance with NATOPS.

(4) Minimum altitude for GTR flights is 50 feet.

(5) Enlisted Aircrew instructors shall not have lookout duties during initial training events.

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

(7) All event participants shall attend the recommended academic training and flight brief. A walkthrough shall be conducted.

(8) CCUI/AGOUI shall be AGQ to conduct GTR-4401.

c. Minimum Crew Requirements. CC/AGO, DMI or WTI/CCUI/AGO, DMI or WTI/CC/AGOUI.

d. Ground Training. Utilize academic courseware as outline in the MAWTS-1 CH-46E Course Catalog and GTR Program Guide. Additional training should consist of:

(1) Current theater specific ROE training from a Staff Judge Advocate.

(2) Enemy situation to include threat systems and related tactics.

e. Prerequisites

EVENT TYPE	T&R CODE / DESIGNATION PREREQUISITES
ACADEMIC	ACAD-2057, ACAD-2058, ACAD-2059,ACAD-4014
FLIGHT	FORM-2301, GTR-2801
QUALIFICATION	TERFQ, AGQ, TGQ IF UTILIZING THE RMWS, NSQ FOR THE APPROPRIATE LIGHT LEVEL

GTR-4401 1.5 365 B,R 2 CH-46E A (NS)

Goal. Introduce ground threat reactions in a radar environment.

Requirement

Discuss:
CRM/inter-flight coordination.
Crew comfort level.
Lookout doctrine.
Situational awareness.
Use of ALE-47, APR-39, ALQ-157, AAR-47, and ASE Go/No-Go criteria.
Use of RADAR horizons, RADAR masking, maneuver, and chaff to defeat threat RADAR systems.
Use of terrain masking, maneuver, and chaff to defeat threat radar missiles.
Tactical expendables.

Various threat signatures with emphasis on threat recognition.
Tactical employment of .50 cal weapon systems/RMWS against ground threats.
Aerial gunnery, POO, ROE, PID, and engagement criteria.
Intra/inter aircraft communication.
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.

Performance Standards. CCUI/AGOUIs 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, GTR-2801, TERF-2305.

Ordnance. 120 flares, 2 x .50 cal weapon systems with 500 rnds .50 cal, (RMWS and 400 rnds 7.62 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 division of aircraft.

6. Tactics (High Threat Environment) (TAC)

a. Purpose. To develop proficiency in tactical execution of assault support operations in the following mission areas in a high threat environment.

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

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

(3) Combat Assault Transport (MCT 1.3.4.1).

(4) Air Delivery (MCT 4.3.4).

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

(6) Air Evacuation (MCT 6.2.2).

b. General

(1) CCUI/AGOUI shall attend the mission brief.

(2) Squadron ordnance shall mount .50 caliber machine guns for all tactical flights. Consideration should be given to utilizing the Ramp Mounted Weapon System (RMWS).

(3) CCUI/AGOUI shall be AG qualified prior to beginning this stage.

(4) CCUI/AGOUI shall be NSQ for the light level being flown.

(5) Aircrews shall discuss CRM as applicable to each event.

c. Minimum Crew Requirement

(1) TAC-4501. CC/AGO, CC/AGO/TG, CCI/CCUI, CCI/AGOUI.

(2) TAC-4502. CC/AGO, CC/AGO/TG, NSI/CCUI, NSI/AGOUI.

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

e. Prerequisites

EVENT TYPE	T&R CODE / QUAL PREREQUISITES
ACADEMIC	NONE
FLIGHT	TAC-2501 GTR-4401
QUALIFICATION	TERFQ, AGQ, TGQ IF UTILIZING THE RMWS, NSQ FOR THE APPROPRIATE LIGHT LEVEL

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.
Aerial gunnery procedures.

CCUI/AGOUI will assist in planning and execute an assault support mission from a mission statement in a high threat environment. The CCUI/AGOUI will assist the pliot in flying 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:
Secure voice and ASE equipment.
Navigation, timing, formation, defensive weaponry, communication discipline, authentication procedures, escort utilization, and weapons control procedures.

Review: TAC-2501.

Performance Standards. Demonstrate knowledge and ability to perform crew responsibilities in a high threat environment.

Prerequisites. GTR-4401 and TAC-2501.

Ordnance. 40 chaff and 80 flares, 500 rounds .50 cal and/or 7.62.

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

External Syllabus Support. As available: live fire (HE preferred), LASER capable, FW/RW Escort/CAS assets, EW Emitter, FW/RW Adversaries, Smokey SAMs.

TAC-4502 1.5 365 B,R 2+ ACFT A NS

Goal. Conduct an NS assault support mission in a high threat environment.

Discuss:
In addition to the TAC-4501 discussion items, discuss NVG operational considerations.

Execute a NS mission similar to TAC-4501. The mission shall be conducted at TERF altitudes.

Emphasize navigation, timing, formation, communication discipline, authentication procedures, escort utilization, and weapons control procedures.

Introduce:
NS high threat tactics.
Review:
TAC-4501.

Performance Standards. Demonstrate knowledge and ability to perform crew responsibilities during NVG operations in a high threat environment.

Prerequisites. TAC-2502 and TAC-4501, 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. Appropriate aerial gunnery range equipped with multiple scored static/moving targets, ranging from personnel to APC size.

External Syllabus Support. As available: live fire (HE preferred), LASER capable, FW/RW Escort/CAS assets, EW Emitter, FW/RW Adversaries and Smokey SAMs.

7. Helicopter Insertion/Extraction Techniques (HIE)

a. Purpose. To conduct and develop proficiency in HIE procedures.

b. General

(1) Pilot, copilot, crew chief, aerial gunner/observer, HRST Master, and HRST Safety Observer shall brief together prior to commencing fastrope, rappelling, and SPIE.

(2) The HRST/Cast Master is responsible for the safe and proper rigging of the aircraft for conduct of HIE operations. CCI shall preflight aircraft rigging.

(3) ICS cranials and gunner's belts are required for HRST Master/Cast Master.

(4) All initial/refresher events shall be conducted as a day evolution.

(5) An NSI is required for initial/refresher NS flights.

(6) Aircrew must be NSQ (appropriate light level) for flights conducted on NVGs.

c. External Syllabus Support. HRST/Cast Master and Safety Observer.

d. Minimum Crew Requirements

(1) HIE-4701/4702/4703 (Day). CC/AGO, CCI/CCUI, CCI/AGOUI.

(2) HIE-4701/4702/4703 (NS). CC/AGO.

e. Ground Training

(1) Review the ANTTP series publications and applicable Force Orders/SOPs.

(2) Review NWP 19-1 series for rescue procedures and MCO 3130 series for Category B SAR Unit procedures.

(3) The MAWTS-1 CH-46E Course Catalog contains the required readings and lectures which shall be completed prior to starting the (HIE) stage.

f. Prerequisites

EVENT TYPE	T&R CODE / QUAL PREREQUISITES
ACADEMIC	ACAD-2060
FLIGHT	FAM-2101
QUALIFICATION	NSQ FOR THE APPROPRIATE LIGHT LEVEL

HIE-4701 1.5 365 B,R 1 CH-46E A (NS)

Goal. Introduce SPIE rig operations.

Requirement

Discuss:
- HIGE/HOGE requirements.
- CRM.
- ICS procedures and standard terminology.
- ICS failure/hand and arm signals.
- Current Force Order/Wing SOP.
- Emergency procedures.
- Obstacle clearance/waveoff.
- Lookout doctrine.
- SPIE from water.
- NVG considerations when conducted at night.

Introduce:
- Inspection of SPIE Rig.
- Troop insertion/extraction via SPIE Rig.

Performance Standards. Demonstrate ability and knowledge to conduct day SPIE operations.

Prerequisite. EXT-2701, EXT-2703 for events conducted at night.

External Syllabus Support. Applicable HIE support equipment, HRST and Safety Observers.

HIE-4702 1.5 365 B,R 1 CH-46E A (NS)

Goal. Introduce helocast/soft duck procedures.

Requirement

Discuss:
- CRM.
- Crew comfort levels.
- Waterfall effect.
- Salt encrustation.
- Ditching procedures.
- Ditching/water landing.

Introduce:
- Helocasting/soft duck procedures.
- Preflight of aircraft, troops and equipment for helo cast or soft duck.

Performance Standards. Demonstrate ability to conduct helocast/soft duck operations.

Prerequisite. TERF-2305 TERFQ, NSQ for the appropriate light level NS-2654 or 2607.

External Syllabus Support. Cast Master and Safety Observers.

HIE-4703 1.5 365 B,R 1 CH-46E A (NS)

Goal. Introduce hoist and rescue procedures for overland/over water operations.

Requirement

Discuss:
CRM.
Crew comfort levels.
Waterfall effect.
Salt encrustation.
Ditching procedures.
SAR equipment.
Emergency procedures.
Cable entanglements/cable cutter.

Introduce:
Rescue procedures.
Internal winch/external hoist rigging.
Hoist procedures for hatch and hell hole.
Use of rescue strop, jungle penetrator, stokes litter and SAR basket.
Emergency procedures including use of Chicago grip, quick splice, and cable cutters
Hand and arm signals used during SAR operations.

Review:
Overwater emergency procedures.
SAR procedures and facilities.

Performance Standards. Demonstrate knowledge and ability to conduct hoisting operations.

Prerequisite. EXT-2701, EXT-2703 if event conducted at night, NSQ for the appropriate light level for events conducted on NVGs.

External Syllabus Support. Operational SAR equipment (as available).

8. Defensive Measures (DM)

a. Purpose. To develop proficiency in tactics and aerial DM used to counter enemy air-to-air threats.

b. General

(1) After successful completion of DM-4801/4802 the CCUI/AGOUI is DM qualified. A qualification letter signed by the commanding officer stating the aircrew is DMQ is required to be placed in the aircrew APR and NATOPS jacket with appropriate logbook entry.

(2) Aircrews shall not conduct DM training unless the following requirements are met:

(a) A proficient DMI is present in the aircraft for all initial flights.

(b) The flight lead must be DM qualified and specifically brief all applicable DM training rules per the ANTTP series publications.

(c) The flight lead briefs any aggressor aircrew per T&R Program Manual, and covers training rules prior to each flight.

(d) DMI shall not have lookout responsibility during DM training.

(3) For helicopter versus helicopter DM, the aggressor aircraft shall be a non-assault helicopter.

(4) XM-218s shall be mounted for all DM flights.

(5) RMWS should be utilized for proficiency DM flights.

c. Minimum Crew Requirement. CC/AGO, CC/AGO/TG, DMI/CCUI/AGO, DMI/CC/AGOUI.

d. Ground Training. Utilize academic courseware as outlined in the MAWTS-1 CH-46E Course Catalog prior to beginning the (DM) stage.

e. Prerequisites

EVENT TYPE	T&R CODE / QUAL PREREQUISITES
ACADEMIC	ACAD-2058, ACAD-4007, ACAD-4008, ACAD-4050, ACAD-4051
FLIGHT	FORM-2301
QUALIFICATION	TERFQ, AGQ, TGQ IF UTILIZING THE RMWS

DM-4801 1.5 365 B,R 2 CH-46E A VS 1 RW AGGRESSOR D

Goal. Introduce DM against a RW aggressor.

Requirement

Discuss:
CRM/Inter-flight coordination.
Crew comfort level.
Lookout doctrine.
Standard terminology.
Situational Awareness.
DM training rules.
Closure rate, radius of turn, and energy state.
RW weapons parameters 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. Aircrew shall meet learning objectives as established by the ANTTP series publications, demonstrate effective 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 aircraft communication, understanding of mutual supportability, recognize closure rate, maintain energy state, utilize proper terminology, utilize effective 360 degree lookout doctrine, demonstrate proper threat calls, proper utilization of onboard defensive systems, understanding of threat weapons capabilities and appropriate flight response.

Ordnance. 40 chaff and 80 flares, 2 x XM-218s shall be mounted, consideration should be given to utilizing the RMWS.

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 D

Goal. Introduce DM against a FW aggressor. This is the defensive measures evaluation/review flight for certification as DMQ.

Requirement

Discuss:
- CRM/inter flight coordination.
- Crew comfort level.
- Lookout doctrine.
- Standard terminology.
- Situational Awareness.
- Closure rate, radius of turn, and energy state.
- FW weapons parameters and considerations.
- Use of ALE-47, APR-39, ALQ-157, AAR-47.
- DM training rules.
- DM against FW aggressor.
- Inter/intra cockpit communication.
- Use of onboard weapon systems.

Introduce: Helicopter versus FW DM per the CH-46E Helicopter DM Guide.

Performance Standards. Aircrew shall meet learning objectives as established by the ANTTP series publications, demonstrate effective 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 aircraft communication, understanding of mutual supportability, recognize closure rate, maintain energy state, utilize proper terminology, utilize effective 360 degree lookout doctrine, demonstrate proper threat calls, proper utilization of onboard defensive systems, understanding of threat weapons capabilities and appropriate flight response.

Ordnance. 40 chaff and 80 flares, 2 x XM-218s shall be mounted, consideration should be given to utilizing the RMWS.

Range Requirements. Training area that supports use of expendables and TERF (if available).

External Syllabus Support. Special use airspace preferred, FW adversary.

9. Carrier Qualification (CQ)

a. Purpose. To introduce/refresh the CC/AGO in unaided shipboard landings.

b. General

(1) Refer to LHA/LPH/LHD NATOPS Manuals and NWP-42 for air capable ship operations.

(2) CQ Requirements

(a) Requirements for initial/refresher/delinquent night unaided CQ events are:

1 Five day CQs.

2 Five night unaided CQs.

(b) CC/AGO CQ-4906 proficient per paragraph 2(a) shall complete the following to maintain proficiency:

1 Two day CQs.

2 Two night unaided CQs.

(3) CC/AGO are authorized to carry passengers under all conditions when proficient in CQ-2904 and CQ-4902, NSQ for the appropriate light level, and IAW NAVMC 3500.14.

(4) CC/AGO shall discuss CRM as applicable to each event.

c. Minimum Crew Requirements. CC/AGO, CCI/CCUI, CCI/AGOUI.

d. 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.

e. Prerequisites. CQ-2901.

(1) Review appropriate chapters of NWP-42 and the LPH/LHA/LHD NATOPS Manual.

(2) Review Ship’s Facilities Resume.

CQ-4901	1.5	365	B,1 CH-46E A N*

Goal. Conduct night unaided FCLPs.

Requirement

Discuss:
CRM.
Communications.
LSE signals.
NS procedures/operations.
Aircraft lighting.
Shipboard lighting.
Wave off.
Crew comfort levels.
Lookout Doctrine.

Introduce:
Night unaided FCLP patterns, approaches, landings, and emergency procedures peculiar to shipboard operations.

Review: CQ-2901.

Performance Standards. Demonstrate the ability/knowledge to perform unaided shipboard flight operations to include LSE hand and arm signals.

Prerequisite. CQ-2901.

External Syllabus Support. Approved FCLP pad.

CQ-4902 1.5 365 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.
LSE signals.

Introduce:
Unaided CQ operations.

Review:
CQ-2901 and CQ-2903.

Performance Standards. Demonstrate the ability/knowledge to perform unaided shipboard flight operations to include LSE hand and arm signals.

Prerequisite. CQ-2903 and CQ-4901.

External Syllabus Support. CQ capable ship.

317. MISSION PLUS SKILL PHASE (4000)

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.

Airborne Rapid Insertion/Extraction (MCT 1.3.4.1.1).

2. General

a. CC/AGOs shall discuss CRM as applicable to each event.

b. The Mission Plus Skills RAID-4503 and RAID-4504 shall be individually logged for each CC/AGO upon the completion of the respective event.

c. XM-218s and/or M240 machine guns shall be mounted in the aircraft during execution of RAID-4503 and RAID-4504. Actual ordnance should be used to the maximum extent possible.

d. Other applicable T&R events can be conducted in conjunction with the performance of a Mission Skill event.

e. A flight leader (section or above) flying within the mission Core Plus Skill flight events can complete an initial or Refresher ATF for the RAID-4503 and RAID-4504, regardless of whether or not the CC/AGO is flying with the flight leader.

f. An ATF is required for all initial or full Refresher RAID-4503 and RAID-4504 Mission Skill flight events.

g. Upon signature of this Manual, CC/AGOs that are current and proficient in TAC-2501 through TAC-2502 may log RAID-4503 and RAID-4504 without conducting the associated flight event(s), at the discretion of the commanding officer. Any CC/AGO that is in the Basic, Series Conversion, or Refresher syllabus that has not attained TAC-2501 through TAC-2503 must complete RAID-4503 and RAID-4504.

3. Minimum Crew Requirement. CC/AGO, CC/AGO/TG, CCI/CCUI/AGO, CCI/CC/AGOUI.

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.

RAID-4503	1.5	365	B 3+ ACFT 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. CCUI/AGOUIs shall assist the pilots in remaining oriented within 500 meters, arrive at LZ or coordinated checkpoint within 30 seconds of briefed plan, land at intended point of landing within 50 meters, 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-4017
FLIGHT	CAL-2203, FORM-2301, TAC-2501, HIE-2705, GTR-2801
QUALIFICATION	TERFQ, AGQ, TGQ IF UTILIZING THE RMWS

Ordnance. 500 rounds .50 cal, 400 rounds 7.62.

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.

RAID-4504 1.5 365 B,R 3+ ACFT 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. RAID-4504 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. CCUI/AGOUIs shall assist the pilots in remaining oriented within 500 meters, arrive at LZ or coordinated checkpoint within 30 seconds of briefed plan, land at intended point of landing within 50 meters, 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-4017
FLIGHT	CAL-2203, FORM-2301, TAC-2502, HIE-2706, GTR-2801
QUALIFICATION	TERFQ, NSQ FOR THE APPROPRIATE LIGHT LEVEL, AGQ, TGQ IF UTILIZING THE RMWS

Ordnance. 500 rounds .50 cal, 400 rounds 7.62.

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.

318. INSTRUCTOR TRAINING PHASE (5000)

1. Crew Chief Instructor Under Training (CCIUT)

a. Purpose. To standardize procedures for qualifying syllabus instructors within the Marine Enlisted Aircrew Training Department (MEAT).

b. General

(1) The CCIUT must demonstrate proficiency in instructing all evolutions in this stage.

(2) CCIUT events 5120 through 5128 shall be complete prior to being designated a Marine Enlisted Aircrew Training Instructor (MEAT Instructor).

(3) CCIUT may fly a TERF-5125 and receive an FRS TERFQ. This qualification will allow a CCIUT to receive the CCI designation and can only instruct a CCUI during a TERF-1701.

(4) CCIUT may fly a night system NS-5127 and receive a FRS NSQ. This Qualification will allow a CCIUT to receive the CCI designation at the completion of their IUT-5128 and be qualified to train in the Enlisted Night Systems Familiarization Instructor (ENSFI) certification course. The CCI can only instruct a CCUI during a NS-1801, NS-1802, NS-1803.

(5) Upon completion of the IUT-5128 and designation by the commanding officer, the MEAT Instructor is capable of instructing all Core Skill Introduction phase events to include TERF and NS events.

(6) The CCIUT shall have completed the requirements for designation as Night Systems FAM Instructor (NSFI) and TERFI per the MAWTS-1 CH-46E Course Catalog.

c. Crew Requirements. CCI/CCIUT.

d. Ground/Academic Training. CCIUT will complete the MEAT ground training syllabus and the Basic Instructor course prior to flying or teaching any syllabus events.

e. Prerequisites

EVENT TYPE	T&R CODE / QUAL PREREQUISITES
ACADEMIC	MEAT GROUND TRAINING SYLLABUS (FRS), BASIC INSTRUCTOR COURSE (FRS)
FLIGHT	NONE
QUALIFICATION	TERQ, NSQ

FAM-5120 1.5 * E 1 CH-46E A D

Goal. Demonstrate crew chief responsibilities and instructional techniques during familiarization flight.

Requirement
Demonstrate instructional techniques of crew chief responsibilities during a Familiarization flight.

Discuss:
CRM.
Course Rules.

Performance Standards. The CCIUT will conform to instructional techniques set forth by the MEAT for all FAM maneuvers per the FRS Standardization Manual and NATOPS Manual.

Prerequisites. Appropriate FRS lesson.

FAM-5121 1.5 * E 1 CH-46E A N*

Goal. Introduce night operations.

Requirement

Discuss:
Lighting systems.

Night operations.
Estimating distances.
CRM.
Adaptability/flexibility.
Decision making.

Introduce:
Light discipline.
Aircraft lighting.
Airfield lighting.
Night lookout doctrine.

Review:
Night precautionary Landings.
Night emergency landings.
Overview of duties.
Situational awareness.
Night startup/shutdown procedures.
Limitations.
Hot seat procedures.

Performance Standards. Demonstrate CCI responsibilities and instructional techniques during night unaided operations IAW NATOPS.

Prerequisite. FAM-5120.

NAV-5122 1.5 * E 1 CH-46E (N)

Goal. Demonstrate crew chief responsibilities and Navigational 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.
Techniques of instruction.

Performance Standards. Demonstrate proper CCI techniques and responsibilities for all NAV Procedures per the FRS Standardization Manual and NATOPS Manual.

Prerequisite. Appropriate FRS lesson.

CAL-5123 1.5 * E 1 CH-46E A D

Goal. Demonstrate CCI responsibilities and instructional techniques during confined area landings (CALs).

Requirement

Discuss:
- Limitations for slope landings.
- Clearance in confined area landings.
- Wave off.
- CRM.
  - Situational Awareness.
  - Assertiveness.
- Emergency procedures.

Review:
- Standard terminology.
- Engine failures in flight.

Performance Standards. Demonstrate proper CCI techniques and responsibilities during confined area landing maneuvers per the FRS Standardization Manual and Natops Manual.

Prerequisite. Appropriate FRS lesson.

FORM-5124 1.5 * E 2 CH-46E A D

Goal. Demonstrate CCI responsibilities and instructional techniques used during formation flight operations.

Requirement

Discuss:
- Lookout doctrine.
- Section CALs
- Formation maneuvers.

Review:
- Standard terminology.
- CALs.
- CRM.
  - Leadership.
- Emergencies Procedures.

Performance Standards. Demonstrate proper CCI techniques and responsibilities used during formation flight operations per the FRS Standardization Manual and NATOPS Manual.

Prerequisite. Appropriate FRS lesson.

TERF-5125 1.5 * E 1 CH-46E A D

Goal. Demonstrate CCI responsibilities and instructional techniques during terrain flight maneuvers(TERF).

Requirement

Discuss:
- Obstacle clearance.
- Standard terminology.

Crew comfort levels.
Wave off.
Clearance in confined areas.
Emergencies during low level operations.
CRM.
Assertiveness.
Communication.

Introduce:
Blade walk.
TERF maneuvers.
Bunts.
Rolls.
Masking and unmasking.
Spiral approach.
Low level quick stop.
Zoom climb.

Review:
Crew responsibilities.
Clearance calls.

Performance Standards. Demonstrate a basic understanding of TERF maneuvers.

Prerequisite. ACAD-0054.

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

EXT-5126 1.5 * E 1 CH-46E A D

Goal. Demonstrate crew chief responsibilities and instructional techniques during external cargo procedures.

Requirement

Discuss:
Static discharge precautions.
Lost communications.
Hand signals.
Emergency release procedures.
Inspection of cargo hook and pendant.

Review:
External operations.
Cargo hook procedures.
Techniques of instruction

Performance Standards. CCI will conform to instructional techniques set forth by the FRS for all EXT Procedures per the FRS Standardization Manual and Natops Manual.

Prerequisite. Appropriate FRS lesson.

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

NS-5127 1.5 * E 1 CH-46E A NS

Goal. Demonstrate CCI responsibilities and instructional techniques used during NVG operations.

Requirement

Discuss:
- Crew comfort levels.
- NVG failures.
- Depth perception.
- Aircraft lighting.
- Emergency procedures.
- CRM.
  - Mission analysis.
  - Assertiveness.

Introduce:
- Use of NVGs during low level operations.
- Aircraft configuration.
- Taxiing on NVGs.
- Use of NVGs at an unlit field.

Review:
- Communication.
- Lookout doctrine.
- Night startup/shutdown.
- Aircraft lighting.
- Taxiing signals.
- Light discipline.
- Crew duties.
- Vertigo.

Performance Standards. Apply basic NS skills as outlined in the MAWTS-1 NVD manual, 6th edition.

Prerequisite. Completion of NITE Lab (ACAD-0062) and FAM-5125.

IUT-5128 1.5 * E 1 CH-46E A (N)

Goal. CCIUT standardization check.

Requirement

Discuss:
- CCUI duties/responsibilities.
- Standard terminology.
- External operations.
- CALs.
- CRM.
- Emergency procedures.
- Instructional techniques.

Review:
- Applicable 1000 phase codes.

Performance Standards. Demonstrate standard CCI procedures, techniques and responsibilities per the FRS Standardization Manual and NATOPS Manual.

Prerequisite. FAM-5120, FAM-5121, NAV-5122, CAL-5123, FORM-5124, TERF-5125, EXT-5126, NS-5127.

External Syllabus Support. As required.

2. Advanced Instructor POI

a. There are nine graduate level courses that qualify crew chief instructors for specific portions of the T&R syllabus. These courses are as follows:

(1) Weapons and Tactics Instructor (WTI Sec MOS 6177).

(2) Terrain Flight Instructor (TERFI).

(3) Night Systems FAM Instructor (NSFI).

(4) Night Systems Instructor (NSI).

(5) Defensive Measures Instructor (DMI).

(6) Aerial Gunnery Instructor (AGI).

(7) Night Systems SAR Instructor (NSSI).

(8) Tail Gunnery Instructor (TGI).

(9) Crew Chief Instructor (CCI).

b. The above courses and applicable training codes are listed in the current MAWTS-1 CH-46E Course Catalog. There will be no refly factors for these instructor flights. T&R syllabus currency in stages is considered sufficient to maintain currency as an instructor. WTIs are only qualified at the Weapons and Tactics Instructor course conducted at MAWTS-1 during WTI.

3. Special Training POI. This category is designed for aircrew to develop proficiency in flight procedures and techniques involving special training requirements. Due to the special equipment and logistical support, facilities or supporting units required to conduct special training flights, squadrons may complete these flights as appropriate support becomes available and mission requirements dictate.

319. REQUIREMENTS, QUALIFICATIONS, DESIGNATIONS (RQD) PHASE (6000)

1. Overview

a. 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.

b. General. Squadrons should use this phase of training for check flights and designations. The CCUI/AGOUI will demonstrate sound levels of aircraft/flight leadership and judgment required in a combat environment.

2. NATOPS POI

a. Purpose. To evaluate the airman in knowledge of aircraft systems, performance limitations, emergency procedures and ground operations, and can be used to determine qualification for NATOPS Instructor designation.

b. General

(1) This is an annual flight requirement as listed in OPNAVINST 3710.7 and A1-H46AE-NFM-000 (CH-46E NATOPS Manual).

(2) This flight code will be used to assist in the management and tracking of annual NATOPS evaluations.

(3) The evaluating crew chief shall be a designated NATOPS Instructor/Assistant NATOPS instructor.

(4) NATOPS Evaluees shall complete and have a graded Open Book (NTPS-6001), Closed Book (NTPS-6002) prior to the commencement of the actual NATOPS evaluation event (NTPS-6101).

(5) Aircrew shall be NSQ for the appropriate light level for all NS flight.

c. Minimum Crew Requirements. NI or ANI/CC, NI or ANI/AGO.

d. 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 Open Book NATOPS Examination

Goal. The Open Book Examination may be taken from the NATOPS question bank 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 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.

Prerequisite. NTPS-6001

NTPS-6003 2.0 365 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.

Prerequisite. NTPS-6002

NTPS-6101 1.5 365 R,E 1+ CH-46E/WST A (NS)

Goal. CC/AGO annual NATOPS evaluation.

Requirement. Evaluate proficiency using all aspects of the CH-46E as a weapons system. The proficiency expected by the evaluator in this flight shall be commensurate with the experience of the CC or AGO being evaluated.

Discuss: All emergency procedures and Standardization Manual maneuvers.

Performance Standards. The performance expected by the evaluator in this flight shall be commensurate with the experience of the aircrew under evaluation.
Prerequisite. Qualified CC/AGO. For CC/AGOs, the NTPS-6003 (Oral Exam) shall be conducted in conjunction with the flight evaluation.

3. CRM Training

a. Purpose. To conduct annual CRM training.

b. General

(1) Aircrew shall be NSQ for the appropriate light level for all NS flights.

(2) CRM Flight may be flown concurrent with any operational or training flight, including NATOPS NTPS-6101.

(3) The CRM Flight Evaluator shall be a designated CRM Instructor or CRM facilitator.

c. Minimum Crew Requirement. CRMI or CRMI/CCI, CRMI or CRMI/AGO.

d. Ground/Academic Training. Annual CRM training as outlined in the CH-46E NATOPS Flight Manual and OPNAVINST 1542.7.

CRM-6103 1.5 365 R,E 1+ CH-46E A (NS)

Goal. Practice/review CRM principles presented in the CH-46E CRM class 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.

Emergencies: Perform as required to evaluate the above skills.

Performance Standards. CC/AGOs shall demonstrate effective use of the CRM 7 critical skills areas.

Prerequisite. Completion of the annual CH-46E CRM ground training, ACAD-6007.
External Syllabus Support. WST/APT.

4. Functional Check Flight Crew Chief (FCFCC) Syllabus

a. Purpose. To introduce and develop proficiency in FCF procedures as well as to obtain the squadron FCF Crew Chief (FCFCC) qualification.

b. General

(1) CCUI will demonstrate an understanding of, and proficiency in, the maintenance procedures involved in functional check flights (FCF).

(2) CCUI 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.

(3) The Quality Assurance Officer within each squadron shall manage the FCF syllabus.

(4) Successful completion of the FCF-6137 constitutes FCFQ. A qualification letter signed by the commanding officer stating the CC is FCF qualified is required. The original shall be placed in the CC's NATOPS jacket and a copy shall be placed in the APR with a corresponding logbook entry.

c. Crew Requirements. FCFCC/FCFCCUI.

d. Ground/Academic Training. Selected reading material from OPNAVINST 4790, CH-46E NATOPS, SOPs, MIMs, etc. as designated by each squadron commanding officer. FCFCCUI shall complete an open book exam.

FCF-6131 1.5 B 1 CH-46E A D

Goal. Conduct T58-GE-16/16A Engine and Engine Condition Control System (ECCS) setup.

Requirement. Introduce procedures and techniques for setup of the T58-GE-16/16A Engine and the associated ECCS. Aircraft must be AIMS.

Discuss
- ECCS principles of operation and system limitations.
- T58-GE-16/16A 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.

Introduce. Procedures and techniques for conducting engine setup and ECCS setup on the T58-GE-16/16A engine and -24 vibration checks.
- Quality Assurance brief/de-brief.
- AIMS Display Unit setup and operation.
- ECCS function check.
- Torque Zeroization.
- 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.

Performance Standards
Crew chiefs shall conduct AIMS Display Unit setup and operation, conduct a full engine setup and performance check and a complete ECCS setup on the T58-GE-16/16A engine (FLY, MID, and MAX adjustments), as well as complete a vibration analysis in the ground, hover, and 120 KIAS regimes.

Prerequisites. FCFCC required reading and FCF Equipment Brief.

FCF-6132 1.5 B 1 CH-46E A D

Goal. Conduct T58-GE-16/16A Engine and Engine Condition Control System (ECCS) setup.

Requirement. Introduce procedures and techniques for setup of the T58-GE-16/16A Engine and the associated ECCS. Aircraft must be non-AIMS.

Discuss
- ECCS principles of operation and system limitations.
- T58-GE-16/16A and ECCS setup procedures.
- NP-600 Engine Test Set and 8500C Balancer/Analyzer setup and operation.
- Troubleshooting techniques.
- Maintenance Instruction Manuals.
- NAVAIR A1-H46E-NFM-700A FCF checklist (B-card).
- SqdnO 4790.

Introduce. Procedures and techniques for conducting engine setup and ECCS setup on the T58-GE-16/16A engine and -24 vibration checks.
- Quality Assurance brief/de-brief.
- NP-600 Engine Test Set and 8500C Balancer/ Analyzer setup and operation.
- ECCS function check.
- Torque Zeroization.
- ECCS FLY Adjustment.
- Fuel control unit topping adjustment.
- ECCS MID and MAX adjustment.
- Single-point and four-point engine performance check.
- -24 ground, hover and 120 KIAS vibration analysis.
- Troubleshooting techniques.

Performance Standards
Crew chiefs shall conduct NP-600 Engine Test Set and 8500C Balancer/Analyzer setup and operation, conduct a full engine setup and performance check and a complete ECCS setup on the T58-GE-16/16A engine (FLY, MID, and MAX adjustments), as well as complete a -24 vibration analysis in the ground, hover, and 120 KIAS regimes.
Prerequisites. FCFCC required reading and FCF Equipment Brief.

FCF-6133 1.5 B 1 CH-46E A D

Goal. Conduct a full track and balance evolution starting with initial run and consisting of as many flights and rotor blade adjustments as required to achieve a balanced rotor system.

Requirement. Introduce procedures and techniques for conducting ground and hover rotor flat track and ground, hover, and 120 KIAS rotor balance. Aircraft must be AIMS.

Discuss
IMS Display Unit setup, operation and troubleshooting techniques.
Maintenance Instruction Manuals.
Rotor blade adjustments.
NAVAIR A1-H46E-NFM-700 FCF checklist (D-card).
SqdnO 4790.

Introduce. Procedures and techniques for conducting rotor track and balance.
Quality Assurance brief/de-brief.
AIMS Display Unit setup, operation, and troubleshooting.
Rotor flat track.
Rotor balance.
Stick plot.
Autorotation check.
Rotor blade adjustments.

Performance Standards
Crew chiefs 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 and rotor blade adjustments.

Prerequisite. FCFCC required reading and FCF Equipment Brief.

FCF-6134 1.5 B 1 CH-46E A D

Goal. Conduct a full track and balance evolution starting with initial run and consisting of as many flights and rotor blade adjustments as required to achieve a balanced rotor system.

Requirement. Introduce procedures and techniques for conducting ground and hover rotor flat track and ground, hover, 90 KIAS, and 120 KIAS rotor balance. Aircraft must be non-AIMS.

Discuss
8500C Balancer/Analyzer setup, operation and troubleshooting techniques.
Maintenance Instruction Manuals.
Rotor blade adjustments.
NAVAIR A1-H46E-NFM-700A FCF checklist (D-card).
SqdnO 4790.

Introduce. Procedures and techniques for conducting rotor track and balance.
Quality Assurance brief/de-brief.
8500C Balancer/Analyzer setup, operation, and troubleshooting.
Rotor flat track.
Rotor balance.
Stick plot.
Autorotation check.
Rotor blade adjustments.

Performance Standards
Crew chiefs 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 and rotor blade adjustments.

Prerequisites. FCFCC required reading and FCF Equipment Brief.

FCF-6137 2.0 365 B,R 1 CH-46E A D

Goal. FCF designation.

Requirement. Effectively demonstrate the ability to perform a full card FCF.

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 FCF-6133.

Performance Standards
Crew chiefs shall demonstrate the ability to conduct a full card (A-card) FCF correctly and efficiently, and demonstrate the ability to troubleshoot aircraft problems.

Prerequisite. FCF-6131 through FCF-6134. Completion of squadron FCF syllabus.

320. AVIATION TRAINING FORMS. Contact the CH-46E shop at MAWTS-1 to receive CH-46E Pilot/Crew Chief/AGO T&R syllabus evaluation forms.

321. T&R SYLLABUS MATRIX. The below matrix summarizes T&R syllabus event information.

CH-46E CREW CHIEF // AERIAL GUNNER/OBSERVER																	
STAGE	TRNG CODE	DESCRIPTION	POI	E	DEVICE	# OF A/C	CON	TEN+	REFLY	#	ACAD	#	SIM	#	FLT	PREREQUISITE	EVENT CONV
1000 PHASE - CORE SKILL INTRODUCTION																	
CORE SKILL INTRODUCTION ACADEMIC EVENTS (ACAD)																	
ACAD	0050	WELCOME ABOARD	B						*		1.0						
ACAD	0051	CBTs	B						*		1.0						
ACAD	0053	NAV CLASS	B						*		1.0						
ACAD	0054	TERF	B						*		1.0						
ACAD	0055	CALSs	B						*		1.0						
ACAD	0056	FORMATION	B						*		1.0						
ACAD	0057	EXTERNAL	B						*		1.0						
ACAD	0058	INTERNAL	B						*		1.0						
ACAD	0059	FLIGHT EQUIP	B						*		1.0						
ACAD	0060	NS CLASS	B						*		1.0						
ACAD	0062	NS LAB	B						*		1.0						
TOTAL CORE SKILL INTRODUCTION ACAD										11	11.0	0	0.0	0	0.0		
FAMILIARIZATION STAGE (FAM)																	
FAM	1109	GROUND PROCEDURES	B,O	E	A	1	D		*						2.0		109
FAM	1110	INTRO EMERGENCY PROC	B,O	E	A	1	D		*						1.5	1109	110
FAM	1111	REV EMERGENCY PROC	B,O	E	A	1	D		*						2.0	1110	111
FAM	1116	A/C PROCEDURES	B,O	E	A	1	D		*						1.5	1111	116
FAM	1117	INTRO NIGHT OPS	B,O	E	A	1	N*		*						1.5	1116	117
TOTAL FAM STAGE										0	0.0	0	0.0	5	8.5		
NAVIGATION STAGE (NAV)																	
NAV	1301	NAV	B,O	E	A	1	D		*						1.5	1116	131
TOTAL NAV STAGE										0	0.0	0	0.0	1	1.5		
CONFINED AREA LANDINGS STAGE (CAL)																	
CAL	1401	SINGLE A/C CALS	B,O	E	A	1	D		*						1.5	1116	141
CAL	1402	SEC CALS	B,O	E	A	1	D		*						1.5	1401	
TOTAL CAL STAGE										0	0.0	0	0.0	2	3.0		
FORMATION STAGE (FORM)																	
FORM	1501	INTRO FORM	B,O	E	A	2	D		*						1.5	1402	151
TOTAL FORM STAGE										0	0.0	0	0.0	1	1.5		

CH-46E CREW CHIEF // AERIAL GUNNER/OBSERVER																	
STAGE	**TRNG CODE**	**DESCRIPTION**	**POI**	**E**	**DEVICE**	**# OF A/C**	**CON**	**TEN+**	**REFLY**	**#**	**ACAD**	**#**	**SIM**	**#**	**FLT**	**PREREQUISITE**	**EVENT CONV**
EXTERNAL STAGE (EXT)																	
EXT	**1601**	**INTRO EXTERNAL OPS**	B,O	**E**	**A**	1	D		*						**1.5**	1401	161
TOTAL EXT STAGE										0	**0.0**	0	**0.0**	1	**1.5**		
TERRAIN FLIGHT STAGE (TERF)																	
TERF	**1701**	**INTRO TERF**	B,O	**E**	**A**	1	D		*						**1.5**	1116	171
TOTAL TERF STAGE										0	**0.0**	0	**0.0**	1	**1.5**		
NIGHT SYSTEMS STAGE (NS)																	
NS	**1801**	**INTRO NS OPS**	B,O	**E**	**A**	1	NS		*						**1.5**	1117	181
NS	**1802**	**INTRO NS NAV**	B,O	**E**	**A**	1	NS		*						**1.5**	1801,1301	182
NS	**1803**	**INTRO NS CALS**	B,O	**E**	**A**	1	NS		*						**1.5**	1802,1401	183
TOTAL NS STAGE										0	**0.0**	0	**0.0**	3	**4.5**		
CORE SKILL INTRODUCTION REVIEW STAGE (REV)																	
REV	**1901**	**REV**	B,O	**E**	**A**	1	(N)		*						**1.5**	1117	191
TOTAL REV STAGE										0	**0.0**	0	**0.0**	1	**1.5**		
CORE SKILL INTRODUCTION CHECK RIDE STAGE (CSIX)																	
CSIX	**1902**	**CC CHECKRIDE**	B,O	**E**	**A**	1	(NS)		*						**1.5**	1117,1301,1501,1601,1701,1803,1901	192
TOTALCSIX STAGE										0	**0.0**	0	**0.0**	1	**1.5**		
TOTAL 1000 PHASE - CORE SKILL INTRODUCTION										11	**11.0**	0	**0.0**	16	**25.0**		

CH-46E CREW CHIEF // AERIAL GUNNER/OBSERVER																	
STAGE	TRNG CODE	DESCRIPTION	POI	E	DEVICE	# OF A/C	CON	TEN+	REFLY	#	ACAD	#	SIM	#	FLT	PREREQUISITE	EVENT CONV
2000 PHASE EVENTS CORE SKILLS																	
CORE SKILL ACADEMIC EVENTS (ACAD)																	
ACAD	2015	RF SAMS	B,R		CLSRM				*		1.0						
ACAD	2016	IR SAM THREAT	B,R		CLSRM				*		1.0						
ACAD	2017	AAA THREAT	B,R		CLSRM				*		1.0						
ACAD	2018	ALE-47 / AAR-47	B,R		CLSRM				365		1.0						
ACAD	2019	AN /APR 39	B,R		CLSRM				365		1.0						
ACAD	2020	ALQ-157	B,R		CLSRM				365		1.0						
ACAD	2021	RULES OF ENG	B,R		CLSRM				*		1.0						
ACAD	2026	AS ESCORT TACTICS	B,R		CLSRM				*		1.0						
ACAD	2028	EXECUTION CHECKLIST	B,R		CLSRM				*		1.0						
ACAD	2050	EA TAC CONSIDERATIONS	B,R		CLSRM				*		1.0						
ACAD	2051	TERF	B,R		CLSRM				*		1.0						
ACAD	2052	EA NVD TRAINING	B,R		CLSRM				*		3.0						
ACAD	2053	AG	B,R		CLSRM				365		1.0						
ACAD	2054	XM-218 / GAU-16	B,R		CLSRM				*		1.0						
ACAD	2055	LASER AIMING	B,R		CLSRM				365		1.0						
ACAD	2056	LASER BORE SIGHTING	B,R		CLSRM				*		1.0						
ACAD	2057	GTR	B,R		CLSRM				*		1.0						
ACAD	2058	CH-46E ASE	B,R		CLSRM				365		1.0						
ACAD	2059	ELECTRONIC WARFARE	B,R		CLSRM				365		1.0						
ACAD	2060	HIE	B,R		CLSRM				*		1.5						
ACAD	2061	ESCORT OPS	B,R		CLSRM				*		1.0						
ACAD	2062	TG	B,R		CLSRM				*		1.0						
ACAD	2063	TRAINING AG	B,R		CLSRM				*		1.0						
TOTAL CORE SKILL ACAD										23	25.5	0	0.0	0	0.0		
FAMILIARIZATION AND INSTRUMENT STAGE (FAM/INST)																	
FAM	2100	SFAM/INST	B		S		D		*				2.0				470
FAM	2101	FAM	B,R		A	1	(N)		180						1.5	2100	201
TOTAL FAM/INST STAGE										0	0.0	1	2.0	1	1.5		
CONFINED AREA LANDINGS STAGE (CAL)																	
CAL	2201	CALS	B		A	1	D		180						1.5	2101	211
CAL	2202	SEC CALS	B		A	2	D		180						1.5	2201	212

CH-46E CREW CHIEF // AERIAL GUNNER/OBSERVER																	
STAGE	**TRNG CODE**	**DESCRIPTION**	**POI**	**E**	**DEVICE**	**# OF A/C**	**CON**	**TEN+**	**REFLY**	**#**	**ACAD**	**#**	**SIM**	**#**	**FLT**	**PREREQUISITE**	**EVENT CONV**
CAL	**2203**	**DIV CALS**	B,R		**A**	3+	D		180						**1.5**	2202	
TOTAL CAL STAGE										0	**0.0**	0	**0.0**	3	**4.5**		
TACTICAL FORMATION STAGE (FORM)																	
FORM	**2301**	**TACFORM**	B.R		**A**	2	(NS)		180						**1.5**	2101	231
TOTAL FORM STAGE										0	**0.0**	0	**0.0**	1	**1.5**		
TERRAIN FLIGHT STAGE (TERF)																	
TERF	**2303**	**TERF MANEUVERS**	B		**A**	1	D		180						**1.5**	2101	241
TERF	**2304**	**TERF**	B		**A**	1	D		180						**1.5**	2101,2303	242
TERF	**2305**	**SEC TERF**	B,R		**A**	2	D		180						**1.5**	2101,2303,2304	243
TOTAL TERF STAGE										0	**0.0**	0	**0.0**	3	**4.5**		
AIR-TO-GROUND STAGE (AG)																	
AG	**2400**	**SIM DAY AG**	B		**S**		D		*				**2.0**			2101	280
AG	**2401**	**DAY SS AG**	B		**A**	1+	D		365						**1.5**	2400	281
AG	**2402**	**DAY SEC AG**	B,R		**A**	2	D		365						**1.5**	2401	282
AG	**2403**	**DAY MT AG**	B,R		**A**	1	D		365						**1.5**	2402	283
AG	**2404**	**SIM NS AG**	B		**S**		NS		*				**2.0**			2400	320
AG	**2405**	**SS NS AG**	B		**A**	1	NS		365						**1.5**	2403,2404	321
AG	**2406**	**SEC NS AG**	B,R		**A**	2	NS		365						**1.5**	2405	322
TOTAL AG STAGE										0	**0.0**	2	**4.0**	5	**7.5**		
TAIL GUNNERY STAGE (TG)																	
TG	**2410**	**DAY TG**	B,R		**A**	1+	D		365						**1.5**	AGQ	481
TG	**2411**	**NS TG**	B,R		**A**	1+	NS		365						**1.5**	2410,NSQ LL	482
TOTAL TG STAGE										0	**0.0**	0	**0.0**	2	**3.0**		
TACTICS STAGE (TAC)																	
TAC	**2501**	**DAY LOW/MED THREAT**	B		**A**	2+	D		180						**1.5**	TERF Q,2203,2801	371
TAC	**2502**	**NS LOW/MED THREAT**	B		**A**	2+	NS		180						**1.5**	2501,NSQ LL	372
TOTAL TAC STAGE										0	**0.0**	0	**0.0**	2	**3.0**		

CH-46E CREW CHIEF // AERIAL GUNNER/OBSERVER																	
STAGE	**TRNG CODE**	**DESCRIPTION**	**POI**	**E**	**DEVICE**	**# OF A/C**	**CON**	**TEN+**	**REFLY**	**#**	**ACAD**	**#**	**SIM**	**#**	**FLT**	**PREREQUISITE**	**EVENT CONV**
NIGHT SYSTEMS HIGH LIGHT LEVEL STAGE (NS HLL)																	
NS	**2601**	**HLL CALS**	B,R		**A**	1	NS		180						**1.5**	2201,2502	251
NS	**2602**	**HLL FORM**	B		**A**	2	NS		180						**1.5**	2301,2601	252
NS	**2603**	**HLL SEC CALS**	B,R		**A**	2	NS		180						**1.5**	2202,2602	253
NS	**2604**	**HLL DIV CALS**	B		**A**	3	NS		*						**1.5**	2203,2603,TERF Q	254
NS	**2605**	**HLL TERF**	B		**A**	1	NS		180						**1.5**	2601,TERF Q	255
NS	**2606**	**HLL SEC TERF**	B		**A**	2	NS		180						**1.5**	2602,2605,TERF Q	256
NS	**2607**	**HLL SEC TERF / CALS**	B,R	**E**	**A**	2	NS		180						**1.5**	2604,2606	257
TOTAL NS HLL STAGE										0	**0.0**	0	**0.0**	7	**10.5**		
NIGHT SYSTEMS LOW LIGHT LEVEL STAGE (NS LLL)																	
NS	**2651**	**LLL CALS**	B,R		**A**	1	NS		180						**1.5**	NSQ HLL	311
NS	**2652**	**LLL SEC CALS**	B,R		**A**	2	NS		180						**1.5**	2651	312
NS	**2653**	**LLL DIV CALS**	B,R		**A**	3+	NS		180						**1.5**	2652	313
NS	**2654**	**LLL TERF / FORM / CALS**	B,R	**E**	**A**	2	NS		180						**1.5**	2653	314
TOTAL NS LLL STAGE										0	**0.0**	0	**0.0**	4	**6.0**		
EXTERNAL STAGE (EXT)																	
EXT	**2701**	**DAY EXTERNALS**	B,R		**A**	1	D		365						**1.5**	2201	221
EXT	**2703**	**NS EXTERNALS**	B,R		**A**	1	NS		365						**1.5**	2701,NSQ LL	392
TOTAL EXT STAGE										0	**0.0**	0	**0.0**	2	**3.0**		
HELICOPTER INSERTION AND EXTRACTION STAGE (HIE)																	
HIE	**2705**	**DAY FASTROPE / RAPPEL**	B,R		**A**	1	D		365						**1.0**	2701,2060	361
HIE	**2706**	**NS FASTROPE / RAPPEL**	B		**A**	1	NS		365						**1.0**	2705,2703	362
HIE	**2707**	**DAY OR NS AD**	B,R		**A**	1	(NS)		365						**1.0**	2101,NSQ LL	461
TOTAL HIE STAGE										0	**0.0**	0	**0.0**	3	**3.0**		
GROUND THREAT REACTION STAGE (GTR)																	
GTR	**2801**	**NON-RADAR THREAT**	B,R		**A**	1	(NS)		365						**1.5**	2403,2301,TERF Q	331
TOTAL GTR STAGE										0	**0.0**	0	**0.0**	1	**1.5**		
CARRIER QUALIFICATION STAGE (CQ)																	
CQ	**2901**	**DAY FCLP**	B,R		**A**	1	D		365						**1.5**	2201	291
CQ	**2902**	**NS FCLP**	B,R		**A**	1	NS		365						**1.5**	2901,NSQ LL	293
CQ	**2903**	**DAY CQ**	B,R		**A**	1	D		365						**1.5**	2901	300
CQ	**2904**	**NS CQ**	B,R		**A**	1	NS		365						**1.5**	2902,2903,NSQ LL	301
TOTAL CQ STAGE										0	**0.0**	0	**0.0**	4	**6.0**		

CH-46E CREW CHIEF // AERIAL GUNNER/OBSERVER																	
STAGE	TRNG CODE	DESCRIPTION	POI	E	DEVICE	# OF A/C	CON	TEN+	REFLY	#	ACAD	#	SIM	#	FLT	PREREQUISITE	EVENT CONV
TOTAL 2000 PHASE - CORE SKILLS										23	25.5	3	6.0	38	55.5		
3000 PHASE EVENTS MISSION SKILLS																	
MISSION SKILL ACADEMIC EVENTS (ACAD)																	
ACAD	3000	TRAP	B,R						*		1.0						
ACAD	3001	MOUT	B,R						*		1.0						
ACAD	3002	CASEVAC	B,R						*		1.0						
ACAD	3003	NEO EXECUTION	B,R						*		1.0						
TOTAL MISSION SKILL ACAD										4	4.0	0	0.0	0	0.0		
SEA-BASED OPERATIONS STAGE (SEA)																	
SEA	3101	SEA-BASED OPS	B,R		A	1	(NS)		*						1.5		
TOTAL SEA STAGE										0	0.0	0	0.0	1	1.5		
SHORE-BASED OPERATIONS STAGE (EXP)																	
EXP	3102	SHORE-BASED OPS	B,R		A	1	(NS)		*						1.5		
TOTAL EXP STAGE										0	0.0	0	0.0	1	1.5		
ASSAULT TRANSPORT STAGE (AT)																	
AT	3103	DAY AT	B		A	2+	D		180						1.5		
AT	3104	NS AT	B,R		A	2+	(NS)		180						1.5		
TOTAL AT STAGE										0	0.0	0	0.0	2	3.0		
AERIAL DELIVERY STAGE (AD)																	
AD	3105	AD	B,R		A	2+	(NS)		365						1.5		
TOTAL AD STAGE										0	0.0	0	0.0	1	1.5		
TACTICAL RECOVERY OF AIRCRAFT AND PERSONNEL STAGE (TRAP)																	
TRAP	3106	TRAP	B,R		A	2+	(NS)		365						1.5		
TOTAL TRAP STAGE										0	0.0	0	0.0	1	1.5		
AIR EVACUATION STAGE (AE)																	
AE	3107	CASEVAC	B,R		A	2+	(NS)		180						1.5		
TOTAL AE STAGE										0	0.0	0	0.0	1	1.5		
TOTAL 3000 PHASE - MISSION SKILLS										4	4.0	0	0.0	7	10.5		

CH-46E CREW CHIEF // AERIAL GUNNER/OBSERVER																	
STAGE	**TRNG CODE**	**DESCRIPTION**	**POI**	**E**	**DEVICE**	**# OF A/C**	**CON**	**TEN+**	**REFLY**	**#**	**ACAD**	**#**	**SIM**	**#**	**FLT**	**PREREQUISITE**	**EVENT CONV**
4000 PHASE EVENTS CORE PLUS																	
CORE PLUS ACADEMIC EVENTS (ACAD)																	
ACAD	**4003**	**RW OAS**	B,R						*		**1.0**						
ACAD	**4004**	**FW OAS**	B,R						*		**1.0**						
ACAD	**4007**	**ATTACK HELO THREAT**	B,R						*		**1.0**						
ACAD	**4008**	**FIXED WING THREAT**	B,R						*		**1.0**						
ACAD	**4014**	**LASER THREAT**	B,R						*		**1.0**						
ACAD	**4017**	**GCE RAID PLANNING**	B,R						*		**1.0**						
ACAD	**4050**	**DM PART I**	B,R						365		**1.0**						
ACAD	**4051**	**DM PART II**	B,R						365		**1.0**						
TOTAL CORE PLUS ACAD										8	**8.0**	0	**0.0**	0	**0.0**		
MOUNTAIN AREA TRAINING STAGE (MAT)																	
MAT	**4201**	**DAY MAT**	B,R		**A**	1	D		365						**1.5**	2201	351
MAT	**4203**	**DAY SEC MAT**	B,R		**A**	2	D		365						**1.5**	2202,4201	450
MAT	**4204**	**NS MAT**	B,R		**A**	1	NS		365						**1.5**	4201,NSQ LL	451
TOTAL MAT STAGE										0	**0.0**	0	**0.0**	3	**4.5**		
CONFINED AREA LANDINGS STAGE (CAL)																	
CALS	**4202**	**UNAIDED CALS**	B,R		**A**	1	N*		365						**1.5**	2201	413
AWT	**4209**	**COLD WEATHER**	B,R		**A**	1	(N)		365						**1.5**	2201,NSQ LL	621
DES	**4211**	**DESERT**	B,R		**A**	1	(N)		365						**1.5**	2201,NSQ LL	622
TOTAL CAL STAGE										0	**0.0**	0	**0.0**	3	**4.5**		
CHEMICAL, BIOLOGICAL, RADIOLOGICAL, NUCLEAR STAGE (CBRN)																	
CBRN	**4206**	**DAY CBRN**	B,R		**A**	1	D		365						**1.0**	2201	431
CBRN	**4207**	**NS CBRN**	B,R		**A**	1	NS		365						**1.0**	4206,NSQ LL	432
TOTAL CBRN STAGE										0	**0.0**	0	**0.0**	2	**2.0**		
EXTERNAL STAGE (EXT)																	
EXT	**4301**	**TERF EXT**	B,R		**A**	1	D		365						**1.5**	2701,TERF Q	420
TOTAL EXT STAGE										0	**0.0**	0	**0.0**	1	**1.5**		
GROUND THREAT REACTION STAGE (GTR)																	
GTR	**4401**	**GTR RADAR**	B,R		**A**	1	(NS)		365						**1.5**	2301,2801,TERF Q,AG Q, TG Q,NSQ LL	332
TOTAL GTR STAGE										0	**0.0**	0	**0.0**	1	**1.5**		

CH-46E CREW CHIEF // AERIAL GUNNER/OBSERVER																		
STAGE	**TRNG CODE**	**DESCRIPTION**	**POI**	**E**	**DEVICE**	**# OF A/C**	**CON**	**TEN+**	**REFLY**	**#**	**ACAD**	**#**	**SIM**	**#**	**FLT**	**PREREQUISITE**	**EVENT CONV**
TACTICS STAGE (TAC)																	
TAC	**4501**	**DAY HIGH THREAT**	B		**A**	2+	D		365						**1.5**	2501,4401	401
TAC	**4502**	**NS HIGH THREAT**	B,R		**A**	2+	NS		365						**1.5**	2502,4501,NSQ LL	402
TOTAL TAC STAGE										0	**0.0**	0	**0.0**	2	**3.0**		
HELICOPTER INSERTION EXTRACTION STAGE (HIE)																	
HIE	**4701**	**SPIE**	B,R		**A**	1	(NS)		365						**1.5**	2701,2703,NSQ LL	460
HIE	**4702**	**HELOCAST/SOFTDUCK**	B,R		**A**	1	(NS)		365						**1.5**	TERF Q,NSQ LL	462
HIE	**4703**	**HOIST OPS**	B,R		**A**	1	(NS)		365						**1.5**	2701,2703,NSQ LL	463
TOTAL HIE STAGE										0	**0.0**	0	**0.0**	3	**4.5**	_	
DEFENSIVE MEASURES STAGE (DM)																	
DM	**4801**	**RW DM**	B,R		**A**	2	D		365						**1.5**	2301,TERF Q,TG Q	441
DM	**4802**	**FW DM**	B,R		**A**	2	D		365						**1.5**	2300,TERF Q,TG Q	442
TOTAL DM STAGE										0	**0.0**	0	**0.0**	2	**3.0**	_	
CARRIER QUALIFICATION STAGE (CQ)																	
CQ	**4901**	**UNAIDED FCLP**	B		**A**	1	N*		365						**1.5**	2901	490
CQ	**4902**	**UNAIDED CQ**	B,R		**A**	1	N*		365						**1.5**	2903,4901	491
TOTAL CQ STAGE										0	**0.0**	0	**0.0**	2	**3.0**	_	
AIRBORNE RAPID INSERTION/EXTRACTION STAGE (RAID)																	
RAID	**4503**	**DAY RAID**	B		**A**	3+	D		365						**1.5**		
RAID	**4504**	**NS RAID**	B,R		**A**	3+	NS		365						**1.5**		
TOTAL RAID STAGE										0	**0.0**	0	**0.0**	2	**3.0**	_	
TOTAL PHASE - CORE SKILLS										8	**8.0**	0	**0.0**	21	**30.5**	_	

CH-46E CREW CHIEF // AERIAL GUNNER/OBSERVER																	
STAGE	TRNG CODE	DESCRIPTION	POI	E	DEVICE	# OF A/C	CON	TEN+	REFLY	#	ACAD	#	SIM	#	FLT	PREREQUISITE	EVENT CONV
5000 PHASE EVENTS INSTRUCTOR TRAINING																	
FRS INSTRUCTOR UNDER TRAINING STAGE																	
FAM	**5120**	**DAY TECHNIQUES**		**E**	**A**	1	D		*						**1.5**		
FAM	**5121**	**NIGHT UNAIDED TECH**		**E**	**A**	1	N*		*						**1.5**	5120	
NAV	**5122**	**NAV**		**E**	**A**	1	(N)		*						**1.5**		
CAL	**5123**	**CAL**		**E**	**A**	1	D		*						**1.5**		
FORM	**5124**	**FORM**		**E**	**A**	2	D		*						**1.5**		
TERF	**5125**	**TERF**		**E**	**A**	1	D		*						**1.5**		
EXT	**5126**	**EXT**		**E**	**A**	1	D		*						**1.5**		
NS	**5127**	**NVG**		**E**	**A**	1	NS		*						**1.5**		
IUT	**5128**	**STAN CHECK**		**E**	**A**	1	(N)		*						**3.0**	5120,5121,5122,5123,5124, 5125,5126,5127	
TOTAL FRS INSTRUCTOR STAGE										0	**0.0**	0	**0.0**	9	**15.0**		
AIR-TO-GROUND INSTRUCTOR STAGE (AGI)																	
AGI	**5401**	**DAY AG IUT**		**E**	**A**	1	D		*						**1.5**	SEE MAWTS-1 CC	540
AGI	**5402**	**NS AG IUT**		**E**	**A**	1	NS		*						**1.5**	SEE MAWTS-1 CC	541
AGI	**5403**	**AGI CERT MLT**		**E**	**A**	1	(NS)		*						**1.5**	SEE MAWTS-1 CC	542
AGI	**5404**	**AGI CERT NS SECTION**	R	**E**	**A**	2	NS		*						**1.5**	SEE MAWTS-1 CC	543
TOTAL AG STAGE										0	**0.0**	0	**0.0**	4	**6.0**		
TAIL GUNNERY INSTRUCTOR STAGE (TGI)																	
TGI	**5410**	**TGI IUT DAY**		**E**	**A**	1	D		*						**1.5**	SEE MAWTS-1 CC	545
TGI	**5411**	**TGI IUT NS**		**E**	**A**	1	NS		*						**1.5**	SEE MAWTS-1 CC	546
TGI	**5412**	**TGI CERT**	R	**E**	**A**	2	(NS)		*						**1.5**	SEE MAWTS-1 CC	547
TOTAL TGI STAGE										0	**0.0**	0	**0.0**	3	**4.5**		
NIGHT SYSTEMS SAR INSTRUCTOR STAGE (NSSI)																	
NSSI	**5501**	**NS SS WORK**		**E**	**A**	1	NS		*						**1.5**	SEE MAWTS-1 CC	550
NSSI	**5502**	**LLL CALS / NAV**		**E**	**A**	1	NS		*						**1.5**	SEE MAWTS-1 CC	551
NSSI	**5503**	**LLL CALS / NAV**		**E**	**A**	1	NS		*						**1.5**	SEE MAWTS-1 CC	552
TOTAL NSSI STAGE										0	**0.0**	0	**0.0**	3	**4.5**		

CH-46E CREW CHIEF // AERIAL GUNNER/OBSERVER																	
STAGE	**TRNG CODE**	**DESCRIPTION**	**POI**	**E**	**DEVICE**	**# OF A/C**	**CON**	**TEN+**	**REFLY**	**#**	**ACAD**	**#**	**SIM**	**#**	**FLT**	**PREREQUISITE**	**EVENT CONV**
NIGHT SYSTEMS FAM INSTRUCTOR STAGE (NSFI)																	
NSFI	**5601**	**HLL SS WORK**		**E**	**A**	1	NS		*						**1.5**	SEE MAWTS-1 CC	560
NSFI	**5602**	**HLL CAL / NAV**		**E**	**A**	2	NS		*						**1.5**	SEE MAWTS-1 CC	561
TOTAL NSFI STAGE										0	**0.0**	0	**0.0**	2	**3.0**		
TERRAIN FLIGHT INSTRUCTOR STAGE (TERF I)																	
TERFI	**5701**	**DAY TERF MAN**		**E**	**A**	1	D		*						**1.5**	SEE MAWTS-1 CC	570
TERFI	**5702**	**DAY TERF NAV**		**E**	**A**	2	D		*						**1.5**	SEE MAWTS-1 CC	571
TERFI	**5703**	**TERF I CHECK**	R	**E**	**A**	2	D		*						**1.5**	SEE MAWTS-1 CC	572
TOTAL TERF I STAGE										0	**0.0**	0	**0.0**	3	**4.5**		
DEFENSIVE MEASURES INSTRUCTOR STAGE (DMI)																	
DMI	**5801**	**RW/FW DM INSTR TECH**		**E**	**A**	2	D		*						**1.5**	SEE MAWTS-1 CC	581
DMI	**5802**	**RW/FW DMI CHECK**	R	**E**	**A**	2	D		*						**1.5**	SEE MAWTS-1 CC	582
TOTAL DMI STAGE										0	**0.0**	0	**0.0**	2	**3.0**		
NIGHT SYSTEMS INSTRUCTOR STAGE (NSI)																	
NSI	**5901**	**NS INSTR TECH**		**E**	**A**	1	NS		*						**1.5**	SEE MAWTS-1 CC	590
NSI	**5902**	**NS SEC TERF**		**E**	**A**	2	NS		*						**1.5**	SEE MAWTS-1 CC	591
NSI	**5903**	**LLL NSI CHECK**		**E**	**A**	1	NS		*						**1.5**	SEE MAWTS-1 CC	592
NSI	**5904**	**LLL SEC NSI CHECK**	R	**E**	**A**	2	NS		*						**1.5**	SEE MAWTS-1 CC	593
TOTAL NSI STAGE										0	**0.0**	0	**0.0**	4	**6.0**		

CH-46E CREW CHIEF // AERIAL GUNNER/OBSERVER																		
STAGE	TRNG CODE	DESCRIPTION	POI	E	DEVICE	# OF A/C	CON	TEN+	REFLY	#	ACAD	#	SIM	#	FLT	PREREQUISITE	EVENT CONV
6000 PHASE EVENTS REQUIREMENTS, QUALIFICATIONS, AND DESIGNATIONS (RQD)																	
RQD ACADEMIC EVENTS (ACAD)																	
NTPS	6001	NATOPS OPEN BOOK	B,R	E					365		2.0						
NTPS	6002	NATOPS CLOSED BOOK	B,R	E					365		2.0					6001	
NTPS	6003	NATOPS ORAL EXAM	B,R	E					365		2.0					6002	
CRM	6007	CRM CLASS	B,R	E					365		2.0						
TOTAL MISSION SKILL ACAD										4	8.0	0	0.0	0	0.0		
NATOPS AND CRM STAGE																	
NTPS	6101	NATOPS EVAL	B,R	E	A	1	(NS)		365						2.0	6003	
CRM	6103	CRM EVAL	B,R	E	A/S	1+	(NS)		365						1.5	6007	
TOTAL NATOPS & CRM STAGE										0	0.0	0	0.0	2	3.5		
FUNCTIONAL CHECK FLIGHT STAGE (FCF)																	
FCF	6131	ECCS SETUP AIMS	B	E	A	1	D		*						1.5		
FCF	6132	ECCS SETUP NON-AIMS	B	E	A	1	D		*						1.5		
FCF	6133	FCF TRACK AND BALANCE AIMS	B	E	A	1	D		*						1.5		
FCF	6134	FCF TRACK AND BALANCE NON AIMS	B	E	A	1	D		*						1.5		
FCF	6135	FCF FULL CARD CHECK	B,R	E	A	1	D		365						2.0	6131,6132,6133,6134	
TOTAL FCF STAGE										0	0.0	0	0.0	5	8.0		
TOTAL PHASE - CORE SKILLS										4	8.0	0	0.0	7	11.5		

CH-46E ATTAIN / MAINTAIN CORE, MISSION, & CORE+ SKILLS - CREW CHIEF // AERIAL OBSERVER/GUNNER													
EVENT DESCRIPTION	T&R EVENTS		BASIC POI ATTAIN			REFRESHER POI ATTAIN			MAINTAIN			CHAINING	PREREQUISITES
	EVENT	CODE	STAGE	CODE	*RE FLY*	STAGE	CODE	*RE FLY*	STAGE	CODE	*RE FLY*		
CORE SKILLS – 2000 PHASE													
SFAM/INST	**SFAM/ INST**	**2100**	**FAM INST**	**2100**	*	**FAM INST**			**FAM INST**				
FAM	**FAM/ INST**	**2101**		**2101**	*180*		**2101**	*180*		**2101**	*180*		2050,2100
CALS	**CAL**	**2201**	**CAL**	**2201**	*180*	**CAL**			**CAL**			2101	2101
SEC CALS	**CAL**	**2202**		**2202**	*180*							2101,2201	2201
DIV CALS	**CAL**	**2203**		**2203**	*180*		**2203**	*180*		**2203**	*180*	2101,2201,2202	2202
TACFORM	**FORM**	**2301**	**FORM**	**2301**	*180*	**FORM**	**2301**	*180*	**FORM**	**2301**	*180*	2101	2101
TERF MAN	**TERF**	**2303**	**TERF**	**2303**	*180*	**TERF**			**TERF**			2101	2051,2101
TERF	**TERF**	**2304**		**2304**	*180*							2101,2303	2303
SEC TERF	**TERF**	**2305**		**2305**	*180*		**2305**	*180*		**2305**	*180*	2101,2303,2304	2304
SIM DAY AG	**SAG**	**2400**	**AG**	**2400**	*	**AG**			**AG**				2101
DAY SS AG	**AG**	**2401**		**2401**	*365*							2101	2400
DAY SEC AG	**AG**	**2402**		**2402**	*365*		**2402**	*365*		**2402**	*365*	2101,2401	2401
DAY MLT AG	**AG**	**2403**		**2403**	*365*		**2403**	*365*		**2403**	*365*	2101,2401,2402	2402
SIM NS AG	**SAG**	**2404**		**2404**	*								2400
SS NS AG	**AG**	**2405**		**2405**	*365*							2101,2401	2403,2404
SEC NS AG	**AG**	**2406**		**2406**	*365*		**2406**	*365*		**2406**	*365*	2101,2401,2402,2405	2405
DAY TG	**TG**	**2410**	**TG**	**2410**	*365*	**TG**	**2410**	*365*	**TG**	**2410**	*365*		AGQ
NS TG	**TG**	**2411**		**2411**	*365*		**2411**	*365*		**2411**	*365*	2410	2410,2607~NS, 2654~LLL
DAY LOW/MED THREAT	**TAC**	**2501**	**TAC**	**2501**	*180*	**TAC**			**TAC**			2201,2202,2301	TERF Q,2203,2801
NS LOW/MED THREAT	**TAC**	**2502**		**2502**	*180*		**2502**	*180*		**2502**	*180*	2201,2202,2301,2601, 2602,2603,2651~LLL, 2652~LLL,2501	2501,2607~NS, 2654~LLL

CH-46E ATTAIN / MAINTAIN CORE, MISSION, & CORE+ SKILLS - CREW CHIEF // AERIAL OBSERVER/GUNNER													
EVENT DESCRIPTION	T&R EVENTS		BASIC POI ATTAIN			REFRESHER POI ATTAIN			MAINTAIN			CHAINING	PREREQUISITES
	EVENT	CODE	STAGE	CODE	*RE FLY*	STAGE	CODE	*RE FLY*	STAGE	CODE	*RE FLY*		
HLL CALS	**NS**	**2601**	**NS HLL**	**2601**	*180*	**NS HLL**	**2601**	*180*	**NS HLL**			2201	2201,2052
HLL FORM	**NS**	**2602**		**2602**	*180*							2201	2301,2601
HLL SEC CALS	**NS**	**2603**		**2603**	*180*		**2603**	*180*				2201,2202,2301,2601, 2602	2202,2602
HLL DIV CALS/FORM	**NS**	**2604**		**2604**	*180*							2201,2202,2203, 2601,2602,2603	2203,2603,TERF Q
HLL TERF	**NS**	**2605**		**2605**	*180*							2302,2303,2304	2601,TERF Q
HLL SEC TERF	**NS**	**2606**		**2606**	*180*							2301,2302,2303,2304, 2305,2602,2605	2602,2605,TERF Q
HLL SEC TERF/CALS	**NS**	**2607**		**2607**	*180*		**2607**	*180*		**2607**	*180*	2201,2202,2301,2302, 2303,2304,2305,2601, 2602,2603,2605,2606	2604,2606
LLL S SHIP CALS	**NS**	**2651**	**NS LLL**	**2651**	*180*	**NS LLL**	**2651**		**NS LLL**			2201,2601	NSQ HLL
LLL SEC CALS	**NS**	**2652**		**2652**	*180*		**2652**	*180*				2201,2202,2601,2602, 2603,2651	2651
LLL DIV CALS	**NS**	**2653**		**2653**	*180*		**2653**	*180*		**2653**	*180*	2201,2202,2601,2602, 2603,2604,2651,2652	2652
LLL TERF/ FORM/CALS	**NS**	**2654**		**2654**	*180*		**2654**	*180*		**2654**	*180*	2201,2202,2301,2302, 2303,2304,2305,2601, 2602,2603,2605,2606, 2607,2651,2652	2653
DAY EXT	**EXT**	**2701**	**EXT**	**2701**	*365*	**EXT**	**2701**	*365*	**EXT**			2201	2201
NS EXT	**EXT**	**2703**		**2703**	*365*		**2703**	*365*		**2703**	*365*	2201,2601~NS, 2651~LLL,2701	2607~NS,2654~LLL
DAY FASTROPE /RAPPEL	**HIE**	**2705**	**HIE**	**2705**	*365*	**HIE**	**2705**	*365*	**HIE**	**2705**	*365*	2201,2701	2060,2701
NS FASTROPE / RAPPEL	**HIE**	**2706**		**2706**	*365*							2201,2601,2651~LLL, 2705	2703,2705
DAY OR NS AD	**HIE**	**2707**		**2707**	*365*		**2707**	*365*		**2707**	*365*		2101,2607~NS, 2654~LLL
NON-RADAR THREAT REACTION	**GTR**	**2801**	**GTR**	**2801**	*365*	**GTR**	**2801**	*365*	**GTR**	**2801**	*365*	2301,2302,2303,2304, 2401,2404,2602	2301,2403,TERF Q

CH-46E ATTAIN / MAINTAIN CORE, MISSION, & CORE+ SKILLS - CREW CHIEF // AERIAL OBSERVER/GUNNER													
EVENT DESCRIPTION	T&R EVENTS		BASIC POI ATTAIN			REFRESHER POI ATTAIN			MAINTAIN			CHAINING	PREREQUISITES
	EVENT	CODE	STAGE	CODE	*RE FLY*	STAGE	CODE	*RE FLY*	STAGE	CODE	*RE FLY*		
DAY FCLP	CQ	2901	CQ	2901		CQ	2901		CQ			2201	2201
DAY CQ	CQ	2903		2903	*365*		2903	*365*				2201,2901	2901
NS CQ	CQ	2904		2904	*365*		2904	*365*		2904	*365*	2201,2601,2651~LLL, 2901,2902,2903	2607~NS,2654~LLL, 2902,2903
MISSION SKILLS - 3000 PHASE EVENTS													
SEA	SEA	3101	SEA	3101	*	SEA	3101	*	SEA	3101	*		
SHORE	EXP	3102	EXP	3102	*	EXP	3102	*	EXP	3102	*		
DAY AT	AT	3103	AT	3103	*180*	AT			AT				
NIGHT AT	AT	3104		3104	*180*		3104	*180*		3104	*180*	3103	
AD	AD	3105	AD	3105	*365*	AD	3105	*365*	AD	3105	*365*		
TRAP	TRAP	3106	TRAP	3106	*365*	TRAP	3106	*365*	TRAP	3106	*365*		
AE	AE	3107	AE	3530	*180*	AE	3530	*180*	AE	3530	*180*		
CORE PLUS SKILLS - 4000 PHASE EVENTS													
DAY MAT	MAT	4201	MAT	4201	*365*	MAT	4201	*365*	MAT	4201	*365*	2201	2201
DAY SEC MAT	MAT	4203		4203	*365*		4203	*365*		4203	*365*	2101,2201,2202,4201	2202,4201
NS MAT	MAT	4204		4204	*365*		4204	*365*		4204	*365*	2201,2601,2650~LLL, 2651~LLL,4201	4201,2607~NS, 2654~LLL
UNAIDED CALS	CALS	4202	CALS	4202	*365*	CALS	4202	*365*	CALS	4202	*365*	2102,2201	2201
COLD WEATHER	AWT	4209		4209	*365*		4209	*365*		4209	*365*	2201	2201, 2607~NS, 2654~LLL
DESERT ENV	DES	4211		4211	*365*		4211	*365*		4211	*365*		2201, 2607~NS, 2654~LLL
DAY CBRN	CBRN	4206	CBRN	4206	*365*	CBRN	4206	*365*	CBRN			2201	2201
NS CBRN	CBRN	4207		4207	*365*		4207	*365*		4207	*365*	2201,2601~NS,2651~LLL, 4206	2607~NS,2654~LLL, 4206
TERF EXT	EXT	4301	EXT	4301	*365*	EXT	4301	*365*	EXT	4301	*365*	2101,2201,2303,2304, 2305,2701	2701,TERF Q
GTR (RADAR)	GTR	4401	GTR	4401	*365*	GTR	4401	*365*	GTR	4401	*365*	2101,2301,2303,2304, 2305,2801	2301,2801,TERF Q, AGQ,TGQ

CH-46E ATTAIN / MAINTAIN CORE, MISSION, & CORE+ SKILLS - CREW CHIEF // AERIAL OBSERVER/GUNNER													
EVENT DESCRIPTION	T&R EVENTS		BASIC POI ATTAIN			REFRESHER POI ATTAIN			MAINTAIN			CHAINING	PREREQUISITES
	EVENT	CODE	STAGE	CODE	*RE FLY*	STAGE	CODE	*RE FLY*	STAGE	CODE	*RE FLY*		
DAY HIGH THREAT	**TAC**	**4501**	**TAC**	**4501**	*365*	**TAC**			**TAC**			2201,2202,2301, 2302,2303,2305, 2501	2501,4401
NS HIGH THREAT	**TAC**	**4502**		**4502**	*365*		**4502**	*365*		**4502**	*365*	2201,2202,2301,2303, 2305,2601,2602,2603, 2605,2606,2607,2501, 2503,2651~LLL, 2652~LLL,2654~LLL,4501	2502,2607~NS, 2654~LLL,4501
SPIE	**HIE**	**4701**	**HIE**	**4701**	*365*	**HIE**	**4701**	*365*	**HIE**	**4701**	*365*	2201,2701	2701,2703
HELOCAST/ SOFTDUCK	**HIE**	**4702**		**4702**	*365*		**4702**	*365*		**4702**	*365*	2101	TERF Q
HOIST OPS	**HIE**	**4703**		**4703**	*365*		**4703**	*365*		**4703**	*365*	2101,2701	2701,2703
RW DM	**DM**	**4801**	**DM**	**4801**	*365*	**DM**	**4801**	*365*	**DM**	**4801**	*365*	2301	2301,TERF Q, AGQ,TGQ
FW DM	**DM**	**4802**		**4802**	*365*		**4802**	*365*		**4802**	*365*	2301	2300,TERF Q, AGQ,TGQ
UNAIDED FCLP	**CQ**	**4901**	**CQ**	**4901**	*365*	**CQ**			**CQ**				2901
UNAIDED CQ	**CQ**	**4902**		**4902**	*365*		**4902**	*365*		**4902**	*365*	2301,4901	2903,4901
MISSION PLUS - 4000 PHASE EVENTS													
DAY RAID	**RAID**	**4503**	**RAID**	**4503**	*365*	**RAID**	**4503**	*365*	**RAID**	**4503**	*365*		
NIGHT RAID	**RAID**	**4504**		**4504**	*365*		**4504**	*365*		**4504**	*365*		