

CHAPTER 1

CH-46E PILOT
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CHAPTER 1

CH-46E PILOT

100. MARINE MEDIUM HELICOPTER SQUADRON (CH-46E) UNIT CORE COMPETENCY

NOTE

The capabilities defined and described in the core capability and unit template sections are provided to ensure each like-squadron maintains a common base of training and depth of capabilities. When resources permit, and when in the judgment of the commander additional training would significantly increase the unit's war fighting capability, training to a level above these base capabilities is permitted. It is incumbent upon and expected of commanders to balance any increase in the depth of core capabilities against the long-term health and readiness of their unit while staying within resource constraints.

1. 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.

2. Mission Essential Task List (METL)

a. (UJTL TA 1.1.2) Conduct Shipboard Deck helicopter Landing Qualifications

b. (UJTL TA 1.1.4) Conduct Sea and Air Deployment Operations
- Maintain the capability to deploy and operate from advanced bases, expeditionary airfields, Forward Operating Bases (FOBs), and naval shipping.
- Perform organizational maintenance on assigned aircraft.

c. (UJTL TA 1.2.1) Conduct Air Assault Operations and Air Assault
- Provide assault support transport of combat troops.
- Provide support for casualty evacuation operations.
- Maintain self-defense capability from ground-to-air and air-to-air threats.

d. (UJTL TA 1.2.3) Conduct Amphibious Assault and Raid Operations
- Conduct assault support for maritime special operations.

e. (UJTL TA 4.2) Distribute Supplies and Provide Transport Service
- Conduct aerial re-supply.
- Provide support for mobile Forward Arming and Refueling Points (FARPS).

f. (UJTL TA 6.2) Conduct Joint Personnel Recovery
- Conduct Tactical Recovery of Aircraft and Personnel (TRAP) operations.
- Augment local Search and Rescue (SAR) assets.

g. (UJTL TA 6.4) Conduct Noncombatant Evacuation
- Provide support for evacuation operations.

3. Table of Organization. Refer to Table of Organization 8940 managed by Total Force Structure, MCCDC, for current authorized organizational structure and personnel strength for CH-46 units. As of this publication date, CH-46 units are authorized:

Squadron
 12 CH-46E
 28 Pilots
 19 Crew Chiefs
 19 Aerial Gunner/Observers

4. Core Capability. A core capable CH-46 unit is able to sustain 20 sorties on a daily basis during contingency/combat operations. The sortie rates are based on 1.5 hour average sortie duration and assumes ≥ 70 percent FMC aircraft and ≥ 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 platform.

5. METL/Core Skill Matrix. CH-46 core skills directly support the METL as follows:

METL	CH-46 CORE SKILL						
	FAM	CAL	EXT	FORM	TERF	NVG HLL	NVG LLL
a. Conduct Shipboard Deck helicopter Landing qualifications	X	X				X	X
b. Conduct Sea and Air Deployment Operations	X	X	X	X	X	X	X
c. Conduct Air Assault Operations and Air Assault	X	X	X	X	X	X	X
d. Conduct Amphibious Assault and Raid Operations	X	X	X	X	X	X	X
e. Distribute Supplies and Provide Transport Service	X	X	X	X	X	X	X
f. Conduct Joint Personnel Recovery	X	X		X	X	X	X
g. Conduct Noncombatant Evacuation	X	X		X	X	X	X

METL	CH-46 CORE SKILL							
	AG	EW	DM	MAT	HIE	TAC	NBC	CQ
a. Conduct Shipboard Deck helicopter landing qualifications								X
b. Conduct Sea and Air Deployment Operations	X	X		X		X	X	X
c. Conduct Air Assault Operations and Air Assault	X	X	X	X	X	X	X	X
d. Conduct Amphibious Assault and Raid Operations	X	X	X	X	X	X	X	X
e. Distribute Supplies and Provide Transport Service	X	X	X	X		X	X	X
f. Conduct Joint Personnel Recovery	X	X	X	X	X	X		X
g. Conduct Noncombatant Evacuation	X			X		X		X

6. CH-46 Core Model Minimum Requirements (CMMR). Squadron core competency reflects the minimum level of competency a squadron must achieve to perform its core capability. Squadron core competency is measured in terms of minimum unit Core Skill Proficiency (CSP) and minimum numbers of flight leaders per paragraphs a. and b. below:

a. Minimum Unit CSP Requirements. As a minimum, in order to be considered Core Competent, a unit must possess the following numbers of crews who are proficient in each core skill (Unit CSP). In order to be considered proficient in a core skill (individual CSP), a crewmember must attain and

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maintain proficiency in core skill events, as delineated in paragraphs (1) and (2) below. The standard CH-46 crew consists of 2 Pilots, a Crew Chief, and an AG/O.

CORE SKILL	CH-46 Unit CSP Requirements Squadron			
	Pilots	Crew Chiefs	AG/O	Crews
FAM	16	8	8	8
CAL	16	8	8	8
EXT	12	6	6	6
FORM	16	8	8	8
TERF	16	8	8	8
NVG (HLL)	16	8	8	8
NVG (LLL)	16	8	8	8
AG	12	6	6	6
EW	12	6	6	6
DM	12	6	6	6
MAT	12	6	6	6
HIE	12	6	6	6
TAC	12	6	6	6
NBC	12	6	6	6
CQ	12	6	6	6

(1) Events Required to Attain Individual CSP. To initially attain CSP, a crewmember must successfully complete all of the T&R events listed in the chart below for that core skill.

CH-46 Pilot	FAM	CAL	EXT	FORM	TERF	NVG (HLL)	NVG (LLL)
T&R event requirements to attain competency	200	210	220	230	240	250	310
	201	211	221	231	241	251	311
	202	212	392		242	252	312
		213			243	253	313
						254	314
						255	
						256	
						257	

CH-46 Pilot	AG	EW	DM	MAT	HIE	TAC	NBC	CQ
T&R event requirements to attain competency	281	330	340	350	360	370	380	290
	321	331	341	351	361	371		291
					362	372		293
						373		300
						374		301
						375		

(2) Events Required to Maintain Individual CSP. To maintain CSP, a crewmember must maintain proficiency in all of the T&R events listed in the chart below for that core skill.

CH-46 Pilot	FAM	CAL	EXT	FORM	TERF	NVG (HLL)	NVG (LLL)
T&R event requirements to maintain competency	-	R212	R221 R392	R231	R243	254 R257	313 R314

CH-46 Pilot	AG	EW	DM	MAT	HIE	TAC	NBC	CQ
T&R event requirements to maintain competency	R281 R321	R331	R341	R351	R361	R375	R380	300 301

b. Minimum Combat Leader Requirements. As a minimum, in order to be considered Core Capable, a unit must possess the following numbers of aircrew with the listed flight leadership designations. The flight leadership designations of the squadron CO, XO, OpsO, and MO should not be used to meet the squadron flight leadership minimums (HAC not inclusive). The intent of this note is not to prevent the squadron's senior leaders from flying in these billets, but rather, to ensure that the squadron has appropriate depth due to the fact that competing demands may limit the flight time of these senior leaders. FCP, although not specifically a combat leader, is required to sustain Core Capability in contingency operations.

DESIGNATION	Pilots
HAC	12
SEC LDR	6
DIV LDR	4
FLT LDR	2
AMC	2
FCP	4

7. Qualifications And Designations Tables. The tables below delineate T&R events required to be completed to attain initial qualifications and designations. All stage lectures, briefs, squadron training and prerequisites shall be complete prior to completing final events. Qualification and designation letters signed by the commanding officer shall be placed in individual NATOPS and APR/MPR jackets. Loss of proficiency in all qualification events of a core skill causes the associated qualification to be lost. Regaining a qualification requires completing all R coded syllabus events associated with that qualification. Designations are command specific. Therefore, if pilot has not had PCS or PCA orders since previous designation letter, no additional designation letter is required. Follow-on commands shall repeat "initial documentation procedure."

Qualification (TRACKING CODE)	Initial Event Qualification Requirements
NATOPS (600)	IAW OPNAVINST 3710.7.
Instrument (601)	IAW OPNAVINST 3710.7.
TERF	241, 242, 243
CQ	300, 301
DM	341, 441, 442
NSQ-HLL	251, 252, 253, 254, 255, 256, 257
NSQ-LLL	311, 312, 313, 314
AG (EAC)	281,282,283,321,322

Designation (TRACKING CODE)	Designation Requirements
HAC	602, 603, 604, 605 (Redesignation shall require, at a minimum, 604 or 605. Balance of the syllabus prior to HAC check shall remain at the discretion of the commanding officer.)
SEC LDR	606, 607, 608
DIV LDR	609, 610, 611
FLT LDR	612
AIR MSN CDR	613
TERFI	IAW MAWTS-1 Course Catalog
DMI	IAW MAWTS-1 Course Catalog
NSI (PILOT)	IAW MAWTS-1 Course Catalog
NSI (EAC)	IAW MAWTS-1 Course Catalog
WTI	IAW MAWTS-1 Course Catalog
AGI (EAC)	IAW MAWTS-1 Course Catalog
NSFI (PILOT)	IAW MAWTS-1 Course Catalog
NSFI (EAC)	IAW MAWTS-1 Course Catalog
NSSI	IAW MAWTS-1 Course Catalog
NSSI (EAC)	IAW MAWTS-1 Course Catalog
FCF (670)	IAW OPNAVINST 4790 and command specific directives

a. Instructor Requirements. A squadron should possess the following numbers of aircrew with the listed instructor designations IAW the CH-46 T&R and MCO 3500.12C (WTPP).

INSTRUCTOR DESIGNATION	Pilots	C/C
TERFI	6	4
DMI	2	2
NSI	4	4
WTI	2*	2**
AGI	N/A	4+

*One shall be assigned as the squadron WTI.

**One shall be assigned in Operations as the squadron enlisted WTI.

+AG/O's holding AGI designation can be included in this number.

8. Training Progression Models. The CH-46 training progression model provides community recommended core skill, qualification, and designation attainment timelines for the average crewmember.

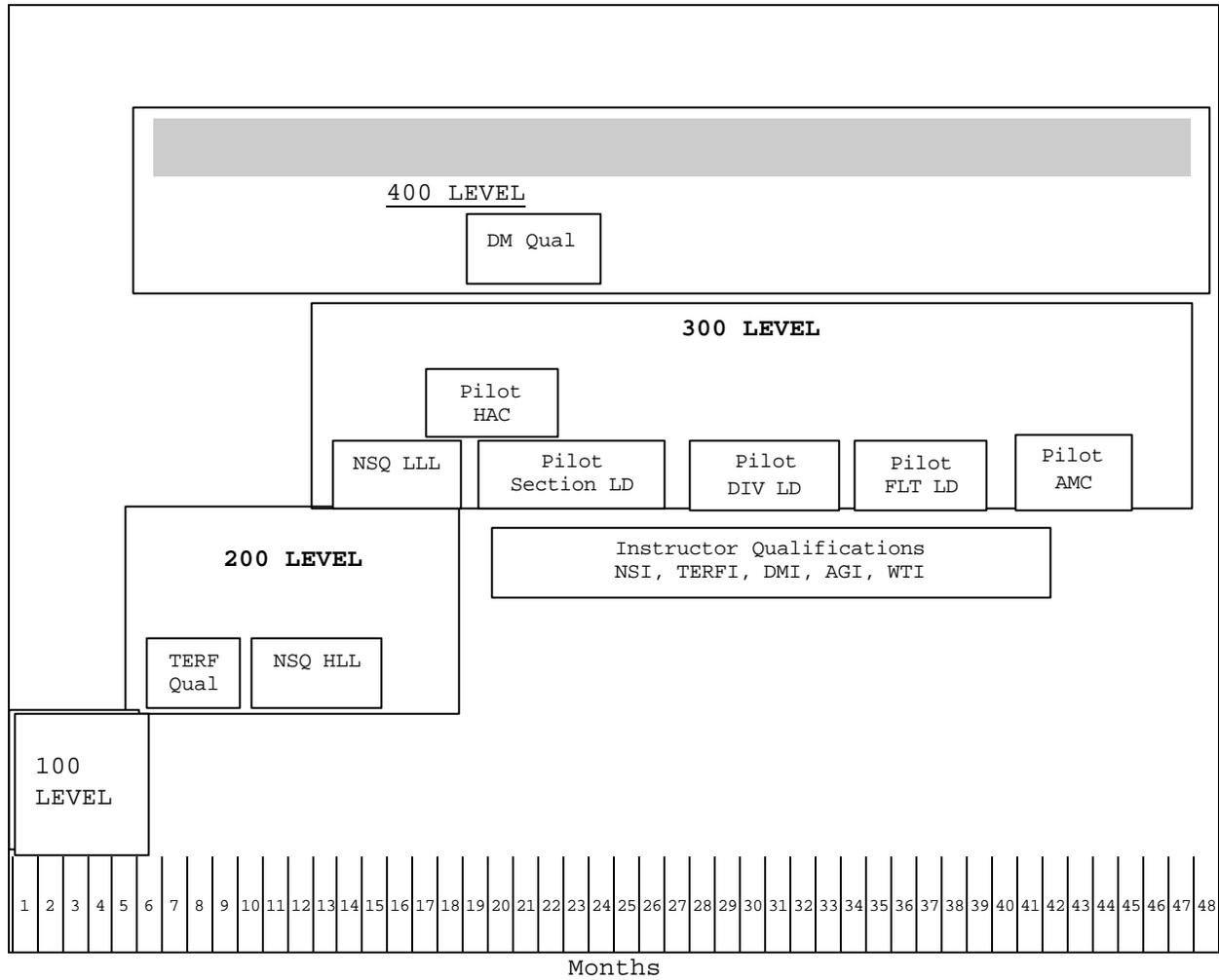


Figure 1-1 CH-46E Pilot Notional Training Progression Model.

101. PROGRAM OF INSTRUCTION (POI) FOR BASIC AND TRANSITION PILOT

<u>WEEKS</u>	<u>COURSE/PHASE</u>	<u>ACTIVITY</u>
1-20	Core Skill Introduction	FRS
21-29	Core Skill Basic	Tactical Squadron
30-49	Core Skill Advanced	Tactical Squadron
50-56	Core Plus	Tactical Squadron

102. POI FOR CONVERSION PILOT

<u>WEEKS</u>	<u>COURSE/PHASE</u>	<u>ACTIVITY</u>
1-10	Core Skill Introduction	FRS
11	Core Skill Basic	Tactical Squadron
12-13	Core Skill Advanced	Tactical Squadron
14-18	Core Plus	Tactical Squadron

103. POI FOR REFRESHER PILOT

<u>WEEKS</u>	<u>COURSE/PHASE</u>	<u>ACTIVITY</u>
1-9	Core Skill Introduction	FRS
10-13	Core Skill Basic	Tactical Squadron
14-17	Core Skill Advanced	Tactical Squadron
18-20	Core Plus	Tactical Squadron

104. POI FOR MODIFIED REFRESHER PILOT

<u>WEEKS</u>	<u>COURSE/PHASE</u>	<u>ACTIVITY</u>
1-9	Core Skill Introduction	FRS

110. GROUND/ACADEMIC TRAINING COURSES OF INSTRUCTION. Utilize academic courseware as outlined in the Instructional System Development (ISD) program and Chapter 6 and 9 of the MAWTS-1 Course Catalog.

120. FLIGHT/SIMULATOR/EVENT TRAINING120.1. Core Skill Introduction Training

<u>STAGE</u>	<u>NO. EVENTS ACFT/SIM</u>	<u>NO. HOURS ACFT/SIM</u>	<u>CRP ACFT/SIM</u>
Basic Qualification	-	-.-	25.0
Familiarization	11/11	15.5/22.0	10.0/4.5
Instruments	4/3	6.0/6.0	4.0/3.0
Navigation	4/0	6.0/0.0	4.0/0.0
Confined Area Landings	2/1	3.0/2.0	1.5/0.5
Formation	2/1	3.0/2.0	2.0/0.5
External Loads	1/1	1.5/2.0	1.0/0.5
Terrain Flight	1/0	1.5/0.0	0.5/0.0
Review	1/1	1.5/2.0	1.0/1.0
Core Skill Introduction Check	1/0	1.5/0.0	1.0/0.0
TOTAL FOR PHASE	27/18	39.5/36.0	25.0/10.0
COMBINED TOTALS	45	75.5	35.0%
ACCUMULATION FOR BASIC POI	45	75.5	60.0%

120.2. Core Skill Basic Training

<u>STAGE</u>	<u>NO. EVENTS</u> <u>ACFT/SIM</u>	<u>NO. HOURS</u> <u>ACFT/SIM</u>	<u>CRP</u> <u>ACFT/SIM</u>
Familiarization	3/1	4.5/2.0	0.6/0.3
Confined Area Landings	3/1	4.5/2.0	1.3/0.3
External Loads	1/1	1.5/2.0	0.5/0.3
Formation Flight	1/1	1.5/2.0	0.3/0.3
Terrain Flight	3/1	4.5/2.0	2.0/0.3
Night Vision Goggles	7/1	10.5/2.0	6.0/0.3
Air-to-Ground	1/0	1.5/0.0	0.5/0.0
Carrier Qualification	<u>3/1</u>	<u>3.0/2.0</u>	<u>1.5/0.5</u>
TOTAL FOR PHASE	22/7	31.5/14.0	12.7/2.3
COMBINED TOTALS	29	45.5	15.0%
ACCUMULATION FOR BASIC POI	74	121.0	75.0%

120.3. Core Skill Advanced Training

<u>STAGE</u>	<u>NO. EVENTS</u> <u>ACFT/SIM</u>	<u>NO. HOURS</u> <u>ACFT/SIM</u>	<u>CRP</u> <u>ACFT/SIM</u>
Carrier Qualification	2/0	2.0/0.0	2.0/0.0
Night Vision Goggles	4/1	6.0/2.0	4.0/0.5
Air to Ground	1/0	1.5/0.0	0.7/0.0
Electronic Warfare	1/1	1.5/2.0	0.8/0.3
Defensive Measures	1/1	1.5/2.0	1.0/0.3
Mountain Area Training	1/1	1.5/2.0	1.0/0.3
Helicopter Insert/Extract Techniques	2/1	2.0/2.0	2.0/0.3
Tactics	4/2	6.0/4.0	4.0/1.0
Nuclear, Biological, and Chemical	0/1	0.0/2.0	0.0/0.5
External Loads	<u>1/1</u>	<u>1.5/2.0</u>	<u>1.0/0.3</u>
TOTAL FOR PHASE	17/9	23.5/18.0	16.5/3.5
COMBINED TOTALS	26	41.5	20.0%
ACCUMULATION FOR BASIC POI	100	162.5	95.0%

120.4. Core Plus Training

<u>STAGE</u>	<u>NO. EVENTS</u> <u>ACFT/SIM</u>	<u>NO. HOURS</u> <u>ACFT/SIM</u>	<u>CRP</u> <u>ACFT/SIM</u>
Tactics	2/1	3.0/2.0	0.8/0.2
Externals	1/0	1.5/1.0	0.4/0.0
Nuclear, Biological, and Chemical	2/0	2.0/0.0	0.6/0.0
Defensive Measures	2/1	3.0/2.0	0.6/0.2
Mountain Area Training	2/0	3.0/0.0	0.6/0.0
Helicopter Insert/Extract Techniques	4/0	4.0/0.0	1.2/0.0
Carrier Qualification	<u>1/0</u>	<u>1.0/0.0</u>	<u>0.4/0.0</u>
TOTAL FOR PHASE	14/2	17.5/4.0	4.6/0.4
COMBINED TOTALS	16	21.5	5.0%
TOTALS FOR BASIC POI	116	184.0	100.0%

121. FLIGHT TRAINING FOR CONVERSION PILOT121.1. Core Skill Introduction Training

<u>STAGE</u>	NO. EVENTS	NO. HOURS
	<u>ACFT/SIM</u>	<u>ACFT/SIM</u>
Familiarization	9/8	12.5/16.0
Instruments	3/3	4.5/6.0
Confined Area Landings	2/1	3.0/2.0
Formation	2/1	3.0/2.0
External Loads	1/1	1.5/2.0
Terrain Flight	1/0	1.5/0.0
Review	0/1	0.0/2.0
Core Skill Introduction Check	<u>1/0</u>	<u>1.5/0.0</u>
TOTAL FOR PHASE	19/15	27.5/30.0
COMBINED TOTALS	34	57.5
ACCUMULATION FOR CONVERSION POI	34	57.5

121.2. Core Skill Basic Training

<u>STAGE</u>	NO. EVENTS	NO. HOURS
	<u>ACFT/SIM</u>	<u>ACFT/SIM</u>
Familiarization	2/1	3.0/2.0
Confined Area Landings	3/1	4.5/2.0
External Loads	1/1	1.5/2.0
Formation Flight	1/1	1.5/2.0
Terrain Flight	3/1	4.5/2.0
Night Vision Goggles	7/1	10.5/2.0
Air-to-Ground	1/0	1.5/0.0
Carrier Qualification	<u>3/1</u>	<u>3.0/2.0</u>
TOTAL FOR PHASE	21/7	30.0/14.0
COMBINED TOTALS	28	44.0
ACCUMULATION FOR CONVERSION POI	62	101.5

121.3. Core Skill Advanced Training

<u>STAGE</u>	NO. EVENTS	NO. HOURS
	<u>ACFT/SIM</u>	<u>ACFT/SIM</u>
Carrier Qualification	2/0	2.0/0.0
Night Vision Goggles	4/1	6.0/2.0
Air to Ground	1/0	1.5/0.0
Electronic Warfare	1/1	1.5/2.0
Defensive Measures	1/1	1.5/2.0
Mountain Area Training	1/1	1.5/2.0
Helicopter Insert/Extract Techniques	2/1	2.0/2.0
Tactics	4/2	6.0/4.0
Nuclear, Biological, and Chemical	0/1	0.0/2.0
External Loads	<u>1/1</u>	<u>1.5/2.0</u>
TOTAL FOR PHASE	17/9	23.5/18.0
COMBINED TOTALS	26	41.5
ACCUMULATION FOR CONVERSION POI	88	143.0

121.4. Core Plus Training

<u>STAGE</u>	<u>NO. EVENTS</u> <u>ACFT/SIM</u>	<u>NO. HOURS</u> <u>ACFT/SIM</u>
Tactics	2/1	3.0/2.0
Externals	1/0	1.5/0.0
Nuclear, Biological, Chemical	2/0	2.0/0.0
Defensive Measures	2/1	3.0/2.0
Mountain Area Training	2/0	3.0/0.0
Helicopter Insert/Extract Techniques	4/0	4.0/0.0
Carrier Qualification	<u>1/0</u>	<u>1.0/0.0</u>
TOTAL FOR PHASE	14/2	17.5/4.0
COMBINED TOTALS	16	21.5
TOTALS FOR CONVERSION POI	104	164.5

122. FLIGHT TRAINING FOR REFRESHER PILOT122.1. Core Skill Introduction Training

<u>STAGE</u>	<u>NO. EVENTS</u> <u>ACFT/SIM</u>	<u>NO. HOURS</u> <u>ACFT/SIM</u>
Familiarization	5/5	8.0/10.0
Instruments	3/2	4.5/4.0
Confined Area Landings	1/0	1.5/0.0
Formation	1/0	1.5/0.0
External Loads	1/0	1.5/0.0
Terrain Flight	1/0	1.5/0.0
Review	0/1	0.0/2.0
Core Skill Introduction Check	<u>1/0</u>	<u>1.5/0.0</u>
TOTAL FOR PHASE	13/8	20.0/16.0
COMBINED TOTALS	21	36.0
ACCUMULATION FOR REFRESHER POI	21	36.0

122.2. Core Skill Basic Training

<u>STAGE</u>	<u>NO. EVENTS</u> <u>ACFT/SIM</u>	<u>NO. HOURS</u> <u>ACFT/SIM</u>
Familiarization	1/0	1.5/0.0
Confined Area Landings	1/0	3.0/0.0
Externals	1/0	1.5/0.0
Formation Flight	1/0	1.5/0.0
Terrain Flight	1/0	2.0/0.0
Night Vision Goggles	3/0	4.5/0.0
Air-to-Ground	<u>1/0</u>	<u>1.5/0.0</u>
TOTAL FOR PHASE	9/0	14.0/0.0
COMBINED TOTALS	9	14.0
ACCUMULATION FOR REFRESHER POI	30	50.0

122.3. Core Skill Advanced Training

<u>STAGE</u>	<u>NO. EVENTS ACFT/SIM</u>	<u>NO. HOURS ACFT/SIM</u>
Night Vision Goggles	3/0	4.5/0.0
Air-to-Ground	1/0	1.5/0.0
Electronic Warfare	1/0	1.5/0.0
Defensive Measures	1/0	1.5/0.0
Mountain Area Training	1/0	1.5/0.0
Helicopter Insert/Extract Techniques	1/0	1.0/0.0
Tactics	1/0	1.5/0.0
Nuclear, Biological, and Chemical	0/1	0.0/2.0
External Loads	1/0	1.5/0.0
TOTAL FOR PHASE	10/1	14.5/2.0
COMBINED TOTALS	11	16.5
ACCUMULATION FOR REFRESHER POI	41	66.5

122.4. Core Plus Training

<u>STAGE</u>	<u>NO. EVENTS ACFT/SIM</u>	<u>NO. HOURS ACFT/SIM</u>
Tactics	1/0	1.5/0.0
Nuclear, Biological, and Chemical	1/0	1.0/0.0
Defensive Measures	2/0	3.0/0.0
Mountain Area Training	1/0	1.5/0.0
TOTAL FOR PHASE	5/0	7.0/0.0
COMBINED TOTALS	5	7.0
TOTALS FOR REFRESHER POI	46	73.5

123. FLIGHT TRAINING FOR MODIFIED REFRESHER PILOT

<u>STAGE</u>	<u>NO. EVENTS ACFT/SIM</u>	<u>NO. HOURS ACFT/SIM</u>
Familiarization	4/5	4.5/10.0
Instrument	3/2	4.5/4.0
Core Skill Introduction Evaluation	1/0	1.5/0.0
TOTAL FOR PHASE	8/7	10.5/14.0
COMBINED TOTALS	15	24.5
TOTALS FOR MODIFIED REFRESHER POI	15	24.5

124. INSTRUCTOR UNDER TRAINING

<u>STAGE</u>	<u>NO. EVENTS ACFT/SIM</u>	<u>NO. HOURS ACFT/SIM</u>
Familiarization	4/0	6.0/0.0
Instrument	2/0	3.0/0.0
Navigation	1/0	1.5/0.0
External Loads	1/0	1.5/0.0
Confined Area Landings	1/0	1.5/0.0
Formation	1/0	1.5/0.0
Instructor Under Training	1/0	3.0/0.0
Night Vision Goggles	1/0	1.5/0.0
TOTAL FOR PHASE	12/0	19.5/0.0
COMBINED TOTALS	12	19.5
TOTALS FOR IUT POI	12	19.5

125. REQUIREMENTS, QUALIFICATIONS AND DESIGNATIONS (RQD) STAGES

<u>STAGE</u>	<u>NO. EVENTS ACFT/SIM</u>	<u>NO. HOURS ACFT/SIM</u>
Annual NATOPS Evaluation	1/0	1.5/0.0
Annual Instrument Evaluation	1/0	1.5/0.0
Aircraft Commander	4/0	6.0/0.0
Section Leader	3/0	4.5/0.0
Division Leader	3/0	4.5/0.0
Flight Leader Check	1/0	1.5/0.0
Mission Commander Check	<u>1/0</u>	<u>1.5/0.0</u>
TOTAL FOR PHASE	14/0	21.0/0.0
COMBINED TOTALS	14	21.0
TOTALS FOR RQD POI	14	21.0

126. SPECIAL TRAINING FLIGHTS

<u>STAGE</u>	<u>NO. EVENTS ACFT/SIM</u>	<u>NO. HOURS ACFT/SIM</u>
Arctic Weather Training	1	2.0
Desert Operations	1	2.0
CRM Training	1	2.0
Water Landings	1	1.0
Air Combat Maneuvering	1	2.0 (Simulator)
Functional Check Pilot Evaluation	1	1.5
ECCS NATOPS Instructor Familiarization	<u>1</u>	<u>2.0</u>
TOTALS FOR SPECIAL TRAINING FLIGHTS	7	12.5

130. EVENT PERFORMANCE REQUIREMENTS1. General

a. Pilots shall fly events annotated with N at least 30 minutes after official sunset. Pilots may fly events annotated with (N) at night.

b. Pilots shall fly events annotated with NS with Night Vision Goggles (NVGs) for the entire flight. Events annotated with (NS) may be conducted at night utilizing NVGs.

c. Pilots should fly all simulator (S) training codes prior to the first flight in the aircraft in stage.

d. Pilots who do not fly Core Skill Introduction training events shall fly them in the subsequent phase of training.

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

f. The Pilot Training Officer/WTI shall ensure all Aircrew Training Forms (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.

g. Transition, Conversion, and Refresher pilots shall have ATFs entered in section 3 of the APR for all flights designated by a T, C, or R in the flight description. These ATFs will replace ATFs previously entered in section 3.

h. 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. Crew Resource Management (CRM) shall be stressed in the training of all pilots.

i. 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. Instructional System Development (ISD) Program. All pilots shall complete assigned ISD lessons prior to completion of the applicable stage.

3. Minimum Altitudes. Pilots should fly all syllabus sorties at the lowest altitude possible commensurate with the sortie description and flight safety.

4. Evaluation Sorties

a. A designated NATOPS Instructor (NI)/Assistant NATOPS Instructor (ANI) shall evaluate RQD-600.

b. A designated instrument evaluator shall evaluate RQD-601.

c. 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 (i.e. delinquent) pilot who has exceeded the refly factor. The evaluator shall complete an ATF for the event.

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

5. Syllabus Assignment. Basic pilots should fly the entire syllabus. Transition, Conversion, and Refresher pilots should fly those flights designated by a T, C, or R in the flight description. The FRS will prescribe any partial Conversion or partial Refresher POI for the Core Skill Introduction syllabus.

6. Refresher Syllabus. T&R Program Manual, the Refresher syllabus is for those pilots of dual control aircraft who require Refresher training at the FRS. This syllabus is predicated on the previously demonstrated experience and syllabus completion of the Refresher PUI. This Manual establishes a truncated syllabus tailored to the Refresher PUI as indicated by those events designated by an R. A pilot in the Refresher syllabus shall fly all R coded events.

a. Designations for Refreshers. At the discretion of the commanding officer, Refresher pilots may regain their previous designations (HAC, Sec Ld, Div Ld, Flt Ld, AMC) by re-flying the senior flight leadership event comparable to each previously held leadership designation.

b. Qualifications for Refreshers. Refreshers must requalify in the appropriate stages of flight (TerfQ, DMQ, NSQ [HLL], NSQ [LLL]). Stage

proficiency may be regained by flying the R syllabus. The senior R coded event in stage shall be flown. Qualification is effective once proficiency is regained.

c. Recertification for Refreshers. Refreshers are recertified by the squadron or MAWTS-1 (as appropriate) as instructors (TERFI, DMI, NSFI, NSI, NSSI) IAW MAWTS-1 course catalog.

(1) Those pilots of dual control aircraft who are out-of-type for less than 485 days and do not require Refresher or Modified Refresher training are simply non-proficient (delinquent) due to the fact that they have exceeded the re-fly factor for any given event. They shall fly all R coded events.

(a) Designations if delinquent but FRS not required. At the discretion of the commanding officer, pilots may regain their previous designations (HAC, Sec Ld, Div Ld, Flt Ld, AMC) by re-flying the senior flight leadership event comparable to each previously held leadership designation.

(b) Qualifications if delinquent and FRS not required. The commanding officer may grant qualification once proficiency in all qualification events is regained.

(c) Recertification not required if FRS not required. The commanding officer may grant recertification upon regaining proficiency in stage.

(2) All the Refresher syllabi issues above apply only up to the stage achieved during the prior tour. Subsequently the pilot will complete the entire remaining basic syllabus. When the R coded events within a stage of training are complete, the pilot may be credited with the CRP for the entire stage of training. This assumes that the Refresher has had previously completed that stage of training. If the Refresher pilot has not previously completed that stage or particular event, then the Refresher shall fly the entire stage or all events not previously flown.

7. Re-fly Interval. Figure 1-2 shows re-fly interval and CRP for the 7562 MOS.

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

a. Annual NATOPS Check (RQD-600).

b. Annual Instrument Check (RQD-601).

c. Any flight in the Core Skill Basic, Core Skill Advanced, Core Plus phase as recommended by the Squadron Standardization Board.

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

131. CORE SKILL INTRODUCTION PHASE

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) All pilots receiving instruction under this syllabus shall be familiar with all emergencies covered on each previous flight.

(2) In preparing for a sortie, pilots shall study emergencies as prescribed in the NATOPS Flight Manual. The pilot's pocket checklist lacks important information presented in the NATOPS Flight Manual. In addition to the emergency procedures, a basic knowledge of aircraft systems related to each particular malfunction shall be studied.

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

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

c. Crew Requirements

(1) Simulator Training - Two RACs/qualified instructor.

(2) Flight Training - IP/RAC/CC.

d. Ground/Academic Training

(1) All pilots shall complete the assigned ISD lessons.

(2) All pilots shall complete NATOPS open book examination prior to FAM-109.

(3) Prior to completing SFAM-118, the RAC shall:

(a) Complete "Introduction to Night Systems Training and Night Systems" contained in the MAWTS-1 Academic Support Package.

(b) Complete the NITE Lab Course "Night Vision Goggle Training Program."

(c) Be familiar with the appropriate chapters of the NWP 3-22.5-CH-46E (CH-46E TACMAN), the MAWTS-1 Helicopter NVD Manual, and the computer generated light level planning calendar.

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

e. Flight and Simulator Event Training (11 Flights, 15.5 Hours / 11 Simulator Events, 22.0 Hours)

SFAM-100 2.0 C,R,M S

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

Requirement

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

(a) Functions the Weapons System Trainer (WST) can simulate and those that are not possible.

(b) Engines and related systems.

1 Beep trim switches.

2 Primary/secondary indications.

(c) Start/shutdown limitations.

(d) Operation of cockpit controls/equipment.

(2) Introduce/Evaluate

(a) Interior inspection/pre-start checklist.

(b) Normal engine start.

(c) Single engine start/engagement.

(d) Pre-taxi checklist.

(e) Radios and communication.

1 Voice communication.

2 ICS operation.

3 UHF & VHF operation.

(f) Normal shutdown.

Performance Standards

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

Prerequisite. Appropriate FRS ISD Lessons.

Ordinance. None.

External Syllabus Support. WST/APT.

SFAM-101

2.0

C S

Goal. Introduce pattern work and ground emergencies.

Requirement

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

(a) APU.

(2) Introduce/Evaluate

(a) Ground taxi.

(b) Takeoff checklist.

- (c) Vertical takeoff.
- (d) Hover patterns.
- (e) Transition to forward flight.
- (f) Normal Pattern.
- (g) Landing checklist.
- (h) Normal approach to a hover.
- (i) Vertical landing.

(3) Review

- (a) Engine start/shutdown.
- (b) Rotor engagement.
- (c) Communication procedures.

(4) Emergencies

- (a) Engine start malfunctions.
 - 1 Hot start/cold hang-up.
 - 2 Circuit breaker malfunctions.
 - 3 Starter hang-up.
- (b) APP/APU malfunctions.
 - 1 Circuit breaker malfunctions.
 - 2 Battery malfunction.
 - 3 APU fire.

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-100, appropriate FRS ISD program lessons.

Ordinance. None.

External Syllabus Support. WST/APT.

SFAM-102

2.0

C S

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

Requirement

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

(a) Rotor Brake.

(2) Introduce/Evaluate

(a) Communications procedures.

(b) Normal approach to a hover.

(c) Normal approach to a no-hover.

(d) Max Gross Wt (minimum power) takeoffs and landings.

(3) Review. All previously introduced malfunctions and procedures.

(4) Emergencies

(a) Engine condition actuator malfunctions.

1 ECA failure rotor brake on.

2 ECA failure on shutdown (FREEZE/MAX/MIN).

(b) Single engine emergencies.

1 HIGE.

2 HOGE.

3 Takeoff.

(c) Engine compartment fire (on deck).

(d) Transformer rectifier failure.

(e) Cross-tie failure (APU running).

(f) Utility hot light.

(g) Rotor brake slippage.

Performance Standards

Pilot shall demonstrate knowledge of the rotor brake system, ECA failures and operation of the aircraft under high gross weights (minimum power).

Prerequisite. SFAM-101, appropriate FRS ISD program lessons.

Ordinance. None.

External Syllabus Support. WST/APT.

SFAM-103

2.0

S

Goal. Introduce running takeoffs and landings and AFCS off flight.

Requirement

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

(a) AFCS.

(2) Introduce/Evaluate

(a) Running takeoff.

(b) Running landing.

(c) AFCS off flight.

(d) Single engine Landings/waveoffs.

(3) Review. Start and shutdown checklist and all previously introduced maneuvers.

(4) Emergencies

(a) ECA failures in flight.

1 Maximum.

2 Minimum.

3 Intermittent.

(b) Generator failure.

(c) LCT failures.

Performance Standards

Pilot shall demonstrate knowledge of the automatic flight control system, single engine operation, and running takeoffs and landings.

Prerequisite. SFAM-102, appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. WST/APT.

SFAM-104

2.0

C,R,M S

Goal. Review previous pattern work and introduce steep approaches and autorotations.

Requirement

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

- (a) Engine oil system.
- (2) Introduce/Evaluate
 - (a) Steep approaches.
 - 1 Hover landing.
 - 2 No hover landing.
 - (b) Straight in 80 kt autorotation.
- (3) Review. AFCS off flight and all previously introduced maneuvers and emergencies.
- (4) Emergencies
 - (a) Single engine emergencies.
 - 1 Lube pump drive shaft failure.
 - 2 Sprag clutch slippage.
 - 3 Compressor stall.
 - (b) DC bus failure.

Performance Standards

Pilot shall demonstrate knowledge of the engine oil system, single engine operation, steep approaches and autorotations.

Prerequisite. SFAM-103, appropriate FRS ISD program lessons.

Ordinance. None.

External Syllabus Support. WST/APT.

SFAM-105

2.0 S

Goal. Introduce 90-degree power recovery autorotation, emergency throttle operations and review previous maneuvers.

Requirement

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

- (a) Emergency throttle system.
- (2) Introduce/Evaluate
 - (a) Obstacle takeoff.
 - (b) Emergency throttle operations.
 - (c) 90-degree autorotation.
- (3) Review. All previously introduced procedures.

(4) Emergencies

(a) Single engine emergencies.

1 Power turbine speed signal interruption
(Flex shaft failure).

2 Engine compartment fire.

(b) Essential bus failures.

(c) Control boost malfunctions.

(d) Rotor brake failure in-flight.

Performance Standards

Pilot shall demonstrate knowledge of the emergency throttle system, obstacle takeoff and 90-degree autorotation.

Prerequisite. SFAM-104, appropriate FRS ISD program lessons.

Ordinance. None.

External Syllabus Support. WST/APT.

SFAM-106

2.0

S

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

Requirement

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

(a) Electrical system.

(2) Introduce/Demonstrate

(a) AFCS off during portions of flight.

(b) Autorotation.

(c) Emergency throttle operations.

(3) Review. All previously introduced maneuvers and emergencies.

(4) Emergencies

(a) Fuel contamination.

(b) Fuel boost malfunctions.

(c) Engine driven fuel pump failure.

(d) Electrical fire/smoke.

(e) Single and dual AFCS malfunctions.

(f) Transmission malfunctions.

1 Gauge malfunctions.

2 Imminent failure.

Performance Standards

Pilot shall demonstrate knowledge of the electrical systems and all previously introduced maneuvers and emergencies.

Prerequisites. SFAM-105, appropriate FRS ISD program lessons.

Ordinance. None.

External Syllabus Support. WST/APT.

SFAM-107

2.0 C,R,M S

Goal. Review all FAM stage maneuvers.

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

(1) Evaluate. Previously introduced maneuvers and emergencies.

(2) Emergencies. AC essential bus failure and DC bus failure.

Prerequisite. SFAM-106, appropriate FRS ISD program lessons.

Performance Standards

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

Ordinance. None.

External Syllabus Support. WST/APT.

SFAM-190

2.0 C,R,M S

Goal. Introduce/Evaluate ECCS start/shutdown, ground emergencies and basic single engine emergencies.

Requirement

(1) Discuss. (ref: CH-46E ECCS NATOPS Manual/CH-46E Flight Standardization Manual)

(a) ECCS system

1 Theory of operation.

2 Start sequence.

3 Shutdown sequence.

4 Normal mode operation.

5 Manual mode operation.

(b) Emergencies

1 Hot Start.

2 Single engine failure takeoff.

3 Single engine failure in HOGE.

4 Single engine failure in flight.

5 Compressor stall.

(2) Introduce/Evaluate

(a) Normal engine start.

(b) Normal shutdown.

(3) Emergencies

(c) Hot start.

(d) Single engine failure on takeoff.

(e) Single engine failure in HOGE.

(f) Single engine failure in flight.

(g) Compressor stall.

(h) ECA failure on shutdown.

Performance Standards

Pilot shall demonstrate knowledge of ECCS, NATOPS checklists and basic single engine emergencies with ECCS.

Prerequisite. Appropriate FRS ISD Lessons.

Ordinance. None.

External Syllabus Support. WST/APT.

SFAM-191

2.0

C,R,M S

Goal. Introduce/Evaluate ECCS in-flight emergencies.

Requirement

(1) Discuss. (ref: CH-46E ECCS NATOPS Manual/CH-46E Flight Standardization Manual)

(a) ECCS system

1 Fail freeze circuitry.

2 Engine malfunction analysis chart.

(b) Emergencies

1 ECCS failure in flight.

2 Flex shaft failure in flight.

3 Sprag clutch slippage.

(2) Review. Start and shutdown checklist and previously introduced emergencies.

(3) Emergencies

(a) ECCS failure in flight.

(b) Flex shaft failure in flight.

(c) Sprag clutch slippage.

Performance Standards

Pilot shall demonstrate knowledge of ECCS, inflight emergencies and demonstrate proficiency in NATOPS checklists.

Prerequisite. SFAM-190.

Ordnance. None.

External Syllabus Support. WST/APT.

FAM-108

0.0 C,R,M 1 STATIC ACFT A

Goal. Introduce normal ground and preflight procedures.
Requirement

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

(a) Systems

1 APU/Ground Power.

2 CNCS.

(b) Emergencies

1 APU compartment fire.

2 All emergency procedures covered in simulator stage.

(2) Introduce/Evaluate

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

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

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

(d) Preflight.

(e) Postflight.

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

(g) Hot seat procedures.

(h) Emergency egress.

(i) CNCS Fam on APU/ground power.

(j) NATOPS Checklists (prestart/starting engines/engaging rotors/pretaxi/pretakeoff/takeoff/prelanding/postlanding/shutdown).

Performance Standards

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

Prerequisite. Appropriate FRS ISD program lessons.

Ordinance. None.

External Syllabus Support. Ground power source.

FAM-109

1.5 C 1 CH-46E A

Goal. Introduce start, normal ground and flight procedures including low work and normal approaches. Review SFAM-101.

Requirement

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

(a) Systems

1 Engine condition system.

2 Engine oil system.

(b) Emergencies

1 Hot start/engine fire.

- 2 Engine compartment fire.
- 3 Rotor brake slippage during engine start.
- 4 ECA failure with rotor brake on.
- 5 ECA failure on shutdown.
- 6 Cold hang-up.

(2) Demonstrate/Introduce

- (a) Normal cockpit procedures.
- (b) Starting procedures.
- (c) Communication procedures.
- (d) Pretaxi procedures.
- (e) Ground taxiing.
- (f) Elevated nose wheel taxi/rearward taxi (demo).
- (g) Vertical takeoff.
- (h) Transition to forward flight (demo).
- (i) Normal approach (demo).
- (j) Max gross takeoff and landing (demo).
- (k) Hover patterns.
- (l) Operation of engine beep trim switches.
- (m) Shutdown procedures.
- (n) Aircraft trim/CDRB usage.
- (o) Home field course rules.

Performance Standards

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

Prerequisite. FAM-108.

Ordinance. None.

External Syllabus Support. None.

FAM-110

1.5 C 1 CH-46E A

Goal. Introduce landing pattern options. Practice start, normal ground and previously introduced flight procedures. Review SFAM-102.

Requirement

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

(a) Systems

- 1 Power Management System.
- 2 Flight Control System to include AFCS.

(b) Emergencies

- 1 Single engine failure while HIGE.
- 2 Single engine failure on takeoff.
- 3 Lost communications per local course rules.
- 4 All previously introduced emergencies.

(2) Demonstrate/Introduce

- (a) No hover landing (demo).
- (b) Simulated single engine/runway landing (demo).
- (c) Steep approach (demo).
- (d) Running takeoff/landing (demo).
- (e) Ramp and hatch usage (demo).
- (f) Torque horn (demo).

(3) Review/Evaluate

- (a) Normal cockpit procedures.
- (b) Starting procedures.
- (c) Communication procedures.
- (d) Pretaxi procedures.
- (e) Ground taxiing.
- (f) Elevated nose wheel taxi/rearward taxi.
- (g) Vertical takeoff.
- (h) Transition to forward flight.
- (i) Normal approach.
- (j) Max gross takeoff and landing.

- (k) Hover patterns.
- (l) Operation of engine beep trim switches.
- (m) Shutdown procedures.
- (n) Aircraft trim/CDRB usage.
- (o) Home field course rules.

Performance Standards

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

Prerequisite. FAM-109 and appropriate FRS ISD program lessons.

Ordinance. None.

External Syllabus Support. None.

FAM-111

1.5 C 1 CH-46E A

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

Requirement

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

(a) Systems

1 Electrical Systems to include AC, DC, and generators.

(b) Emergencies

1 Single engine failure in-flight.

2 Dual engine failure in-flight.

3 Engine restart in-flight.

4 Single AFCS failure.

5 Dual AFCS failure.

6 Fuel jettison.

(2) Demonstrate/Introduce

(a) PMS-off flight (demo).

(b) Single engine failure on takeoff and HIGE (demo).

- (c) Straight-in autorotation (demo).
 - (d) AFCS off flight (demo).
 - (e) Steep approach.
 - (f) Single engine flight/approach/wave-off.
 - (g) No-hover landing.
 - (h) Running takeoff/landing.
 - (i) Local course rules.
- (3) Review/Evaluate
- (a) Ground taxiing.
 - (b) Vertical takeoff.
 - (c) Transition to forward flight.
 - (d) Normal approach.
 - (e) Max gross takeoff and landing.
 - (f) Communications procedures.
 - (g) Previously introduced maneuvers as necessary.

Performance Standards

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

Prerequisite. FAM-110 and appropriate FRS ISD program lessons.

Ordinance. None.

External Syllabus Support. None.

FAM-112

1.5 1 CH-46E A

Goal. Introduce AFCS off flight and minimum power pattern work. Review SFAM-103.

Requirement

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

(a) Systems

1 Transmissions and Drive System to include Sprag Clutch.

2 Emergency Throttle System.

3 Rotor Brake System.

(b) Emergencies

1 Fuselage fire in-flight.

2 Smoke and fume elimination.

3 Engine fire in-flight.

4 Generator failure.

5 Electrical fire.

(2) Demonstrate/Introduce

(a) Ninety-degree power recovery autorotation (demo).

(b) Single engine to a spot (demo).

(c) Straight-in autorotation.

(d) AFCS off flight.

(e) Single engine failure on takeoff/HIGE.

(f) PMS-off flight.

(3) Review/Evaluate

(a) Running takeoff and landing.

(b) Single engine flight/approach/waveoff.

(c) No hover landing.

(d) Local course rules.

(e) Previously introduced maneuvers as necessary.

Performance Standards

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

Prerequisites. FAM-111 and appropriate FRS ISD program lessons.

Ordinance. None.

External Syllabus Support. None.

FAM-113

1.5

C,R,M 1 CH-46E A

Goal. Review previous pattern work and introduce Emergency Throttle operations. Review maneuvers from SFAM-104.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E FRS Standardization Manual)

(a) Systems

1 Engine Fuel Control.

2 Engine Fuel System.

(b) Emergencies

1 Nf flex shaft failure.

2 Rotor brake failure in-flight.

3 Sprag clutch seizure.

4 Sprag clutch slippage.

5 Compressor stall.

6 Single engine failure HOGE.

7 Dual engine failure HOGE.

(2) Demonstrate/Introduce

(a) Practice ETS operation/approaches (demo).

(b) Single engine failure HOGE (demo).

(c) Max-glide power recovery autorotation (demo).

(d) Simulated ECA failure in-flight (demo).

(e) Ninety degree power recovery autorotation.

(f) Simulated single engine to a spot.

(3) Review/Evaluate

(a) Straight-in power recovery autorotation.

(b) Max gross weight/min power takeoff and landings.

(c) AFCS off flight/approaches.

(d) Simulated single engine approach/landings.

(e) Simulated single engine failure on takeoff.

(f) Simulated single engine failure HIGE.

(g) Previously introduced maneuvers as necessary.

Performance Standards

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

Prerequisite. FAM-112 and appropriate FRS ISD program lessons.

Ordinance. None.

External Syllabus Support. None.

FAM-114

1.5

C 1 CH-46E A

Goal. Introduce ETS techniques and review as required.

Requirement

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

(a) Systems

1 Utility Hydraulic System.

2 Hydraulic Boost System.

(b) Emergencies

1 ECA failure.

2 Imminent transmission failure.

3 Fuel boost pump failure.

4 Engine driven fuel pump failure.

5 Fuel quantity indicator failure.

6 LCT actuator failures.

7 Other emergencies as required.

(2) Demonstrate/Introduce

(a) FAM maneuvers in various cyclic trim modes (demo).

(b) Practice ETS operations in-flight (demo).

(c) ETS operations.

(d) ETS approach/landings.

- (e) Maximum glide power recovery autorotation.
- (3) Review/Evaluate
 - (a) Ninety degree power recovery autorotation.
 - (b) Single engine to a spot.
 - (c) Max gross weight/min power takeoff and landings.
 - (d) AFCS off flight/approaches.
 - (e) Steep approach.

Performance Standards

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

Prerequisite. FAM-113 and appropriate FRS ISD program lessons.

Ordinance. None.

External Syllabus Support. None.

FAM-115

1.5 1 CH-46E A

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

Requirement

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

(a) Systems

- 1 Integrated Cargo Handling Systems.
- 2 Review all system limitations.

(b) Emergencies

- 1 Hydraulic flight control boost failures.
- 2 Utility hydraulic system/subsystem failure.
- 3 Utility hydraulic system overheating.
- 4 All previously introduced emergencies as required.

(c) Miscellaneous

- 1 Ditching.

2 Single engine takeoff from water/water taxi.

3 Inadvertent HEFS inflation.

4 Cargo jettison.

(2) Review/Evaluate

(a) All previously introduced FAM maneuvers.

(b) Max glide power recovery autorotation.

(c) ETS operations.

Performance Standards

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

Prerequisite. FAM-114 and appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. None.

FAM-116

1.5 C,R,M 1 CH-46E A

Goal. FAM stage progress check.

Requirement

(1) Evaluate. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)

(a) All FAM stage maneuvers.

(2) Review. 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-115 and appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. None.

FAM-117

1.5 C,R,M 1 CH-46E A N

Goal. Introduce night operations.

Requirement

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

- (a) Aircraft lighting and use.
- (b) Radar altimeter use.
- (c) CRM.
- (d) Night scan.
- (e) Prelaunch communications with light signals.
- (f) Emergency procedures at night.

(2) Introduce/Evaluate

- (a) Takeoff to a hover.
- (b) Transition to forward flight.
- (c) Normal approach.
- (d) Vertical landing from a hover.
- (e) Running landing.
- (f) Steep approach.
- (g) Power recovery autorotations.
- (h) AFCS off flight/approach/landing.
- (i) Simulated single engine approach/landing.
- (j) ETS approach/landing.

Performance Standards

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

Prerequisite. FAM-116 and appropriate FRS ISD lessons.

Ordnance. None.

External Syllabus Support. None.

SFAM-118

2.0

C S NS

Goal. Introduce NVG procedures.

Requirement

(1) Introduce/Evaluate

- (a) Goggle/Degoggle.

- (b) NVG eyelane/goggle preflight.
- (c) Aircraft lighting procedures.
- (d) Scan techniques.
- (e) Vertical takeoffs/landings.
- (f) Hover patterns.
- (g) Normal approaches.

(2) Emergencies. Any previously introduced emergency as appropriate.

Performance Standards

Pilot shall practice NVG procedures and scan technique to prepare for aircraft events.

Prerequisite. FAM-117, NVG Lab, Night Systems class and appropriate FRS ISD lessons.

Ordinance. None.

External Syllabus Support. WST/APT, Night Vision Goggles.

FAM-119

2.0 C,R 1 CH-46E A NS

Goal. Introduce NVG flight.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, MAWTS-1 NVD Manual)

- (a) CRM.
- (b) Crew comfort levels.
- (c) NVG failures.
- (d) Depth perception.
- (e) Aircraft lighting.
- (f) Emergency procedures.
- (g) MAWTS-1 NVD Manual.
- (h) ANVIS 6 or 9 NVD, and NVG HUD (HMD).

(2) Introduce

- (a) Use of NVGs at an unlighted outlying field under ambient light levels greater than .0022 LUX as depicted by the computer generated Light Level Planning Calendar.

(b) Use and wear of NVGs while performing taxi, basic air work, low work, and touch-and-go pattern work.

(3) Emergencies. Perform as required.

Performance Standards

Pilot shall practice basic FAM maneuvers safely while wearing NVGs.

Prerequisite. SFAM-118, NVG Lab, Night Systems class, appropriate FRS ISD lessons.

Ordinance. None.

External Syllabus Support. NVGs, unlit airfield.

2. Instruments (INST)

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

b. General

(1) 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.

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

(3) Pilot shall complete IGS prior to INST-126 if the pilot does not possess a current instrument rating.

(4) Pilots will find maneuver descriptions in the NATOPS Instrument Flight Manual and explanations in the current FRS Standardization Manual.

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

(6) Prerequisite. Appropriate FRS ISD program lessons.

c. Crew Requirement

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

(2) Flight Training - IP/RAC/CC.

d. Ground Training. All basic pilots shall complete the appropriate ISD lessons. Transition, Conversion, and Refresher pilots shall complete their designated lessons.

e. Simulator Event and Flight Training. (3 Events, 6.0 Hours/4 Flights, 6.0 Hours).

SINST-120

2.0

C,R,M S

Goal. Introduce radio, TACAN, ADF, and radar altimeter procedures.

Requirement

(1) Review

- (a) Instrument checklist.
- (b) ITO.
- (c) Altitude hold procedures.
- (d) Level speed change.
- (e) Timed turns.
- (f) S-1 patterns.
- (g) Full/partial panel unusual attitude recoveries.
- (h) Partial panel.
- (i) Oscar pattern.
- (j) Instrument autorotation.

(2) Introduce/Evaluate

- (a) TACAN procedures.
- (b) LF/UHF ADF procedures.
- (c) GCA procedures.
- (d) 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. Appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. WST/APT/operable TACAN/ADF.

SINST-121

2.0

C,R,M S (N)

Goal. Practice basic instrument flight and coordination maneuvers.

Requirement

(1) Discuss

- (a) Maneuver limitations.
- (b) Compass system control panel.
- (c) Instrument scan.

(2) Introduce/Evaluate

- (a) Instrument checklist.
- (b) Level speed change.
- (c) Timed turns (standard and one-half standard rate).
- (d) Climbs and descents.
- (e) Unusual attitudes.
- (f) Partial panel at cruise altitude.
- (g) Oscar pattern.
- (h) Vertical S-1 pattern.

(3) 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-120, appropriate FRS ISD lessons.

Ordinance. None.

External Syllabus Support. WST/APT/operable TACAN/ADF.

SINST-122

2.0

C S N

Goal. Introduce radio instrument orientation.

Requirement

(1) Introduce/Evaluate

- (a) ADF time/distance checks.
- (b) ADF holding.
- (c) ADF approach.
- (d) ADF missed approach.
- (e) UHF direction finding.

- (f) Instrument departure.
- (2) Review/Evaluate
 - (a) Basic airwork.
 - (b) Basic instrument work.
 - (c) Instrument takeoff.
- (3) 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 and demonstrate instrument orientation.

Prerequisite. SINST-121, appropriate FRS ISD lessons.

Ordinance. None.

External Syllabus Support. WST/APT/operable TACAN/ADF.

INST-123

1.5 C,R,M 1 CH-46E/WST A/S (N)

Goal. Practice TACAN/GCA procedures.

Requirement

- (1) Introduce/Evaluate
 - (a) TACAN point-to-point navigation.
 - (b) TACAN tracking, radial changes.
 - (c) TACAN holding.
 - (d) TACAN arcing.
 - (e) TACAN approach.
 - (f) TACAN missed approach.
 - (g) GCA (PAR, ASR) procedures.
 - (h) TACAN departure.
- (2) Review/Evaluate
 - (a) Instrument takeoff.
 - (b) UHF/ADF orientation.
- (3) 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-122, appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. Operable TACAN, GCA approach.

INST-124

1.5 C,R,M 1 CH-46E/WST A/S (N)

Goal. Introduce enroute procedures.

Requirement

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

- (a) Fuel management.
- (b) Internal fuel tank procedures.

(2) Introduce/Evaluate

- (a) GCA (ASR).
- (b) Cross-Country Procedures.
 - 1 Flight logs.
 - 2 File flight plan.
 - 3 Departure/airways/arrival procedures.
 - 4 Close out flight plan.

(3) Review/Evaluate

- (a) TACAN procedures.
- (b) GCA (PAR).
- (c) Basic instruments.

(4) 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 to an approved military field within the parameters set forth in the Instrument manual.

Prerequisite. INST-123, appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. Operable TACAN, GCA Approach.

INST-125

1.5 1 CH-46E/WST A/S (N)

Goal. Review INST-123. Emphasize approaches.

Requirement

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

(a) Flight filing when airborne.

(b) Pilot responsibilities at other fields.

(2) Review/Evaluate

(a) Flight logs.

(b) Filing DD-175.

(c) Departure/airways/approach procedures.

(d) Voice procedures.

(e) Instrument approaches.

(f) Missed approaches.

(3) Emergencies. Perform as required.

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 military field within the parameters set forth in the Instrument manual. Emphasis placed on DD-175 and filing procedures.

Prerequisite. INST-124, appropriate FRS ISD lessons.

Ordinance. None.

External Syllabus Support. Operable TACAN, GCA approach.

INST-126

1.5 C,R,M 1 CH-46E/WST A/S (N)

Goal. RAC/Refresher Instrument check.

Requirement

(1) Review/Evaluate. All previously introduced instrument maneuvers and procedures.

(2) Emergencies. Perform as required.

Performance Standards

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

Prerequisites. INST-125, appropriate instrument minimums per OPNAVINST 3710.7.

Ordnance. None.

External Syllabus Support. Operable TACAN, GCA approach.

3. Navigation (NAV)

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

b. General. Conversion aircrews qualified and current in navigation in previous type aircraft are exempt. Pilots will be prepared to discuss the seven critical steps of CRM as applicable to each event.

c. Crew Requirement. IP/RAC/CC.

d. Flight Training. (4 Flights, 6.0 Hours).

NAV-130 1.5 1 CH-46E A

Goal. Introduce day visual navigation.

Requirement

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

(a) CRM.

(b) Lost plane procedures.

(c) Time/distance checks.

(d) Distance estimation and map legend information.

(e) Map Preparation.

(f) METT-TSL considerations on route selection.

(2) Introduce

(a) Navigation procedures emphasizing use of terrain, contour features, and triangulation to determine position.

(b) Use of 1:250,000 maps.

(c) Point-to-point navigation to at least five checkpoints at 200 to 500 feet AGL. Remain within 500 meters of course line.

Performance Standards

Pilot shall perform a navigation route utilizing a 1:250,000 map remaining within 500 meters of course throughout the route that consists of a minimum of five checkpoints.

Prerequisite. FAM-113, FRS Navigation class.

Ordnance. None.

External Syllabus Support. None.

NAV-131

1.5 1 CH-46E A

Goal. Review NAV-130.

Requirement

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

- (a) Comfort level.
- (b) Navigation techniques.
- (c) Map preparation.
- (d) Boundaries.
- (e) Wind correction for DR navigation.
- (f) In-flight route changes.
- (g) Onboard navigation systems.
- (h) Basic Survivability Concepts.

(2) Plan and navigate at 200-300 feet AGL to a minimum of six predetermined terrain features using 1:50,000 maps. Remain within 200 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 200 meters of course for a minimum of six checkpoints.

Prerequisite. NAV-130.

Ordinance. None.

External Syllabus Support. None.

NAV-132

1.5 1 CH-46E A N

Goal. Introduce visual navigation at night.

Requirement

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

- (a) CRM.
- (b) Special characteristics of night NAV.
- (c) Map preparation/mission planning.
- (d) Onboard navigation systems.

(e) Aircraft Signatures.

(2) Introduce

(a) Dead reckoning navigation to at least four points using pre-computed times and airspeeds.

(b) Altitude at 500-1,000 feet AGL.

(3) 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 500 meters of course for a minimum of four checkpoints at night.

Prerequisite. NAV-131 and FAM-117.

Ordinance. None.

External Syllabus Support. None.

NAV-133

1.5

1 CH-46E A NS

Goal. Introduce NVG navigation.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, CH-46E TAC Manual, MAWTS-1 NVD Manual)

(a) Map preparation.

(b) Cockpit interior lighting.

(c) CRM.

(d) Crew comfort levels.

(e) Inadvertent IMC.

(f) NVG navigation techniques.

(g) Onboard navigation systems.

(h) Aircraft survivability equipment.

(2) Introduce/Evaluate

(a) Navigation to at least five points using 1:250,000 maps.

(b) Altitude 200-500 feet AGL.

(3) Emergencies. Perform as required.

Performance Standards

Pilot shall perform a navigation route utilizing NVGs remaining within 500 meters of course for a minimum of five checkpoints.

Prerequisite. NAV-132 and FAM-119.

Ordnance. None.

External Syllabus Support. NVGs.

4. Confined Area Landings (CAL)

a. Purpose. To develop takeoff and landing skills in confined areas.

b. General. Maneuver descriptions; refer to paragraph 131.1b.

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

(2) Prerequisite. Refer to paragraph 131.1.e.

c. Crew Requirement. IP/RAC/CC.

d. Ground Training. Refer to paragraph 131.1d.

e. Simulator Event and Flight Training. (1 Event, 2.0 Hours/2 Flights, 3.0 Hours).

SCAL-140 2.0 C S

Goal. Introduce confined area work.

Requirement

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

(a) CRM.

(b) Aircraft clearance.

(c) Zone brief.

(2) Introduce/evaluate

(a) Confined area approach.

(b) Confined area landing.

(c) Masking/unmasking.

(d) Low level quick stops.

(e) Bunts/rolls.

(f) Low level flight.

(3) Emergencies

- (a) ETS operation.
- (b) Emergency landing in trees.
- (c) Others as required.

Performance Standards

Pilot shall perform landing to a confined area emphasizing obstacle clearance and TERF Maneuvers IAW CH-46E TAC Manual.

Prerequisite. Appropriate FRS ISD program lessons.

Ordinance. None.

External Syllabus Support. WST/APT.

CAL-141

1.5 C,R 1 CH-46E A

Goal. Introduce confined area work.

Requirement

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

- (a) CRM.
- (b) Aircraft clearance.
- (c) Zone brief.
- (d) Confined area approaches and landings.
- (e) Aircraft vulnerability.

(2) Demonstrate. Mainmount landing.

(3) Introduce/Evaluate

- (a) Confined area approach.
- (b) Confined area landing.
- (c) Obstacle Approach.
- (d) Waveoff.
- (e) Obstacle takeoff.

(4) Emergencies

- (a) Emergency landing in trees.

Performance Standards

Pilot shall perform confined area landings to an unprepared surface.

Prerequisite. FAM-116, appropriate FRS ISD lessons.

Ordinance. None.

External Syllabus Support. Confined area landing zones.

CAL-142

1.5 C 1 CH-46E A NS

Goal. Introduce NVG CALs.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) NVG failures.

(2) Introduce/Evaluate. NVG confined area landings/takeoffs at various unlighted CAL zones.

(3) Emergencies. Perform as required.

Performance Standards

Pilot shall perform confined area landings to an unprepared surface utilizing NVGs.

Prerequisite. FAM-119 and CAL-141.

Ordinance. None.

External Syllabus Support. NVGs, CAL zones.

5. Formation (FORM)

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

b. General. Refer to paragraph 131.1b. Pilots will be prepared to discuss the seven critical steps of CRM as applicable to each event.

c. Crew Requirements. IP/RAC/CC.

d. Ground Training. Refer to paragraph 241.1e.

e. Simulator Event and Flight Training. (1 Event, 2.0 Hours/2 Flights, 3.0 Hours).

SFORM-150

2.0 C S N

Goal. Introduce day and night (unaided) formation procedures.

Requirement

(1) Discuss

(a) Aircraft lighting and use.

- (b) Radar altimeter use.
 - (c) CRM.
 - (d) Night scan.
 - (e) Visual cues for night formation.
 - (f) Depth perception/relative motion at night.
 - (g) Hazards peculiar to night formation.
- (2) Introduce/Evaluate
- (a) Section takeoff.
 - (b) Cruise formation.
 - (c) Parade formation.
 - (d) Breakup and Rendezvous.
 - 1 Running rendezvous.
 - 2 Carrier rendezvous.
 - (e) Crossovers.
 - 1 Cruise crossovers.
 - 2 Parade crossovers.
 - (f) Turns.
 - 1 Cruise turns.
 - 2 Parade turns.
 - (g) Lead Changes.
 - 1 Cruise lead changes.
 - 2 Parade lead changes.
 - (h) Section landings.
- (3) Emergencies. Electrical system malfunctions or as required.

Performance Standards

Pilot shall perform confined area landings to an unprepared surface.

Prerequisite. Appropriate FRS ISD program lessons and SCAL-140.

Ordinance. None.

External Syllabus Support. NVGs, WST/APT.

FORM-151

1.5

C, R 2 CH-46E A

Goal. Introduce formation procedures.

Requirement

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

- (a) Cruise principles.
- (b) Radius of turn concept.
- (c) Formation types.
- (d) Break up and rendezvous.
- (e) Overrun.

(2) Introduce/Evaluate

- (a) Cruise formation.
- (b) Cruise turns.
- (c) Section cruise confined area takeoffs and landings.
- (d) Lead change.

(3) Emergencies. Perform as required.

Performance Standards

Pilot shall perform cruise formation flight and five section cruise landings to an unprepared surface.

Prerequisite. CAL-141, appropriate FRS ISD Lessons.

Ordinance. None.

External Syllabus Support. CAL zones.

FORM-152

1.5

C 2 CH-46E A

Goal. Introduce parade formation procedures.

Requirement

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

- (a) Hand/light signals.
- (b) Parade principles.

(2) Introduce/Evaluate

- (a) Parade formation.
- (b) Crossovers.

(c) Parade turns.

(d) Lead changes.

(e) Section parade takeoffs/landings to an OLF.

(3) Emergencies. Perform as required.

Performance Standards

Pilot shall perform parade formation flight and section parade landings to an improved surface safely.

Prerequisite. FORM-151, appropriate FRS ISD lessons.

Ordinance. None.

External Syllabus Support. Prepared surface runway.

6. External Loads (EXT)

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

b. General. Refer to paragraph 241.1b.

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

(2) Prerequisite. Refer to paragraph 241.1d.

c. Crew Requirements. IP/RAC/CC.

d. Ground Training. Refer to paragraph 241.1e.

e. Simulator Event and Flight Training. (1 Event, 2.0 Hours/1 Flight, 1.5 Hours).

SEXT-160 2.0 C S

Goal. Introduce day and night external cargo operations.

Requirement

(1) Discuss

(a) HST signals.

(b) Power available versus power required limitations.

(c) CRM.

(d) Crew comfort level.

(e) Obstacle clearance.

(f) Aircraft lighting.

(g) Load and pendant lighting.

(2) Introduce/Evaluate

- (a) Configure aircraft for external cargo.
- (b) Approach to pickup zone.
- (c) Cargo hookup.
- (d) Departure from pickup zone.
- (e) Enroute phase.
- (f) Cargo delivery.
- (g) Simulated hoist operations.
- (h) External cargo operations to a confined area.
- (i) Obstacle takeoff with external cargo.
- (j) Confined area landings.
- (k) Steep approach to a confined area.

(3) Emergencies. Perform as required.

- (a) Failure of one engine with an external load.
- (b) Loss of ICS.
- (c) Aerodynamically unstable/oscillating loads.
- (d) Cargo jettison.

Performance Standards

Pilot shall perform five pickups and dropoffs to a confined zone.

Prerequisite. SCAL-140, appropriate FRS ISD program lessons.

Ordinance. None.

External Syllabus Support. WST/APT.

EXT-161

1.5 C,R 1 CH-46E A

Goal. Introduce external cargo operations.

Requirement

(1) Discuss

- (a) Inadvertent IMC while conducting external operations.
- (b) Approach to pickup zone.
- (c) Cargo hookup.

- (d) Departure from pickup zone.
- (e) Enroute phase.
- (f) Cargo delivery.
- (g) External operations to a confined area.
- (h) Obstacle takeoff with external cargo.
- (i) Standard terminology.
- (j) Hook/pendant preflight.
- (k) Cargo jettisoning.
- (l) Loss of ICS.
- (2) Introduce/Evaluate
 - (a) Pickup and delivery of FMF equipment (when available).
 - (b) External cargo operations to a confined area.
 - (c) Obstacle takeoff with external cargo.
- (3) Review/Evaluate
 - (a) Confined area landings.
 - (b) Steep approach to a confined area.
 - (c) Obstacle takeoff.
- (4) Emergencies. Perform as required.

Performance Standards

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

Prerequisite. CAL-141, appropriate FRS ISD lessons.

Ordinance. None.

External Syllabus Support. HST team, 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. Maneuver descriptions; refer to CH-46E FRS Standardization Manual and CH-46E TAC Manual.

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

(2) Prerequisite. SCAL-140.

- c. Crew Requirements. IP/RAC/CC/AO.
- d. Ground Training. FRS TERF class..
- e. Simulator Event and Flight Training. (1 Event, 2.0 Hours/1 Flight, 1.5 Hours).

TERF-171 1.5 C R 1 CH-46E A

Goal. Introduce TERF operations.

Requirement

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

- (a) CRM.
- (b) Aircraft clearance.
- (c) Emergencies in TERF environment.
- (d) TERF maneuvers.

(2) Introduce/evaluate

- (a) Maximum performance takeoff.
- (b) Performance checks.
- (c) Masking/unmasking.
- (d) Low level quick stops.
- (e) Bunts/rolls.
- (f) Low level flight/turns.
- (g) Zoom climb.
- (h) Spiral climbout/approach.
- (i) Low level approach.
- (j) Offset approach.

(3) Emergencies

- (a) ETS operation.
- (b) Emergency landing in trees.
- (c) Others as required.

Performance Standards

Pilot shall perform TERF maneuvers emphasizing obstacle clearance IAW CH-46E TAC Manual.

Prerequisite. FAM-116, appropriate FRS ISD program lessons.

Ordinance. None.

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

8. Review (REV)

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

b. General. All pilots under instruction (B,C,R) shall complete SREV-170. Moreover, all CH-46 pilots shall fly this event once per month if an approved simulator is available. If an approved simulator is not available, the squadron NATOPS officer may substitute a written examination on normal and emergency procedures.

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

(2) Prerequisite. Refer to paragraph 231.1d.

c. Crew Requirements. IP/RAC/CC.

d. Ground Training. Completion of NATOPS closed book examination.

e. Simulator Event and Flight Training. (1 Event, 2.0 Hours/1 Flight, 1.5 Hours).

SREV-180 2.0 C,R S

Goal. Review previous maneuvers and emergencies.

Requirement

(1) Review/Evaluate

(a) FAM stage maneuvers.

(b) Instrument stage maneuvers.

(c) Confined area landings.

(2) 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 ISD program lessons.

Ordinance. None.

External Syllabus Support. WST/APT.

REV-181 1.5 1 CH-46E A

Goal. Review previous maneuvers and emergencies.

Requirement

(1) Review/Evaluate. All maneuvers from all previous Core Skill Introduction flights.

(2) 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-180.

Ordinance. None.

External Syllabus Support. None.

9. 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-182, 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 ISD and NATOPS prerequisites prior to this flight.

c. Crew Requirements. IP/RAC/CC.

d. Academic Training. Completion of open and closed book examinations.

e. Flight Training. (1 Flight, 1.5 Hours).

CSIX-182 1.5 C,R,M E 1 CH-46E A

Goal. RAC/Refresher NATOPS evaluation.

Performance Standards

Pilot shall perform all FAM maneuvers and emergencies IAW CH-46E NATOPS, TAC Manual and FRS Standardization Manuals.

Prerequisite. REV-181.

Ordinance. None.

External Syllabus Support. None.

132. CORE SKILL BASIC PHASE

1. Familiarization (FAM)

a. Purpose. To review day and night unaided FAM maneuvers, navigation procedures, basic instrument procedures, and introduce/evaluate ECCS normal and emergency procedures.

b. General

(1) Pilots will find FAM maneuver descriptions in the NATOPS Manual and FRS Stan manual.

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

(3) The ECCS NATOPS (A1-H46AE-NFM-300 VOL. 1) describes normal and emergency procedures associated AFC-495, the new H-46 Engine Condition and Control System.

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

(5) Prerequisite. CSIX-182.

c. Crew Requirements. P/P/CC.

d. Ground/Academic Training. Utilize academic courseware as outlined in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (3 Flights, 4.5 Hours /1 Simulator Event, 2.0 Hours)

FAM-200 1.5 E C 1 CH-46E/WST A/S

Goal. Introduce/evaluate ECCS preflight/start/shutdown and inflight emergencies.

Requirement

(1) Discuss. (ref: CH-46E ECCS NATOPS Manual/CH-46E Flight Standardization Manual)

(a) ECCS system

- 1 Theory of operation.
- 2 Preflight/start checklist.
- 3 Shutdown checklist.
- 4 Normal mode operation.
- 5 Manual mode operation.

(b) Emergencies

- 1 Single engine failure takeoff.

- 2 Single engine failure in HOGE.
- 3 Single engine failure in flight.
- 4 Compressor stall.
- 5 ECCS failure in flight.
- 6 Flex shaft failure in flight.
- 7 Sprag clutch slippage.
- 8 Practice autorotations.

(2) Introduce/Evaluate

- (a) Normal Engine Start.
- (b) Normal shutdown.

(3) Emergencies

- (a) Single engine failure takeoff.
- (b) Single engine failure in flight.
- (c) Compressor stall.
- (d) ECCS failure in flight.
- (e) Flex shaft failure in flight.
- (f) Sprag clutch slippage.
- (g) Practice autorotations.

Performance Standards

Pilot shall demonstrate knowledge of ECCS, NATOPS checklists and in-flight emergencies with ECCS.

Prerequisite. Appropriate FRS ISD Lessons or ECCS academic period of instruction.

Ordinance. None.

External Syllabus Support. None.

SFAM-201

2.0 C 1 CH-46E S

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

Requirement

(1) Discuss

- (a) Familiarization maneuvers.
- (b) Aircraft lighting and use.
- (c) Night scan.
- (d) Night fixation.
- (e) CRM.
- (f) Basic instrument procedures.

(2) Introduce. N/A.

(3) Review

- (a) Familiarization maneuvers.
- (b) Operations at lighted and unlighted fields.
- (c) Basic instrument procedures to include turn patterns, vertical S-1 patterns, Oscar patterns, partial panel flight, and instrument autorotations.
- (d) Emphasize emergency procedures that pilot cannot fly in the aircraft; i.e., dual engine failure, full autorotation, flex shaft failure, ECA malfunctions, compressor stalls, etc.

Performance Standards

IAW NATOPS/Instrument Flight Manuals.

Prerequisite. None.

Ordinance. None.

External Syllabus Support. WST/APT.

FAM-202

1.5 C R 1 CH-46E A

Goal. Review day familiarization maneuvers, navigation above 200 ft, and basic instrument procedures.

Requirement

(1) Discuss

- (a) CRM.
- (b) Local course rules.
- (c) Map preparation.
- (d) Route selection.

(2) Introduce. N/A.

(3) Review

(a) FAM stage maneuvers.

(b) Basic instrument procedures to include turn patterns, vertical S-1 patterns, Oscar pattern, partial panel flight, and instrument autorotations.

(c) Instrument approaches.

(d) Navigation above 200 ft using a minimum of five checkpoints.

(e) Emergency procedures, as required.

(f) CNCS operation.

Performance Standards

Pilot shall fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, established pattern checkpoints, recognize closure rate to a landing point, remain oriented on zone, and land within two rotors of intended point of landing.

Prerequisite. SFAM-200.

Ordinance. None.

External Syllabus Support. Landing areas.

FAM-203

1.5 C 1 CH-46E A N

Goal. Review night FAM maneuvers, basic instrument scan, and navigation above 200 ft.

Requirement

(1) Discuss

(a) Aircraft lighting and use.

(b) Night scan.

(c) Night fixation.

(d) CRM.

(e) Map preparation.

(f) Route selection.

(2) Introduce. N/A.

(3) Review

(a) Operations at a lighted field to include FAM stage maneuvers.

(b) Navigation above 200 ft using a minimum of five checkpoints.

(c) Instrument scans for night operations.

Performance Standards

Pilots shall fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure rate to landing point, remain oriented on zone, and land within two rotors of intended point of landing.

Prerequisite. None.

Ordinance. None.

External Syllabus Support. Lighted landing areas.

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 and NWP 3-22.5-CH46E. Pilots shall discuss CRM as applicable to each event.

c. Crew Requirements

(1) CAL-211/212. P/CP/CC.

(2) CAL-213. P/CP/CC/AO.

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (3 Flights, 4.5 Hours /1 Simulator Event, 2.0 Hours)

SCAL-210 2.0 C 1 CH-46E S

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

Requirement

(1) Discuss

(a) Low/high threat tactical approaches, landings and departures to a confined area.

(b) Power settling/settling with power.

(c) Low altitude emergency procedures (i.e., landing in trees).

(d) Power requirements at high gross weights to effect safe takeoffs/landings.

(e) LZ brief/evaluation.

(2) Introduce

(a) Low/high threat tactical approaches.

(b) Landings and departures to a confined area.

(c) CRM.

(d) Crew comfort level.

(e) Night fixation.

(f) Effects of wind.

(g) Landing in valleys and canyons.

(h) Crosswind, upslope, and downslope landings with respect to tail clearance. Use of taxi/forward cyclic trim position.

(3) Review. CAL-141.

Performance Standards

Pilots shall fly pattern within 50 ft 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 two rotors of intended point of landing.

Prerequisite. None.

Ordinance. None.

External Syllabus Support. WST/APT.

CAL-211

1.5 C 1 CH-46E A

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

Requirement

(1) Discuss

(a) Low/high threat tactical approaches, landings and departures to a confined area.

(b) Power settling/settling with power.

(c) Low altitude emergency procedures (i.e., landing in trees).

(d) Power requirements at high gross weights to effect safe takeoffs/landings (power checks).

(e) Rotor blade clearances (blade walk).

(f) LZ brief/evaluation.

(2) Introduce

(a) Low/high threat tactical approaches.

(b) Landings and departures to a confined area.

(c) CRM.

(d) Crew comfort level.

(e) Effects of wind.

(f) Landing in valleys and canyons.

(g) Crosswind, upslope, and downslope landings with respect to tail clearance.

(h) Use of taxi/forward cyclic trim position.

(3) Review. CAL-141.

Performance Standards

Pilots shall fly pattern within 50 ft 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 two rotors of intended point of landing.

Prerequisite. SCAL-210.

Ordinance. None.

External Syllabus Support. Landing zones.

CAL-212

1.5 C R 2 OR MORE ACFT A (N)

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

Requirement

(1) Discuss

(a) Section and division tactical approaches.

(b) Landings and departures to a confined area in all threat environments.

(2) Introduce

(a) Section/division tactical approaches (if applicable).

(b) Landings and departures to a confined area in all threat environments.

(3) Review. FORM-151.

Performance Standards

Pilots shall fly pattern within 50 ft 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, land within two rotors of intended point of landing (lead), and maintain section integrity during approach and landing (wingman).

Prerequisite. CAL-211.

Ordinance. None.

External Syllabus Support. LZ to accommodate a section.

CAL-213

1.5 C 1 CH-46E A N

Goal. Introduce unaided night CALs.

Requirement

(1) Discuss/Introduce

(a) CRM.

(b) Crew comfort levels.

(c) Night fixation.

(d) Night CAL takeoffs, approaches, and landings to various unlighted CAL zones.

(e) Use of landing and searchlights.

(f) LZ brief/evaluation.

(2) Review. N/A.

Performance Standards

Pilots shall fly pattern within 50 ft 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 two rotors of intended point of landing.

Prerequisite. FAM-203, CAL-211.

Ordinance. None.

External Syllabus Support. Landing zones.

3. External Cargo Operations (EXT)

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

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

c. Crew Requirements. P/P/CC.

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (1 Flight, 1.5 Hours / 1 Simulator Event, 2.0 Hours)

SEXT-220 2.0 C S

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

Requirement

(1) Discuss

(a) CRM during external load operations.

(b) Tactical considerations during external lift operations.

(c) Emergency procedures with external loads.

(2) Introduce. None.

(3) Review. External load hookups and drops to a confined area.

Performance Standards

Pilots shall fly pattern within 50 ft 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 HOGGE requirements, complete a minimum of five hookups and drops, place load within 5 meters of intended point of drop.

Prerequisite. None.

Ordinance. None.

External Syllabus Support. WST/APT/operable TEN.

EXT-221 1.5 C R 1 CH-46E A

Goal. Review external load operations from a confined area.

Requirement

(1) Discuss

- (a) CRM during external load operations.
- (b) Tactical considerations during external lift operations.
- (c) Hoist and winch operations.
- (d) Emergency procedures during external operations.
- (e) Command jettisoning procedures.
- (f) HST Brief.

(2) Introduce. None.

(3) Review. EXT-161.

Performance Standards

Pilots shall fly pattern within 50 ft 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, complete a minimum of five hook ups and drops, place load within 5 meters of intended point of drop.

Prerequisite. SEXT-220, CAL-211.

Ordinance. None.

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

4. Formation Flight (FORM)

- a. Purpose. To review formation and introduce tactical formation maneuvering.
- b. General. Pilots shall discuss CRM as applicable to each event.
- c. Crew Requirements. P/P/CC/AO.
- d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.
- e. Flight and Simulator Event and Training (1 Flight, 1.5 Hours/1 Simulator Event, 2.0 Hours)

SFORM-230

2.0

C S

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

Requirement

(1) Discuss

- (a) CRM.
- (b) Crew comfort level.
- (c) Closure rate.
- (d) Lead changes (to include EMCON).
- (e) Common terminology.
- (f) Division formation, emphasize dash-3 position.
- (g) Tactical formation maneuvering.
- (h) Appropriate formation maneuvers against a FW threat, RW threat, IR missile threat, radar guided missile threat, and AAA threat.
- (i) Intra and inter aircraft communications.
- (j) Inadvertent IMC.

(2) Introduce

- (a) Break turns, center turns, pinch/dig, cover, tac turns, in-place turns, split turns, cross turns.
- (b) Combat spread and combat cruise.

(3) Review

- (a) Parade formation.
- (b) Section takeoffs/landings.
- (c) 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, and employ appropriate commands to maneuver flight.

Prerequisite. None.

Ordinance. None.

External Syllabus Support. WST/APT/operable TEN.

FORM-231

1.5 C,R 2 CH-46E A

Goal. Review formation and introduce tactical formation maneuvering.

Requirement

(1) Discuss

- (a) CRM.
- (b) Crew comfort level.
- (c) Closure rate.
- (d) Lead changes (to include EMCON).
- (e) Common terminology.
- (f) Division formation, emphasize dash-3 position.
- (g) Tactical formation maneuvering.
- (h) Appropriate formation maneuvers against a FW threat, RW threat, IR missile threat, radar guided missile threat, and AAA threat.
- (i) Intra and inter aircraft communications.
- (j) Inadvertent IMC.

(2) Introduce

- (a) Break turns, center turns, pinch/dig, cover, tac turns, in-place turns, split turns, cross turns.
- (b) Combat spread and combat cruise.

(3) 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, and employ appropriate commands to maneuver flight.

Prerequisite. SFORM-230.

Ordinance. None.

External Syllabus Support. None.

5. Terrain Flight (TERF)

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

b. General. TERF 241-243 instructional flights require a TERF Instructor. Successful completion of TERF-243 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 pilots NATOPS jacket and a copy in the pilots APR with a corresponding logbook entry. T&R Program Manual establishes TERF altitude restrictions and currency requirements.

c. Crew Requirements. P/P/CC/AO.

d. Ground/Academic Training. Utilize academic courseware as outlined in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (3 Flights, 4.5 Hours/1 Event, 2.0 Hours)

STERF-240

2.0

C S

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

Requirement

(1) Discuss

- (a) CRM during TERF.
- (b) Crew comfort level during TERF.
- (c) Emergency procedures in TERF environment.
- (d) TERF maneuvers (bunts, rolls, quick-stops, masking and unmasking).
- (e) Differences between low level, contour and NOE flight.
- (f) Map preparation and route selection.
- (g) Mission planning systems.
- (h) Demonstrate effective cockpit management for precision navigation.

(2) Introduce. Contour and low level flight.

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

Performance Standards

Pilots shall plan and fly a route to a minimum of six checkpoints below 200 ft 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 (CNCS 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. None.

Ordnance. None.

External Syllabus Support. WST/APT/operable TEN.

TERF-241

1.5 C 1 CH-46E A

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

Requirement

(1) Discuss

- (a) CRM during TERF.
- (b) Crew comfort level during TERF.
- (c) Emergency procedures during TERF.
- (d) TERF maneuvers (bunts, rolls, quick-stops, masking/unmasking).
- (e) Differences between types of TERF flight.
- (f) Map preparation (hazards, etc).
- (g) Low altitude emergencies.

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

(3) Review. Blade walk/power checks.

Performance Standards

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

Prerequisite. STERF-240.

Ordnance. None.

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

TERF-242

1.5 C 1 CH-46E A

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

Requirement

(1) Discuss

- (a) CRM during TERF navigation.
- (b) Common terminology used during TERF navigation.
- (c) Hazard maps.
- (d) Tactical map preparation (1:50,000 & 1:250,000).
- (e) Time/distance checks.
- (f) CNCS employment considerations.

(2) Introduce

- (a) Navigate a TERF route with a minimum of five checkpoints in the contour profile and remain oriented within 500 meters of course line.
- (b) Onboard navigation systems.

(3) Review. TERF-241.

Performance Standards

Pilots shall plan and fly a route to a minimum of five checkpoints at or below 200 ft 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 (CNCS as secondary source), utilize proper terminology.

Prerequisite. TERF-241.

Ordinance. None.

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

TERF-243

1.5 C,R 2 CH-46E A

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

Requirement

(1) Discuss

- (a) CRM during formation flight in TERF environment.
- (b) Common terminology.
- (c) Altitude awareness.
- (d) NOE considerations.

(2) Introduce. Tactical formations in the low level and contour profiles.

(3) Review. TERF-242 and FORM-231.

Performance Standards

Pilots shall plan and fly a route to a minimum of five checkpoints as lead below 200 ft AGL, properly control flight utilizing TACFORM maneuvers in the TERF environment, TERF navigation utilizing 1:50,000 and 1:250,000 scale maps as appropriate, remain oriented on route within 200 meters, ensure effective CRM for navigation, altitude 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, and as wingman, retains situational awareness during navigation.

Prerequisite. TERF-242.

Ordinance. None.

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

6. NVGs High Light Level (HLL)

a. Purpose. To develop skill in the use of NVGs under light levels greater than .0022 lux (HLL)) as predicted by the computer generated light level calendar and to qualify the PUI in NVG HLL operations.

b. General

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

(2) Successful completion of NVG-257 constitutes Night Systems Qualified (NSQ) HLL. A qualification letter signed by the commanding officer stating the pilot is NSQ HLL is required to be qualified to carry troops under HLL conditions. The original shall be placed in the pilot's NATOPS jacket, and a copy in his APR with a corresponding logbook entry.

c. Crew Requirements. P/P/CC/AO.

d. Ground/Academic Training. Utilize academic courseware as outlined in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (7 Flights, 10.5 Hours/1 Simulator Event, 2.0 Hours)

SNVG-250 2.0 C S NS

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

Requirement

(1) Discuss

- (a) CRM during NVG CAL operations.
- (b) Crew comfort level during NVG CAL operations.
- (c) Scan technique during FAM maneuvers.
- (d) NVG low altitude emergencies.

(2) Introduce

- (a) Section CALs in HLL.
- (b) NVG HUD operations.

(3) Review

- (a) NVG preflight/set up.
- (b) Single aircraft CALs in HLL.

Performance Standards

Pilots shall plan and fly a route to a minimum of four checkpoints below 200 ft AGL, maintain effective NVG/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 ft 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. None.

Ordinance. None.

External Syllabus Support. WST/APT/operable TEN.

NVG-251

1.5 C,R 1 CH-46E A NS

Goal. Review NVG single aircraft CALs in HLL.

Requirement

(1) Discuss

- (a) CRM during NVG CAL operations.
- (b) Crew comfort level during NVG CAL operations.
- (c) NVG failures at low altitudes.

- (d) Light level planning requirements.
 - (e) Inadvertent IMC.
 - (f) NVG preflight/set up.
 - (g) LZ brief and evaluation.
- (2) Introduce. NVG HUD operation if available.
- (3) Review. Single aircraft CALs in HLL.

Performance Standards

Pilots shall maintain effective NVG/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 ft 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. SNVG-250.

Ordinance. None.

External Syllabus Support. NVG landing zones.

NVG-252

1.5 C 2 CH-46E A NS

Goal. Conduct NVG formation flight in HLL.

Requirement

- (1) Discuss
- (a) CRM during NVG formation operations.
 - (b) NVG formation techniques.
 - (c) Aircraft lighting during NVG formation.
 - (d) Inadvertent IMC.
 - (e) NVG combat cruise.
 - (f) NVG failures during formation flight.
- (2) Introduce. NVG formation flight (i.e., turn pattern).
- (3) Review. FORM-231, CNCS employment if available, turn patterns and break up/rendezvous.

Performance Standards

Pilots shall maintain effective NVG/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, and wingman maintains proper NVG combat cruise position.

Prerequisite. FORM-231, NVG-251.

Ordinance. None.

External Syllabus Support. None.

NVG-253

1.5 C,R 2 CH-46E A NS

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

Requirement

(1) Discuss

(a) CRM during NVG section CALs.

(b) Section tactical approach, landings and departures to a confined area while using NVGs in HLL.

(c) LZ brief and evaluation.

(2) Introduce. Section tactical approach, landings and departures to a confined area while using NVGs in HLL.

(3) Review. CAL-212, NVG-251 and NVG-252.

Performance Standards

Pilots shall maintain effective NVG/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, fly pattern within 50 ft 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. CAL-212, NVG-252.

Ordinance. None.

External Syllabus Support. NVG landing zones.

NVG-254

1.5 C 3 OR MORE CH-46E A NS

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

Requirement

(1) Discuss

- (a) CRM during NVG formation and CALs.
- (b) NVG division CAL techniques.
- (c) NVG division formation techniques.
- (d) Inadvertent IMC on NVGs.
- (e) Obstacle clearance.
- (f) LZ brief and evaluation.

(2) Introduce

- (a) NVG division formation.
- (b) NVG division CALs.

(3) Review. NVG-252 and NVG-253.

Performance Standards

Pilots shall maintain effective NVG/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, fly pattern within 50 ft 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. NVG-253.

Ordinance. None.

External Syllabus Support. NVG landing zones.

NVG-255

1.5

C 1 CH-46E A NS

Goal. Conduct NVG TERF navigation.

Requirement

(1) Discuss

- (a) CRM during NVG TERF navigation.
- (b) NVG navigation techniques.
- (c) Use of onboard navigation systems.
- (d) Moon illumination/shadow effects on NVG navigation.
- (e) NVG low altitude emergencies.

(2) Introduce

(a) NVG TERF navigation.

(b) Navigate a route below 200 ft AGL with at least four checkpoints and remain oriented within 500 meters of course line.

(3) Review. TERF-243. Use of onboard navigation systems.

Performance Standards

Pilots shall plan and fly a route to a minimum of four checkpoints below 200 ft AGL, maintain effective NVG/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.

Prerequisite. TERF qualified and NVG-251 complete.

Ordinance. None.

External Syllabus Support. NVG TERF route.

NVG-256

1.5

C 2 CH-46E A NS

Goal. Conduct NVG TERF formation, navigation flight.

Requirement

(1) Discuss

(a) CRM in the NVG TERF environment.

(b) NVG TERF/formation techniques.

(c) NVG HUD utilization.

(d) NVG low altitude emergencies.

(2) Introduce. NVG TERF formation flight.

(3) Review. TERF-243 and NVG-252.

Performance Standards

Pilots shall maintain effective NVG/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 flight, employs NVG combat cruise principles, plan and fly a route to a minimum of four checkpoints below 200 ft AGL, remain oriented on route within 500 meters,

demonstrate effective cockpit management for precision navigation.

Prerequisite. TERF qualified, NVG-252 and NVG-255.

Ordinance. None.

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

NVG-257

1.5 C,R 2 CH-46E A NS

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

Requirement

(1) Discuss

(a) NVG low-level emergencies.

(b) LZ brief/evaluation.

(2) Introduce. N/A.

(3) Review. NVG-253, NVG-256.

Performance Standards

Pilots shall navigate a route below 200 ft AGL with at least four checkpoints and remain oriented within 500 meters of course line, arrive at the final checkpoint within 2 minutes of the planned arrival time, maintain effective NVG/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 ft 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. NVG-254, 255, and 256.

Ordinance. None.

External Syllabus Support. NVG LZ and approved TERF route (restricted area preferred).

7. Air-to-Ground (AG)

a. Purpose. To develop CRM proficiency during AG.

b. General. N/A.

c. Crew Requirements. P/P/CC/AG.

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (1 Flight, 1.5 Hours)

AG-281

1.5

C R 1 OR MORE CH-46E A

Goal. Introduce AG procedures.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) Weapons preflight.

(d) Types of ammunition.

(e) Standard weapons commands.

(f) Lost communication procedures.

(g) Visual signals.

(h) Weapons safety considerations, malfunctions/emergencies.

(i) Weapons conditions.

(j) Sectors/Fields of fire.

(k) Shadow gunnery techniques.

(l) Towed target (banner) techniques.

(m) Moving target techniques.

(2) Introduce. AG.

(3) Review. None.

Performance Standards

Pilots shall use proper weapon procedures and commands to direct AG, demonstrate understanding of weapons parameters and employment, demonstrate proper response to weapon malfunctions, demonstrate proper understanding of aircraft maneuvers in response to threat, 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. None.

Ordinance. 500 rounds of .50 cal, 2 smoke grenades.

External Syllabus Support. Appropriate AG range, moving land target (if available).

8. Carrier Qualification (CQ)

a. Purpose. To qualify the PUI in day, night unaided, and NVG FCLPs.

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

(1) An NSI is required for initial NVG FCLP flights.

(2) Night CQ Requirements:

(a) For initial/Refresher/delinquent:

- Five day FCLPs.
- Five NVG FCLPs.
- Five night unaided FCLPs.

(b) Pilots previously night CQ and proficient per paragraph 142.8b(2)(a) above shall complete the following to maintain proficiency:

- Two day FCLPs.
- Two NVG FCLPs. (Note: CQ-293 chains CQ-292 and CQ-291).
- Two night unaided FCLPs. (Note: CQ-292 chains CQ-291).

(3) CQ-293 may be flown under any light level condition. PUI must be NSQ for appropriate light level.

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

c. Crew Requirements

(1) CQ-291, 292. P/P/CC.

(2) CQ-293. P/P/CC/AO.

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (3 Flights, 3.0 Hours / 1 Event, 2.0 Hours)

SCQ-290 2.0 C 1 CH-46E S N NS

Goal. Introduce day, night unaided, and NVG CQ.

Requirement

(1) Discuss

(a) CRM during shipboard landings.

(b) Communications used in shipboard environment.

(c) LSE signals.

(d) Emergency procedures over water (water landings/ditching).

(e) Aircraft lighting used during shipboard operations.

(f) Aviation Capable/Air Capable class ships.

(g) Basic instrument scan.

(2) Introduce. Day, night, and NVG CQ patterns, approaches, landings, and emergency procedures peculiar to shipboard operations.

(3) Review. Instrument procedures.

Performance Standards

Pilots shall demonstrate proper shipboard communications and aircraft lighting procedures, maintain effective instrument/NVG scan, execute proper cockpit switchology, fly established CQ pattern demonstrating understanding of proper upwind, crosswind and interval parameters, fly 300 ft/80 kt pattern within 50 ft 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 1 meter of intended point of landing.

Prerequisite. SCAL-210.

Ordinance. None.

External Syllabus Support. FMC WST/APT/TEN.

CQ-291

1.0 C 1 CH-46E A

Goal. Conduct day FCLPs.

Requirement

(1) Discuss

- (a) CRM during shipboard landings.
- (b) Communications used during shipboard landings.
- (c) LSE signals.
- (d) Water landings/ditching.
- (e) Aircraft lighting used during shipboard landings.
- (f) Basic instrument scan.

(2) Introduce. Day FCLP patterns, approaches, landings, and emergency procedures peculiar to shipboard operations.

(3) Review. N/A.

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 ft/80 kt pattern within 50 ft 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 1 meter of intended point of landing.

Prerequisite. SCQ-290, CAL-211.

Ordinance. None.

External Syllabus Support. Approved FCLP pad.

CQ-292

1.0 C 1 CH-46E A N

Goal. Conduct night unaided FCLPs.

Requirement

(1) Discuss

- (a) CRM during night shipboard landings.
- (b) Crew comfort levels during night shipboard landings.
- (c) Situational awareness during night shipboard landings.
- (d) Aircraft lighting used during night shipboard landings.
- (e) Basic instrument scan.
- (f) Emergency procedures at night over water.

(2) Introduce. Night FCLP patterns, approaches, landings, and emergency procedures peculiar to shipboard operations.

(3) Review. N/A.

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 ft/80 kt pattern within 50 ft 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 1 meter of intended point of landing.

Prerequisite. CAL-213 and CQ-291.

Ordinance. None.

External Syllabus Support. Approved FCLP pad.

CQ-293

1.0 C 1 CH-46E A NS

Goal. Conduct NVG FCLPs.

Requirement

(1) Discuss

- (a) CRM during NVG shipboard landings.
- (b) Crew comfort levels during NVG shipboard landings.
- (c) Situational awareness during NVG shipboard landings.
- (d) Emergency procedures (aircraft and NVGs).
- (e) Aircraft and deck lighting during NVG shipboard operations.
- (f) Basic instrument scan.

(2) Introduce. NVG FCLPs.

(3) Review. N/A.

Performance Standards

Pilots shall demonstrate proper shipboard communications and aircraft lighting procedures, maintain effective instrument/NVG scan, execute proper cockpit switchology, fly established CQ pattern demonstrating understanding of proper upwind, crosswind and interval parameters, fly 300 ft/80 kt pattern within 50 ft 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 1 meter of intended point of landing.

Prerequisite. NVG-251 and CQ-292.

Ordinance. None.

External Syllabus Support. NVD capable FCLP pad.

133. CORE SKILL ADVANCED PHASE

1. Carrier Qualification (CQ)

- a. Purpose. To train/refresh the PUI in day and NVG shipboard landings.
- b. General

(1) Refer to LHA/LPH/LHD NATOPS Manuals and NWP-42 for air capable ship operations.

(2) Night CQ Requirements:

(a) For initial/Refresher/delinquent:

- Five day CQs.
- Five NVG CQs.
- Five night unaided CQs.

(b) Pilots previously night CQ and proficient per para 133.1.b.(2)(a) above shall complete the following to maintain proficiency:

- Two day CQs.
- Two NVG CQs. (Note: CQ-301 chains CQ-300 and CQ-491).

- Two night unaided CQs. (Note: CQ-491 chains CQ-300).

(3) CQ-301 shall be flown under HLL conditions for initial qualification. NSI required for initial NVG flights. Currency and requalification flights may be flown under any light level condition.

(4) Pilot is CQ upon completion of CQ-300, CQ-301 and CQ-491.

(5) Pilots are authorized to carry passengers during daylight hours when proficient in CQ-300.

(6) Pilots are authorized to carry passengers under all conditions when proficient in CQ-301 and CQ-491.

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

c. Crew Requirement

(1) CQ-300, P/P/CC.

(2) CQ-301, P/P/CC/AO (NSI for initial qualification).

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

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

(2) Review Ship's Facilities Resume.

e. Flight and Simulator Event Training (2 Flights, 2.0 Hours)

CQ-300 1.0 C 1 CH-46E A

Goal. Conduct day CQ.

Requirement

(1) Discuss

(a) CRM during shipboard landings.

(b) Communications used during shipboard landings.

(c) LSE signals.

(d) Water landings/ditching.

(e) Aircraft lighting used during shipboard landings.

(f) Rotor engagement/disengagement.

(g) Launch/recovery wind envelopes.

(h) Basic instrument scan.

(2) Introduce. Day CQ patterns, approaches, landings, and emergency procedures peculiar to shipboard operations.

(3) Review. CQ-291.

Performance Standards

Pilots shall fly 300 ft/80 kt pattern within 25 ft 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 1 meter 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-291.

Ordinance. None.

External Support. Air capable ship deck.

CQ-301

1.0 C 1 CH-46E A NS

Goal. Conduct NVG CQ.

Requirement

(1) Discuss

- (a) CRM during shipboard landings.
- (b) Communications used during shipboard landings.
- (c) LSE signals.
- (d) Water landings/ditching.
- (e) Aircraft lighting used during shipboard landings.
- (f) Rotor engagement/disengagement.
- (g) Launch/recovery wind envelopes.
- (h) Transition from instrument to NVG scan.
- (i) Basic instrument scan.
- (j) NVG scan/fixation.

(2) Introduce. NVG CQ patterns, approaches, landings, and emergency procedures peculiar to NVG shipboard operations.

(3) Review. CQ-293, CQ-300.

Performance Standards

Pilots shall fly 300 ft/80 kt pattern within 25 ft 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 1 meter of intended point of landing, maintain effective instrument and NVG scan,

recognize proper closure with intended point of landing, demonstrate proper shipboard communications and aircraft lighting.

Prerequisite. CQ-300 and CQ-293.

Ordinance. None.

External Support. NVG capable ship deck.

2. NVGs Low Light Level (LLL)

a. Purpose. Qualify the PUI in NVG (LLL) operations.

b. General. Successful completion of NVG-314 constitutes Night Systems Qualified (NSQ). A qualification letter signed by the commanding officer stating the pilot is NSQ is required to be qualified 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.

(1) Prerequisites

(a) NSQ (HLL).

(b) Initial/Refresher flights require an NSI.

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

c. Crew Requirement. P/P/CC/AO.

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event (4 Flights, 6.0 Hours / 1 Simulator Event, 2.0 Hours)

SNVG-310 2.0 C 1 CH-46E S/A NS

Goal. Conduct NVG (LLL) TERF formation, navigation, single, section and division CALs.

Requirement

(1) Discuss

(a) Crew comfort level during NVG (LLL) operations.

(b) NVG (LLL) considerations.

(c) NVG (LLL) CAL techniques.

(d) Aircraft lighting considerations during NVG (LLL) operations.

(e) Low altitude emergencies.

(2) Introduce. NVG (LLL) CALs.

(3) Review. SNVG-250, NVG HUD operations.

Performance Standards

Pilots shall fly a navigation route with at least four checkpoints, fly route below 200 ft AGL, remain oriented on route within 500 meters, arrive at final checkpoint within 1 minute of planned arrival time, maintain effective instrument and NVG 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 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 2 rotors of intended point of landing.

Prerequisite. TERF-240.

Ordnance. None.

External Syllabus Support. NVG capable WST/APT/TEN.

NVG-311

1.5 C,R 1 CH-46E A NS

Goal. Introduce single aircraft NVG (LLL) CALs.

Requirement

(1) Discuss

- (a) Crew comfort level during NVG (LLL) operations.
- (b) NVG (LLL) considerations.
- (c) NVG (LLL) CAL techniques.
- (d) Aircraft lighting considerations during NVG (LLL) operations.
- (e) Low altitude emergencies.

(2) Introduce. NVG (LLL) CALs.

(3) Review. NVG-251, NVG HUD operations if available.

Performance Standards

Pilots shall fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize proper closure with intended point of landing, remain oriented on zone, land within 2 rotors of intended point of landing, maintain effective instrument and NVG scan.

Prerequisite. NVG-310.

Ordnance. None.

External Syllabus Support. CAL site.

NVG-312

1.5 C,R 2 CH-46E A NS

Goal. Introduce NVG (LLL) formation and section CALs.

Requirement

(1) Discuss

- (a) CRM during NVG (LLL) formation.
- (b) Crew comfort level during NVG (LLL) formation operations.
- (c) NVG (LLL) formation techniques.
- (d) External aircraft lighting considerations during NVG (LLL) formation operations.

(2) Introduce

- (a) NVG (LLL) formation.
- (b) NVG (LLL) section CALs.

(3) Review. NVG-252 and NVG-253.

Performance Standards

Pilots shall fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize proper closure with intended point of landing, remain oriented on zone, land within 2 rotors of intended point of landing, maintain effective instrument and NVG scan, maintain proper distance and bearing within 3-5 rotors, utilize formation principles of radius of turn, step-up/step-down, recognize proper closure rate with lead aircraft.

Prerequisite. NVG-311.

Ordinance. None.

External Syllabus Support. CAL site.

NVG-313

1.5 C 3 OR MORE CH-46E A NS

Goal. Conduct NVG (LLL) formation and division CALs.

Requirement

(1) Discuss

- (a) CRM during NVG (LLL) formation.
- (b) Crew comfort level during NVG (LLL) formation operations.
- (c) NVG (LLL) formation techniques.

(d) External aircraft lighting considerations during NVG (LLL) formation operations.

(2) Introduce

(a) NVG (LLL) division formation.

(b) NVG (LLL) division CALs.

(3) Review. NVG-254 and NVG-312.

Prerequisite. NVG-312.

Performance Standards

Pilots shall fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize proper closure with intended point of landing, remain oriented on zone, land within 2 rotors of intended point of landing, maintain effective instrument and NVG scan, maintain proper distance and bearing for appropriate formation position, utilize formation principles of radius of turn, step-up/step-down, recognize proper closure rate with lead aircraft.

Prerequisite. NVG-312.

Ordinance. None.

External Syllabus Support. CAL site.

NVG-314

1.5 C,R 2 CH-46E A NS

Goal. Conduct NVG (LLL) TERF formation, navigation, and section CALs.

Requirement

(1) Discuss

(a) CRM during NVG (LLL) TERF navigation.

(b) Crew comfort level during NVG TERF operations.

(c) NVG navigation considerations under (LLL) conditions.

(d) Use of onboard navigation systems.

(e) Emergencies at low altitude.

(2) Introduce. NVG (LLL) TERF navigation.

(3) Review. Section CALs, NVG-257, NVG-312, and use of onboard navigation systems (CNCS as secondary source).

Prerequisite. NVG-313.

Performance Standards

Pilots shall fly a navigation route with at least four checkpoints, fly route below 200 ft AGL, remain oriented on

route within 500 meters, arrive at final checkpoint within 1 minute of planned arrival time, maintain effective instrument and NVG 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 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, and land within 2 rotors of intended point of landing.

Prerequisite. NVG-313.

Ordinance. None.

External Syllabus Support. CAL site, approved NVG navigation route.

3. Air-to-Ground (AG)

a. Purpose. To develop CRM proficiency during NVG aerial gunnery.

b. Crew Requirement. P/P/CC/AG.

c. Prerequisites

(1) AG-281 and NVG-251.

(2) NSI required if PUI is not NSQ for appropriate light level.

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (1 Flight, 1.5 Hours)

AG-321 1.5 C R 1 CH-46E A NS

Goal. Introduce NVG AG gunnery.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) Weapon preflight.

(d) Standard weapons commands.

(e) Lost communication procedures.

(f) Visual signals.

(g) Weapon malfunctions/stoppage.

(h) LASER employment and considerations/safety precautions.

- (i) Sectors of fire/fields of fire.
- (j) Shadow gunnery techniques.
- (k) Moving target techniques.
- (l) Weapon conditions.
- (2) Introduce
 - (a) NVG aerial gunnery.
 - (b) Effects of ordnance, expendables, pyrotechnics on NVGs.
- (3) Review. AG-281.

Performance Standards

Pilots shall maintain effective NVG scan, utilize solid instrument scan, recognize proper closure with intended point of landing, demonstrate understanding of NVG 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. AG-281.

Ordnance. 500 rounds of .50 cal, expendables and others as available.

External Syllabus Support. AG gunnery range.

4. Electronic Warfare (EW)

a. Purpose. To introduce and develop proficiency in using Aircraft Survivability Equipment (ASE) and the employment of Electronic Warfare (EW) principles.

b. General

- (1) The PUI shall use an EW range or threat emitter for EW-331.
- (2) Refer to NWP 3-22.5-CH46E and the NATOPS Manual for electronic warfare equipment operating procedures.
- (3) Prerequisite
 - (a) TERF qualified.
 - (b) All initial flights require a WTI or DMI.

c. Crew Requirement. P/P/CC/AO.

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Simulator Event and Flight Training (1 Flight, 1.5 Hours/1 Simulator Event, 2.0 Hours)

SEW-330

2.0

C S/A

Goal. Demonstrate an understanding of the following:

- (1) Operation of all onboard ASE.
- (2) Strengths and weaknesses of onboard ASE versus AAA, IR SAMs, and RADAR SAMs.
- (3) Tactics vs AAA, IR SAMs, and RADAR SAMs.

Requirement

(1) Discuss

- (a) Operation of the ALE-39, APR-39, ALQ-157 and AAR-47.
- (b) Strengths and weaknesses of each ASE system versus AAA, IR SAMs, and RADAR SAMs.
- (c) CRM as it applies to the use of onboard ASE.
- (d) Tactics against AAA, IR SAMs, and RADAR SAMs.
- (e) Tactical expendables.
- (f) Various threat signatures with emphasis on threat recognition.

(2) Introduce

- (a) Use of all onboard ASE.
- (b) EW tactics against AAA, IR SAMs, and RADAR SAMs.

(3) Review. None.

Performance Standards

Pilots shall demonstrate proper operation of ASE, understanding and interpretation of APR indications, ability to break lock when tracked, effective flight leadership and maneuvering in response to threat, and proper ASE employment with regard to threat.

Prerequisite. None.

Ordinance. None.

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

EW-331

1.5

C R 1 CH-46E A

Goal. Demonstrate an understanding of the following:

- (1) Operation of all onboard ASE.
- (2) Strengths and weaknesses of onboard ASE versus AAA, IR SAMs, and RADAR SAMs.
- (3) Tactics versus AAA, IR SAMs, and RADAR SAMs.

Requirement

- (1) Discuss
 - (a) Operations of the ALE-39, APR-39, ALQ-157, and AAR-47.
 - (b) Strengths and weaknesses of each ASE system versus AAA, IR SAMs, and RADAR SAMs.
 - (c) CRM as it applies to the use of onboard ASE.
 - (d) Tactics against AAA, IR SAMs, and RADAR SAMs.
 - (e) Tactical expendables.
- (2) Introduce
 - (a) Use of all onboard ASE.
 - (b) Tactics against AAA, IR SAMs, and RADAR SAMs.
- (3) Review. EW-330.

Performance Standards

Pilots shall demonstrate proper operation of ASE, understanding and interpretation of APR indications, ability to break lock when tracked, effective flight leadership and maneuvering in response to threat, and proper ASE employment with regard to threat.

Prerequisite. None.

Ordnance. 40 chaff, 20 flares.

External Syllabus Support. EW range, EW emitter, smoke grenades or pyrotechnics.

5. Defensive Measures (DM)

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

b. General

(1) Conduct DM-341 against a threat emitter (e.g., SA-8, ZSU 23-4, etc.) and shall use ground based threat simulation (e.g., smokey SAMs, hand-held pyrotechnics, etc.).

(2) After completion of DM-341, DM-441 and DM-442, the PUI is DM Qualified.

(3) Aircrews shall not conduct DM training unless the following requirements are met:

(a) A DMI is present in the cockpit for all initial/Refresher flights.

(b) The flight lead must be DM qualified and specifically brief all applicable DM training rules per the MAWTS-1 Helicopter DM Guide.

(4) .50 caliber machine guns should be mounted for all DM flights.

(5) Prerequisites

(a) TERF Qualified.

(b) FORM-231 and EW-331.

c. Crew Requirement. P/P/CC/AO.

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (1 Flight, 1.5 Hours/1 Simulator Event, 2.0 Hours)

SDM-340

2.0

C S/A

Goal. Introduce multi-aircraft DM against a ground threat.

Requirement

(1) Discuss

(a) CRM/inter-flight coordination.

(b) Crew comfort level.

(c) Lookout doctrine.

(d) Situational awareness.

(e) Use of ALE-39, APR-39, ALQ-157, and AAR-47.

(f) Tactical formation maneuvering.

(g) Use of RADAR horizons, RADAR masking, maneuver and chaff to defeat threat RADAR systems.

(h) Use of terrain masking, maneuver, IR jammers, and flares to defeat threat IR missiles.

(2) Introduce

(a) Section/division maneuvering against surface to air missile and RADAR threat systems on an EW range.

(b) Threat avoidance maneuvers and/or tactics to counter threat systems.

(c) Appropriate evasive maneuvers when engaged by a ground based threat.

(3) Review. SFORM-230 and SEW-330.

Performance Standards

Pilots shall demonstrate ability to break lock when tracked, maintain SA of wingman prior to and through evasive maneuvering, demonstrate effective flight leadership and maneuvering in response to threat, proper ASE employment with regard to threat, meet learning objectives as established by MAWTS-1 DM Guide.

Prerequisite. None.

Ordinance. None.

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

DM-341

1.5 C,R 2 CH-46E A

Goal. Introduce multi-aircraft DM against a ground threat.

Requirement

(1) Discuss

(a) CRM/inter-flight coordination.

(b) Crew comfort level.

(c) Lookout doctrine.

(d) Situational awareness.

(e) Use of ALE-39, APR-39, ALQ-157, and AAR-47.

(f) Tactical formation maneuvering.

(g) Use of RADAR horizons, RADAR masking, maneuver and chaff to defeat threat RADAR systems.

(h) Use of terrain masking, maneuver, IR jammers, and flares to defeat threat IR missiles.

(i) Inter/intra cockpit communications.

(2) Introduce

(a) Section/division DM against surface to air missile and RADAR threat systems on an EW range.

(b) Threat avoidance maneuvers and/or tactics to counter threat systems.

(c) Appropriate evasive maneuvers when engaged by a ground based threat.

(3) Review. FORM-231, EW-331, DM-340.

Performance Standards

Pilots shall demonstrate ability to break lock when tracked, maintain SA of wingman prior to and through evasive maneuvering, demonstrate effective flight leadership and maneuvering in response to threat, demonstrate proper ASE employment with regard to threat.

Prerequisite. EW-331.

Ordnance. 40 chaff, 20 flares, 2 smoke grenades or pyrotechnics.

External Syllabus Support. EW range and emitter.

6. Mountain Area Training (MAT)

a. Purpose. To develop proficiency in MAT.

b. Crew Requirement. P/P/CC.

c. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

d. Flight and Simulator Event Training (1 Flight, 1.5 Hours / 1 Event, 2.0 Hours)

SMAT-350 2.0 C S/A

Goal. Conduct MAT.

Requirement

(1) Discuss

- (a) CRM in MAT.
- (b) Emergencies in mountainous terrain.
- (c) Wind and weather effects.
- (d) High altitude operations.
- (e) Slope landings.
- (f) Pinnacle landings.

(2) Introduce

- (a) Mountainous area operations.
- (b) Pinnacle landings.
- (c) Slope landings.

- (d) Landings and operations in valleys and canyons.
- (e) Crosswind landings.
- (f) Max gross operations.
- (g) Waveoff.

(3) Review. SCAL-210.

Performance Standards

Pilots shall fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 1/2 rotor of intended point of landing, demonstrate proper understanding of mountainous terrain and environmental considerations, demonstrate proper use of cyclic trim in landing phase, and demonstrate effective CRM.

Prerequisite. SCAL-210.

Ordinance. None.

External Syllabus Support. Area that supports MAT.

MAT-351

1.5 C,R 1 CH-46E/WST A/S

Goal. Conduct MAT.

Requirement

(1) Discuss

- (a) CRM in MAT.
- (b) Emergencies in mountainous terrain.
- (c) Wind and weather effects.
- (d) High altitude operations.
- (e) Slope landings.
- (f) Pinnacle landings.

(2) Introduce

- (a) Mountainous area operations.
- (b) Pinnacle landings.
- (c) Slope landings.
- (d) Landings and operations in valleys and canyons.
- (e) Crosswind landings.

(3) Review. CAL-211.

Performance Standards

Pilots shall fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 1/2 rotor of intended point of landing, demonstrate proper understanding of mountainous terrain and environmental considerations, demonstrate proper use of cyclic trim in landing phase, and demonstrate effective CRM.

Prerequisite. CAL-211.

Ordnance. None.

External Syllabus Support. Area that supports MAT.

7. 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) ICS cranials and gunner's belts are required for HRST.

(3) CRM as applicable to HIE operations.

(4) Prerequisite. Aircrew must be NSQ (appropriate light level) for flights conducted on NVGs.

(5) External Syllabus Support. HRST master and safety observer.

c. Crew Requirements

(1) HIE-361. P/P/CC.

(2) HIE-362. P/P/CC/AO.

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (2 Flights, 2.0 Hours / 1 Simulator Event, 2.0 Hours)

SHIE-360 2.0 C S/A

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

Requirement

(1) Discuss

(a) HIGE/HOGE requirements.

- (b) Voice communication/standard terminology.
 - (c) Current Force Order/Wing SOP.
 - (d) Emergency procedures.
 - (e) Tactical considerations for various HIE techniques.
 - (f) Fastrope, SPIE rig, paraops, helocast, and rescue hoist ops procedures.
- (2) Introduce
- (a) Skills involved for holding an extended high hover.
 - (b) Troop insertion and extraction via fastrope, SPIE rig, paraops, helocast, and rescue hoist ops.
- (3) Review. SEXT-220.

Performance Standards

Pilots shall execute HIE IAW local SOPs, fly pattern within 50 ft 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. None.

Ordinance. None.

External Syllabus Support. WST/APT.

HIE-361

1.0 C,R 1 CH-46E A

Goal. Conduct fastrope and rappel procedures.

Requirement

- (1) Discuss
- (a) HIGE/HOGE requirements.
 - (b) CRM. Pilots, crew chief, HRST master and HRST safety observer brief together.
 - (c) Voice communication/standard terminology.
 - (d) ICS failure/hand and arm signals.
 - (e) Current Force Order/Wing SOP.
 - (f) Obstacle clearance/waveoff.
 - (g) Rope specific emergency procedures.
 - (h) Tactical considerations for fastrope/rappel operations.

(2) Introduce

- (a) Preflight of fastrope frame/rappel rigging.
- (b) Skills involved for holding an extended high hover.
- (c) Troop insertion via fastrope/rappelling.

(3) Review. SHIE-360.

Performance Standards

Pilots shall demonstrate ability to insert ropers within 10 feet of intended insertion point, execute HIE IAW local SOPs, fly pattern within 50 ft 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-211, EXT-221.

Ordinance. None.

External Syllabus Support. Applicable HIE support equipment.

HIE-362

1.0 C 1 CH-46E A N NS

Goal. Introduce and develop proficiency in NVG fastrope/rappel.

Requirement

(1) Discuss

- (a) CRM.
- (b) NVG considerations during NVG HIE operations.
- (c) Emergency procedures during NVG HIE operations.

(2) Introduce. NVG fastrope/rappel procedures.

(3) Review. HIE-361.

Performance Standards

Pilots shall demonstrate ability to insert ropers within 10 feet of intended insertion point, execute HIE IAW local SOPs, fly pattern within 50 ft 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 NVG 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. HIE-361, EXT-392.

Ordinance. None.

External Syllabus Support. Applicable HIE support equipment.

8. Tactics (Low and 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 and medium threat environment. Use MCCRES Volume III, Section A standards.

- (1) Helicopter Assault Operations (MPS 3A.4).
- (2) Noncombatant Evacuation Operations (NEO) (MPS 3A.7).
- (3) Raid (MPS 3A.8).
- (4) Security/Reinforcement (MPS 3A.9).
- (5) Reconnaissance Patrol/Reaction Force Operations (MPS 3A.10).
- (6) Medical Evacuation (MPS 3A.1).
- (7) Tactical Recovery of Aircraft, Equipment, and Personnel (TRAP) (MPS 3A.12).

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 should mount .50 caliber machine guns for all tactical flights.

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

c. Crew Requirement

(1) TAC-371. P/P/CC/AO.

(2) STAC-373. A flight leader should instruct initial event for PUI.

(3) TAC-374. P/P/CC/AG.

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (4 Flights, 6.0 Hours/2 Events, 4.0 Hours)

STAC-370 2.0 C S/A (NS)

Goal. Conduct day or NVG assault support operation in a low threat environment in accordance with MCCRES Volume III, Section A.

Requirement

(1) Discuss

- (a) Tactical planning, briefing, and execution.
- (b) Use of onboard ASE during the mission.
- (c) CRM during the ingress, objective area, and egress phases of the mission.
- (d) Rules of engagement as they apply to the mission.
- (e) Tactics used in a low threat environment.
- (f) Use of onboard navigation systems.
- (g) NVG considerations with multiple aircraft aerial gunnery.

(2) Introduce

- (a) Tactical planning, briefing, execution, and use of precision navigation systems.
- (b) PUI will assist in planning and conducting the tactical brief.
- (c) Tactical conduct of assigned tasks from the mission statement, emphasizing tactical formations and approaches as contained in the NWP 3-22.5-CH46E.
- (d) Radio procedures and discipline consistent with EMCON conditions.
- (e) DASC control.
- (f) Approach and retirement routes.
- (g) Air control points.
- (h) Escort tactics.

(3) Review. SEW-330, EW-331.

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 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, 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. SEW-330.

Ordinance. None.

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

TAC-371

1.5 C 2 OR MORE CH-46E A

Goal. Conduct an assault support operation in a low threat environment IAW MCCRES Volume III, Section A MPS 3A.4.

Requirement

(1) Discuss

- (a) Tactical planning, briefing, and execution.
- (b) Use of onboard ASE during the mission.
- (c) CRM during the ingress, objective area, and egress phases of the mission.
- (d) Rules of engagement as they apply to the mission.
- (e) Tactics used in a low threat environment.
- (f) Use of onboard navigation systems.

(2) Introduce

- (a) Tactical planning, briefing, execution, and use of precision navigation systems.
- (b) PUI will assist in planning and conducting the tactical brief.
- (c) Tactical conduct of assigned tasks from the mission statement, emphasizing tactical formations and approaches as contained in the NWP 3-22.5-CH46E.
- (d) Radio procedures and discipline consistent with EMCON conditions.
- (e) DASC control.
- (f) Approach and retirement routes.
- (g) Air control points.
- (h) Escort tactics.

(3) Review. EW-331.

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 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, 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. CAL-212, SEW-330, and TERFQ.

Ordnance. Optional.

External Syllabus Support. Authorized TERF area, CAL site, (live fire range preferred).

TAC-372

1.5 C 2 OR MORE CH-46E A NS

Goal. Conduct an NVG assault support operation in a low threat environment IAW MCCRES Volume III, Section A, MPS 3A.4.

Requirement

(1) Discuss

- (a) Tactical planning, briefing, and execution.
- (b) Use of onboard ASE during the mission.
- (c) CRM during the ingress, objective area, and egress phases of the mission.
- (d) Rules of engagement as they apply to the mission.
- (e) Tactics used in a low threat environment.
- (f) Use of precision navigation systems.
- (g) Ordnance effects on NVGs.
- (h) Laser aiming devices.

(2) Introduce

- (a) Tactical planning, briefing, execution, and use of onboard navigation systems.
- (b) PUI will assist in planning and conducting the tactical brief.

(c) Tactical conduct of assigned tasks from the mission statement, emphasizing tactical formations and approaches as contained in the NWP 3-22.5-CH46E.

(d) Radio procedures and discipline consistent with EMCON conditions.

(e) DASC control.

(f) Approach and retirement routes.

(g) Air control points.

(h) Escort tactics.

(3) Review. EW-331.

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 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 NVG 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.

Prerequisites. TAC-371, NSQ for appropriate light level (or NSI with non-NSQ pilot).

Ordinance. Optional.

External Syllabus Support. Authorized TERF area, CAL site, (live fire range preferred).

STAC-373

2.0 C S/A (NS)

Goal. Conduct a day or NVG assault support operation in a medium threat environment emphasizing MCCRES standards.

Requirement

(1) Discuss

(a) CRM during an assault support mission.

(b) Flight countertactics for air and ground threats.

- (c) ASE utilization.
 - (d) Escort considerations.
 - (e) Fire support considerations and control measures.
 - (f) Control and terminology for onboard defensive weapons.
 - (g) EMCON procedures.
 - (h) NBC considerations.
 - (i) TERF considerations.
- (2) Introduce
- (a) Mission planning using a preplanned scenario and mission.
 - (b) Tactical formations and maneuvers.
 - (c) Navigation time and distance checks to meet a planned L-Hour.
 - (d) Multi-plane aerial gunnery in an objective area/LZ, if possible.

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 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 NVG 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 considerations.

Prerequisite. STAC-370.

Ordnance. None.

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

TAC-374

1.5 C 2 OR MORE CH-46E A

Goal. Conduct an assault support mission in a medium threat environment emphasizing MCCRES standards.

Requirement

(1) Discuss

- (a) CRM during an assault support mission.
- (b) Flight countertactics for air and ground threats.
- (c) ASE utilization.
- (d) Escort considerations.
- (e) Fire support considerations and control measures.
- (f) Control and terminology for onboard defensive weapons.
- (g) EMCON procedures.
- (h) NBC considerations.
- (i) TERF considerations.

(2) Introduce

- (a) Mission planning using a preplanned scenario and mission.
- (b) Tactical formations and maneuvers.
- (c) Navigation time and distance checks to meet a planned L-Hour.
- (d) Multi-plane aerial gunnery in an objective area/LZ, if possible.
- (e) Escort aircraft utilization, 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 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, 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. TAC-371.

Ordnance. 20 chaff, 40 flares, .50 cal optional.

External Syllabus Support. TERF area, CAL site, (live fire, EW range preferred).

TAC-375

1.5 C,R 2 OR MORE CH-46E A NS

Goal. Conduct an assault support mission in a medium threat environment on NVGs IAW MCCRES Volume III, Section A, MPS 3A.16 Night Operations.

Requirement

(1) Discuss

- (a) CRM conducting a NVG mission.
- (b) Escort considerations at night.
- (c) Fire support considerations at night.
- (d) NVG mission briefing.
- (e) NVG considerations during tactical missions.
- (f) Precision navigation systems.
- (g) ASE utilization for night missions.
- (h) NBC considerations.
- (i) TERF considerations.

(2) Introduce

- (a) Tactical assault support mission at night using NVGs.
- (b) Escort aircraft utilization, if available.
- (c) Multi-aircraft NVG aerial gunnery in an objective area if possible.

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 50 meters, demonstrate proper employment of ASE, proper use of tactical formations, demonstrate SA of other aircraft through all phases of flight, flight leadership control, demonstrate proper understanding of NVG considerations with multiple aircraft aerial gunnery, proper understanding of laser employment, proper understanding of C4I utilization to facilitate execution and information flow, demonstrate appropriate respect for threat from planning through execution, understanding of aircraft maneuver with regard to threat response in concert with proper aerial gunnery employment, proper understanding of escort considerations, proper understanding of secure and active communications, understanding of FSCM utilization, and understanding of contingency considerations.

Prerequisites. TAC-372.

Ordinance. 20 chaff, 40 flares, .50 cal optional.

External Syllabus Support. TERF area, CAL site, (live fire EW range preferred).

10. Nuclear, Biological, and Chemical (NBC)

a. Purpose. To develop proficiency with the AR-5 protective assembly during normal and tactical flight operations to include while wearing NVGs.

b. General

(1) When the event is conducted in the simulator both pilots should be masked. Only one pilot at a time shall be masked in the aircraft.

(2) CRM applicable to NBC operations.

c. Crew Requirement. Simulator: PUI/PUI. Aircraft: P/P/CC.

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (1 Simulator Event, 2.0 Hours)

SNBC-380 2.0 C,R S/A NS

Goal. Develop flight skills in a simulated NBC environment. Conduct NVG flight operations in a simulated NBC environment.

Requirement

(1) Discuss

- (a) Aircrew protective ensemble.
- (b) Nuclear effects to aircraft and aircrew.
- (c) Chemical and Biological agents, their effects and aircrew protective measures.
- (d) Decontamination considerations.
- (e) CRM in an NBC environment, to include emergency procedures.
- (f) Operational capabilities and limitations of protective masks.
- (g) Physiological limitations and fatigue factors imposed by NBC protective equipment.
- (h) Heliborne operations in a NBC environment.
- (i) NVG operations in a NBC environment.
- (j) NVG failures.
- (k) Operational capabilities, limitations and compatibility of the AR-5 and NVGs.

- (1) Emergency egress and ditching considerations.
- (2) Demonstrate
 - (a) Donning, adjustments, and doffing of the AR-5.
 - (b) Donning, adjustments and doffing of the AR-5 with NVGs.
- (3) Introduce
 - (a) Ground operations.
 - (b) Airfield pattern operations.
 - (c) CALs.
- (4) Review. None.

Performance Standards

Pilots shall demonstrate ability to perform all ground operations with AR-5, demonstrate ability to safely perform flight maneuvers with AR-5, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on landing zone, land within 2 rotors of intended point of landing, maintain effective NVG scan, and utilize solid instrument scan.

Prerequisite. SCAL-210.

Ordinance. None.

External Syllabus Support. NVG WST/APT.

11. External Cargo Operations (EXT)

- a. Purpose. To conduct NVG external cargo operations.
- b. General. CRM applicable to external cargo operations.
- c. Crew Requirements. P/P/CC/AO. NSI required for initial/Refresher SEXT-390, EXT-392.
- d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.
- e. Flight and Simulator Event Training (1 Flight, 1.5 Hours/1 Simulator Event, 2.0 Hours)

SEXT-390 2.0 C S NS

Goal. To conduct external operations in the TERF and NVG environment.

Requirement

- (1) Discuss
 - (a) Emergency procedures during TERF external operations.

(b) Limitations on power available, speed, maneuverability and altitude during TERF external operations.

(c) LZ lighting for NVG external operations.

(d) Common terminology for NVG external operations.

(e) Aircraft and NVG emergencies.

(2) Introduce

(a) Fly a TERF route with a minimum of 4 checkpoints in the contour profile while carrying an external load.

(b) External load operations to a confined area while using NVGs in an environment. Complete a minimum of 5 hookup/drops.

(3) Review. SEXT-220, EXT-221, TERF-241, and TERF-242.

Performance Standards

Pilot shall:

Properly respond to crew positioning calls, place load within 5 meters of intended point, recognize closure/descent rates, maintain briefed clearance below load, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, maintain effective NVG 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-220, SNVG-250, STERF-240 and TERF-242.

Ordinance. None.

External Syllabus Support. External capable WST/APT.

EXT-392

1.5 C,R 1 CH-46E A NS

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

Requirement

(1) Discuss

(a) CRM during external operations.

(2) Introduce. External load operations to a confined area in an NVG environment. Complete a minimum of 5 hookup/drops.

(3) Review. SEXT-390, EXT-221, and NVG-251.

Performance Standards

Pilots shall properly respond to crew positioning calls, place load within 5 meters of intended point, recognize closure/

descent rates, maintain briefed clearance below load, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, maintain effective instrument and NVG 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. EXT-221, NVG-251.

Ordnance. None.

External Syllabus Support. Single-point load (1000-4000 pounds), HST, authorized TERF route.

134. CORE PLUS PHASE

1. 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. Use MCCRES Volume III, Section A, Standards.

(1) Helicopter Assault Operation [MPS 3A.4].

(2) Noncombatant Evacuation Operation (NEO) [MPS 3A.7].

(3) Raid [MPS 3A.8].

(4) Security/Reinforcement [MPS 3A.9].

(5) Reconnaissance Patrol/Reaction Force Operation [3A.10].

(6) Medical Evacuation [MPS 3A.1].

(7) Tactical Recovery of Aircraft, Equipment, and Personnel (TRAP) [MPS 3A.12].

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 should mount .50 caliber machine guns for all tactical flights.

c. Crew Requirement

(1) STAC-400. A flight leader should instruct PUI.

(2) TAC-401/402. P/P/CC/AG.

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (2 Flights, 3.0 Hours/1 Simulator Event, 2.0 Hours)

STAC-4002.0C S (NS)

Goal. Conduct a day or NVG assault support mission in a high threat environment using MCCRES standards; incorporate AG and EW concepts and skills.

Requirement

(1) Discuss

- (a) CRM/crew comfort level.
- (b) ASE operations and secure voice capability.
- (c) NBC considerations.
- (d) Planning based on METT.
- (e) Aerial gunnery procedures.
- (f) Helicopter Operation Planning Checklist and Mission Briefing Guide as contained in the NWP 3-22.5-CH46E.
- (g) NVG considerations if flown at night.
- (h) TERF considerations.

(2) PUI will plan and execute an assault support mission from a mission statement using MCCRES standards 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 .50 caliber machine guns.

(3) Introduce

- (a) ASE and secure voice.
- (b) Navigation, timing, formation, defensive weaponry, communication discipline, authentication procedures, escort utilization, and weapons control procedures.

(4) Review. STAC-373.

Performance Standards

Pilots shall perform IAW MCO P3501.4A (MCCRES). 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 1 minute 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 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 NVG considerations with multiple aircraft aerial gunnery, understanding of FSCM utilization, demonstrate understanding of contingency considerations.

Prerequisites. None.

Ordnance. None.

External Syllabus Support. FMC WST/APT/TEN/ASE/Systems.

TAC-401

1.5 C 2 OR MORE ACFT A

Goal. Conduct an assault support mission in a high threat environment using MCCRES standards; incorporate AG and EW concepts and skills.

Requirement

(1) Discuss

- (a) CRM/crew comfort level.
- (b) ASE operations and secure voice capability.
- (c) NBC considerations.
- (d) Planning based on METT.
- (e) Aerial gunnery procedures.
- (f) Helicopter Operation Planning Checklist, and Mission Briefing Guide as contained in the NWP 3-22.5-CH46E.
- (g) TERF considerations.

(2) PUI will assist in planning and execute an assault support mission from a mission statement using MCCRES standards 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 .50 caliber machine guns.

(3) Introduce

- (a) ASE and secure voice.
- (b) Navigation, timing, formation, defensive weaponry, communication discipline, authentication procedures, escort utilization, and weapons control procedures.

(4) Review. TAC-374.

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 50 meters, 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.

Prerequisites. TAC-374, DM-341, and STAC-400.

Ordinance. 20 chaff and 40 flares, 600 rounds .50 cal.

External Syllabus Support. (As available) Live fire (HE preferred), laser capable, FW/RW escort/CAS assets, EW Emitter, FW/RW adversaries, Smokey SAMs.

TAC-402

1.5 C,R 2 OR MORE ACFT A NS

Goal. Conduct an assault support mission in a high threat environment on NVGs IAW MCCRES Volume III, Section A, MPS 3A.16 Night Operations.

Requirement

(1) In addition to the TAC-401 discussion items, discuss NVG (LLL) operational considerations.

(2) Execute a NVG mission similar to TAC-401. The PUI will fly the mission at TERF altitudes.

(3) Emphasis on 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 50 meters, 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 NVG considerations with multiple aircraft aerial gunnery, proper understanding of laser employment and contingency requirements, demonstrate understanding of FSCM utilization, and understanding of contingency considerations.

Prerequisites. TAC-375 and TAC-401, NSQ for appropriate light level.

Ordinance. 20 chaff and 40 flares, 600 rounds .50 cal.

External Syllabus Support. (As available) Live fire (HE preferred), laser capable, FW/RW escort/CAS assets, EW Emitter, FW/RW adversaries, Smokey SAMs, C4I integration.

2. External Cargo Operations (EXT)

- a. Purpose. To conduct TERF external cargo operations.
- b. General. CRM applicable to external cargo operations.
- c. Crew Requirements. P/P/CC/AO. TERFI required for initial EXT-420.
- d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.
- e. Flight and Simulator Event Training (1 Flight, 1.5 Hours)

EXT-420 1.5 C, 1 CH-46E A

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

Requirement

(1) Discuss

(a) CRM during external evolutions.

(2) Introduce. External load operations to a confined area in a TERF environment. Complete a minimum of 5 hookup/drops.

(3) Review. SEXT-390.

Performance Standards

Pilots shall properly respond to crew positioning calls, place load within 5 meters of intended point, recognize closure/descent rates, fly route within 50 ft 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.

Prerequisite. EXT-221 and TERF-242.

Ordinance. None.

External Syllabus Support. Load (1,000-4,000 pounds preferred), HST, authorized TERF route.

3. Nuclear, Biological, and Chemical (NBC)

a. Purpose. To develop proficiency with the AR-5 protective assembly during normal and tactical flight operations to include while wearing NVGs.

b. General

(1) For the safe execution of initial NBC flights, one pilot and one aircrewman shall remain unmasked. On subsequent flights all aircrew may remain masked. When using the AR-5 during NVG training flights, one pilot and one aircrewman shall remain unmasked due to the restricted field of view when using AN/AVS-6 with the AR-5.

(2) Initial NBC-431 training flight will be flown in HLL conditions. Proficiency flights may be flown in LLL.

(3) Aircrew shall be NSQ (HLL).

(4) NSI required for all initial NVG instructional flights.

(5) If flown during LLL conditions, both pilots shall be NSQ.

c. Crew Requirement. P/P/CC/AO.

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (2 Flights, 2.0 Hours)

NBC-430 1.0 C 1 CH-46E A

Goal. Conduct normal flight operations in a simulated NBC environment.

Requirement

(1) Discuss

(a) Aircrew protective ensemble.

(b) Nuclear effects to aircraft and aircrew.

(c) Chemical and Biological agents, their effects and aircrew protective measures.

(d) Decontamination considerations.

(e) CRM in an NBC environment to include emergency procedures.

- (f) Operation capabilities and limitations of protective masks.
- (g) Physiological limitations and fatigue factors imposed by NBC protective equipment.
- (h) Heliborne operations in a NBC environment.
- (2) Demonstrate. Donning, adjustments and doffing of the AR-5.
- (3) Introduce (with AR-5 donned)
 - (a) Ground operations.
 - (b) Airfield pattern operations.
 - (c) CALs.

Performance Standards

Pilots shall demonstrate ability to perform all ground operations with AR-5, ability to safely perform flight maneuvers with AR-5, fly pattern within 50 ft 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 2 rotors of intended point of landing.

Prerequisites. CAL-211 and SNBC-380.

Ordinance. None.

External Syllabus Support. CAL site.

NBC-431

1.0 C R 1 CH-46E A NS

Goal. Conduct NVG flight operations in a simulated NBC environment.

Requirement

- (1) Discuss
 - (a) Heliborne operations at night in a NBC environment.
 - (b) NVG failures.
 - (c) Operational capabilities, limitations and compatibility of the AR-5 and NVGs.
 - (d) CRM in a NBC environment to include emergency procedures.
- (2) Demonstrate. Donning, adjustments, and doffing of the AR-5 with NVGs.
- (3) Introduce (with AR-5 and NVGs donned)
 - (a) Ground operations.

(b) Airfield pattern operations.

(c) CALs.

Performance Standards

Pilot shall maintain effective NVG scan, utilize solid instrument scan, demonstrate ability to safely perform flight maneuvers with AR-5, fly pattern within 50 ft 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 2 rotors of intended point of landing.

Prerequisites. NVG-257 and NBC-430.

Ordinance. None.

External Syllabus Support. CAL site.

4. Defensive Measures (DM)

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

b. General

(1) After completion of DM-341, DM-441 and DM-442, the PUI is DM qualified.

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

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

(b) The flight lead must be DM qualified and specifically brief all applicable DM training rules per the MAWTS-1 Helicopter DM Guide.

(c) The flight lead briefs any aggressor aircrew per 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 caliber machine guns should be mounted for all DM flights.

(5) Successful completion of DM-442 constitutes DM qualified. A qualification letter signed by the commanding officer stating the pilot is DMQ is required to be placed in the aircrew APR and NATOPS jacket with appropriate logbook entry.

(6) Prerequisites

(a) TERF qualified.

(b) FORM-231 and DM-341.

c. Crew Requirement. P/P/CC/AO.

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (2 Flights, 3.0 hours / 1 Simulator Event, 2.0 Hours)

SDM-440

2.0

C S

Goal. Introduce section DM against a RW/FW aggressor.

Requirement

(1) Discuss

(a) CRM/inter-flight coordination.

(b) Crew comfort level.

(c) Lookout doctrine.

(d) Common terminology.

(e) SA.

(f) DM training rules.

(g) Closure rate, radius of turn, and energy state.

(h) Use of ALE-39, APR-39, ALQ-157, and AAR-47.

(i) Use of .50 caliber machine gun.

(j) DM against RW/FW aggressor.

(k) Inter/intra cockpit communicating.

(2) Introduce. DM with a RW/FW aggressor per the MAWTS-1 Helicopter DM Guide.

(3) Review. Helicopter performance characteristics and NATOPS limitations.

Performance Standards

Pilots shall meet learning objectives as established by MAWTS-1 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 IAW 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. None.

Ordnance. None.

External Syllabus Support. FMC WST/APT/TEN/ASE/Systems.

DM-441

1.5 C,R 2 CH-46E A VS 1 RW AGGRESSOR

Goal. Introduce DM against a RW aggressor.

Requirement

(1) Discuss

- (a) CRM/Inter-flight coordination.
- (b) Crew comfort level.
- (c) Lookout doctrine.
- (d) Common terminology.
- (e) SA.
- (f) DM training rules.
- (g) Closure rate, radius of turn, and energy state.
- (h) Use of ALE-39, APR-39, ALQ-157, and AAR-47.
- (i) Use of .50 caliber machine gun.
- (j) DM against RW aggressor.
- (k) Inter/intra cockpit communicating.

(2) Introduce. Helicopter versus helicopter DM with an aggressor helicopter per the MAWTS-1 Helicopter DM Guide.

(3) Review. Helicopter performance characteristics and NATOPS limitations.

Performance Standards

Pilots shall meet learning objectives as established by MAWTS-1 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 IAW 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. NVG-257, SDM-440 and NBC-430.

Ordnance. 20 chaff and 40 flares.

External Syllabus Support. Range (TACTS optional), RW adversary (RW platform capable of fwd firing ordnance).

DM-442

1.5 C,R 2 CH-46E A VS 1 FW AGGRESSOR

Goal. Introduce DM against a FW aggressor.

Requirement

(1) Discuss

- (a) CRM/inter flight coordination.
- (b) Crew comfort level.
- (c) Lookout doctrine.
- (d) Common terminology.
- (e) SA.
- (f) Closure rate, radius of turn, and energy state.
- (g) FW weapons parameters and considerations.
- (h) DM training rules.
- (i) Use of .50 caliber machine gun.
- (j) DM against FW aggressor.
- (k) Inter/intra cockpit communicating.

(2) Introduce. Helicopter versus FW DM per the MAWTS-1 Helicopter DM Guide.

Performance Standards

Pilots shall meet learning objectives as established by MAWTS-1 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 IAW 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. NVG-257 and NBC-430.

Ordnance. 20 flares.

External Syllabus Support. Range (TACTS optional), FW adversary.

6. Mountain Area Training (MAT)

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

b. Crew Requirement

(1) MAT-450. P/P/CC.

(2) MAT-451. P/P/CC/AO.

c. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

d. Flight and Simulator Event Training (2 Flights, 3.0 Hours)

MAT-450 1.5 C 2 CH-46E A

Goal. Introduce section aircraft operations in mountainous terrain.

Requirement

(1) Discuss

(a) Section maneuvering during mountain area operations.

(b) CAL selection in mountain areas.

(c) CAL techniques in mountain areas.

(2) Introduce

(a) Section operations in mountainous terrain.

(b) Section CALs in mountainous terrain.

(3) Review. CAL-212 and MAT-351.

Performance Standards

Pilots shall maintain SA of wingman requirements, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 1/2 rotor 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.

Prerequisite. CAL-212 and MAT-351.

Ordnance. None.

External Syllabus Support. Range that supports MAT.

MAT-451

1.5

C R 1 CH-46E A NS

Goal. Introduce NVG mountainous area operations.

Requirement

(1) Discuss

(a) CRM during mountainous terrain NVG operations.

(b) Visual illusions on NVGs in mountainous terrain.

(2) Introduce

(a) NVG mountainous terrain operations.

(b) NVG CALs in mountainous areas.

(3) Review. NVG-251.

Performance Standards

Pilots shall maintain effective NVG scan, utilize solid instrument scan, recognize proper closure with intended point of landing, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on zone, land within 1/2 rotor 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.

Prerequisites. NVG-251 and MAT-351.

Ordinance. None.

External Syllabus Support. Range that supports MAT.

6. 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 Jump Master/Cast Master.

c. Crew Requirement

(1) HIE-460, 461(day), 462 and 463(day). P/P/CC.

(2) HIE-461(NVG) and 463(NVG). P/P/CC/AO.

d. Prerequisite. Aircrew must be NSQ (appropriate light level) for flights conducted on NVGs.

e. External Syllabus Support. HRST Master and Safety Observer.

f. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

g. Flight and Simulator Event Training (4 Flights, 4.0 Hours)

HIE-460 1.0 C 1 CH-46E A

Goal. Introduce SPIE rig operations.

Requirement

(1) Discuss

(a) HIGE/HOGE requirements.

(b) CRM. Pilots, crew chief, HRST Master and HRST Safety Observer brief together.

(c) Voice communication/standard terminology.

(d) ICS failures/hand and arm signals.

(e) Current Force Order/Wing SOP.

(f) Obstacle clearance.

(g) Emergency procedures.

(h) Tactical considerations for SPIE operations.

(i) SPIE extraction from water.

(2) Introduce

(a) Inspection of SPIE Rig.

(b) Skills involved for holding extended hover.

(c) Troop insertion/extraction via SPIE Rig.

Performance Standards

Pilots shall demonstrate ability to properly inspect aircraft rigging, ability to insert ropers within 10 ft of intended point of insertion, execute HIE IAW local SOPs, fly pattern within 50 ft 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-221.

Ordnance. None.

External Syllabus Support. HRST and Safety Observers.

HIE-461

1.0 C 1 CH-46E A (NS)

Goal. Introduce day or NVG aerial delivery procedures.

Requirement

(1) Discuss

(a) CRM during aerial deliveries.

(b) Voice communication/standard terminology during aerial deliveries.

(c) Tactical considerations for aerial delivery of troops/cargo.

(d) Proper rigging and preflight of equipment to be inserted by aerial delivery.

1 Paradrop procedures.

2 Sensor drop procedures.

3 ICS procedures.

(e) Airspace coordination considerations.

(2) Introduce. Insertion of troops/cargo or sensors by aerial delivery.

Performance Standards

Pilots shall demonstrate ability to properly inspect aircraft rigging, execute HIE IAW local SOPs, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on insertion point, maintain effective instrument and NVG scan, demonstrate proper CRM and voice commands, maintain SA of obstacles.

Prerequisite. None.

Ordnance. None.

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

HIE-462

1.0 C 1 CH-46E A

Goal. Introduce helocast/soft duck procedures.

Requirement

(1) Discuss

(a) CRM while performing helocast or soft duck over water.

- (b) Proper rigging and preflight of equipment to be inserted via helocast and soft duck.
- (c) Low altitude aircraft emergencies over water.
- (d) Ditching/water landing.
- (e) Salt encrustation/compressor stall.
- (f) Helocast/soft duck delivery altitudes and airspeeds.
- (g) Voice communications/standard terminology.
- (h) Tactical considerations for helocast/soft duck operations.

(2) Introduce

- (a) Insertion of troops and equipment by helocast or soft duck.
- (b) Preflight of aircraft, troops and equipment for helocast or soft duck.

Performance Standards

Pilots shall demonstrate ability to properly inspect rigging, execute HIE IAW local SOPs, fly pattern within 5 ft 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. None.

Ordinance. None.

External Syllabus Support. Cast Master and Safety Observers.

HIE-463

1.0 C 1 CH-46E A (N)(NS)

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

Requirement

(1) Discuss

- (a) CRM during rescue operations.
- (b) Considerations during rescue operations.
- (c) Emergency procedures during rescue operations.

(2) Review

- (a) Preflight of appropriate HIE equipment.
- (b) Internal/external hoisting operations.

Performance Standards

Pilots shall properly respond to crew positioning calls, exercise hoist operations within 2 meters of intended point, recognize closure/descent rates, maintain briefed clearance below load, fly pattern within 50 ft 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-221.

Ordinance. None.

External Syllabus Support. Operational jungle penetrator or SAR basket (as available).

7. 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.

(2) CQ Requirements

(a) Requirements for initial/Refresher/delinquent qualification are:

- five day CQs.
- five NVG CQs.
- five night unaided CQs.

(b) Pilots previously night CQ and proficient per paragraph 2(a) shall complete the following to maintain proficiency:

- two day CQs.
- two NVG CQs. (Note: CQ-301 chains CQ-300 and CQ-491).
- two night unaided CQs. (Note: CQ-491 chains CQ-300).

(3) Pilot is CQ on completion of CQ-300, CQ-301 and CQ-491.

(4) Pilots are authorized to carry passengers under all conditions when proficient in CQ-301 and CQ-491.

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

c. Crew Requirement. CQ-491. P/P/CC.

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

f. Flight and Simulator Event Training (1 Flight, 1.0 Hour)

CQ-491 1.0 C 1 CH-46E A N

Goal. Conduct night unaided CQ.

(1) Discuss

- (a) CRM during shipboard landings.
- (b) Communications used during shipboard landings.
- (c) LSE signals.
- (d) Water landings/ditching.
- (e) Aircraft lighting used during shipboard landings.
- (f) Rotor engagement/disengagement.
- (g) Launch/Recovery wind envelopes.
- (h) Transition from instrument to NVG scan.
- (i) Basic instrument scan.

Performance Standards

Pilots shall fly 300 ft/80 kt pattern within 25 ft 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 1 meter of intended point of landing, maintain effective NVG scan, utilize solid instrument scan, recognize proper closure with intended point of landing, demonstrate proper shipboard communications and aircraft lighting.

Prerequisite. CQ-292 and CQ-300.

Ordinance. None.

External Syllabus Support. CQ capable ship.

140. INSTRUCTOR TRAINING

1. Instructor Under Training (IUT)

a. Purpose. To develop qualified instructor pilots using a standardized flight training program.

b. General

(1) The IUT should fly all sorties with an experienced IP. The IP for NVG-513 shall be an NSI.

(2) The IUT may find all maneuver descriptions in the FRS Standardization Manual, NATOPS Flight Manual, and MAWTS-1 Course Catalog.

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

c. Crew Requirement. IP/IUT/CC (AO if NVGs are used).

d. Ground/Academic Training. Instructors will complete the appropriate portion of the ISD program prior to qualification.

e. Flight and Simulator Event Training (12 Flights, 19.5 Hours)

FAM-500

1.5

E 1 CH-46E A

Goal. Introduce techniques of instruction.

Requirement

(1) Discuss

(a) CRM.

(b) Course rules.

(2) Introduce

(a) Course rules.

(b) Techniques of instruction.

(c) All FAM stage maneuvers.

Performance Standards

Pilot will conform to instructional techniques set forth by the FRS for all FAM Maneuvers IAW the FRS Standardization Manual and NATOPS Manual.

Prerequisite. Appropriate FRS ISD lessons.

Ordinance. None.

External Syllabus Support. None.

FAM-501

1.5

E 1 CH-46E A/S

Goal. Introduce techniques of instruction.

Requirement

(1) Discuss

(a) CRM.

(b) Course rules.

(2) Introduce

(a) Course rules.

(b) Techniques of instruction.

(c) All familiarization stage maneuvers.

Performance Standards

Pilot will conform to instructional techniques set forth by the FRS for all FAM Maneuvers IAW the FRS Standardization Manual and NATOPS Manual.

Prerequisite. Appropriate FRS ISD lessons.

Ordinance. None.

External Syllabus Support. None.

FAM-502

1.5 E 1 CH-46E/WST A/S N

Goal. Night instructional techniques introduction.

Requirement

- (1) Discuss. CRM.
- (2) Introduce
 - (a) Local area orientation.
 - (b) Night FAM stage maneuvers.
- (3) Review
 - (a) All previously introduced maneuvers as necessary.
 - (b) Instructional techniques.
 - (c) Single engine landings.

Performance Standards

Pilot will conform to instructional techniques set forth by the FRS for all Night FAM Maneuvers IAW the FRS Standardization Manual and NATOPS Manual.

Prerequisite. Appropriate FRS ISD lessons.

Ordinance. None.

External Syllabus Support. None.

INST-503

1.5 E 1 CH-46E/WST A/S

Goal. Introduce instrument instructional techniques.

Requirement

- (1) Discuss. CRM.
- (2) Introduce
 - (a) Basic instrument procedures.
 - (b) Basic instrument patterns (vertical S-1 and Oscar patterns).

(3) 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 IAW the FRS Standardization Manual and NATOPS Instrument Flight Manual.

Prerequisite. Appropriate FRS ISD lessons.

Ordinance. None.

External Syllabus Support. None.

INST-504

1.5 E 1 CH-46E/WST A/S

Goal. Continue instrument instructional techniques.

Requirement

- (1) Discuss. CRM.
- (2) Review
 - (a) IFR flight planning.
 - (b) Filing DD-175 and DD-175-1.
 - (c) Airway procedures.
 - (d) Precision and non-precision instrument approaches.

Performance Standards

Pilot will conform to instructional techniques set forth by the FRS for all INST Maneuvers IAW the FRS Standardization Manual and NATOPS Instrument Flight Manual.

Prerequisite. Appropriate FRS ISD lessons.

Ordinance. None.

External Syllabus Support. None.

NAV-505

1.5 E 1 CH-46E A

Goal. Introduce navigation procedures instructional techniques.

Requirement

- (1) Discuss. Navigation and identifying positions using charts and maps.
- (2) Review
 - (a) CRM.

- (b) Lost plane procedures.
- (c) Time/distance checks.
- (d) Distance information and map legend information.
- (e) Use of jet logs and enroute navigational computer.
- (f) Mountainous area landings.
- (g) CALs.
- (h) Power available.
- (i) Techniques of instruction.

Performance Standards

Pilot will conform to instructional techniques set forth by the FRS for all NAV Procedures IAW the FRS Standardization Manual and CH-46E TAC Manual.

Prerequisite. Appropriate FRS ISD lessons.

Ordinance. None.

External Syllabus Support. None.

EXT-506

1.5 E 1 CH-46E A

Goal. Introduce external cargo procedures instructional techniques.

Requirement

- (1) Discuss. CRM.
- (2) Review
 - (a) External operations.
 - (b) Cargo hook procedures.
 - (c) Techniques of instruction.

Performance Standards

Pilot will conform to instructional techniques set forth by the FRS for all EXT Procedures IAW the FRS Standardization Manual and CH-46E TAC Manual.

Prerequisite. Appropriate FRS ISD lessons.

Ordinance. None.

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

CAL-507

1.5

E 1 CH-46E/WST A/S

Goal. Introduce CAL instructional techniques.

Requirement

(1) Discuss

- (a) CRM.
- (b) Zone brief.

(2) Review

- (a) CALs.
- (b) Power checks.
- (c) Techniques of instruction.
- (d) Masking/unmasking.
- (e) Bunts/Rolls.
- (f) Quick stop.

Performance Standards

Pilot will conform to instructional techniques set forth by the FRS for all CAL/TERF Procedures IAW the FRS Standardization Manual and CH-46E TAC Manual.

Prerequisite. Appropriate FRS ISD lessons.

Ordinance. None.

External Syllabus Support. TERF area.

FAM 508

1.5

E 1 CH-46E/WST A/S

Goal. Introduce/evaluate ECCS techniques of instruction.

Requirement

(1) Discuss. (ref: CH-46E ECCS NATOPS Manual/CH-46E Flight Standardization Manual)

(a) ECCS system

- 1 Theory of operation.
- 2 Preflight/start checklist.
- 3 Shutdown checklist.
- 4 Normal mode operation.
- 5 Manual mode operation.

(b) Emergencies (instructional technique)

- 1 Single engine failure takeoff.
- 2 Single engine failure in HOGE.
- 3 Single engine failure in flight.
- 4 Compressor stall.
- 5 ECCS failure in flight.
- 6 Flex shaft failure in flight.
- 7 Sprag clutch slippage.
- 8 Practice autorotations.

(2) Introduce/Evaluate

- (a) Normal Engine Start.
- (b) Normal shutdown.

(3) Emergencies (instructional technique)

- (a) Single engine failure takeoff.
- (b) Single engine failure in HOGE.
- (c) Single engine failure in flight.
- (d) Compressor stall.
- (e) ECCS failure in flight.
- (f) Flex shaft failure in flight.
- (g) Sprag clutch slippage.
- (h) Practice autorotations.

Performance Standards

Pilot shall demonstrate knowledge of ECCS, NATOPS checklists and instructional technique with ECCS.

Prerequisite. FAM-195.

Ordnance. None.

External Syllabus Support. None.

FORM-509

1.5 E 2 CH-46E A

Goal. Introduce formation flight instructional techniques.

Requirement

- (1) Discuss
 - (a) CRM.
 - (b) Safety parameters.
- (2) Review
 - (a) All formation maneuvers.
 - (b) Techniques of instruction.

Performance Standards

Pilot will conform to instructional techniques set forth by the FRS for all FORM Procedures IAW the FRS Standardization Manual and CH-46E TAC Manual.

Prerequisite. Appropriate FRS ISD lessons.

Ordnance. None.

External Syllabus Support. None.

IUT-511

3.0 E 1 CH-46E A

Goal. Instructor standardization check.

Requirement

- (1) Discuss
 - (a) CRM.
 - (b) Safety parameters.
- (2) 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 IAW the FRS Standardization Manual, CH-46E TAC Manual and NATOPS Manual.

Prerequisite. Appropriate FRS ISD lessons.

Ordnance. None.

External Syllabus Support. None.

NVG-513

1.5 E 1 CH-46E A NS

Goal. Introduce initial NVG instructional techniques.

Requirement

(1) Discuss

- (a) CRM.
- (b) Crew comfort levels.
- (c) NVG failures.
- (d) Depth perception.
- (e) Cockpit lighting.
- (f) Emergency procedures.

(2) Evaluate. All phases and techniques of instruction to include the following:

- (a) Taxi.
- (b) Vertical takeoff.
- (c) Vertical landing.
- (d) Square patterns.
- (e) Touch and go patterns.

Performance Standards

Pilot will conform to instructional techniques set forth by the FRS for all NVG procedures IAW the FRS Standardization Manual, MAWTS-1 NVD Manual and CH-46E TAC Manual.

Prerequisite. Appropriate FRS ISD lessons, completion of NVG NSFI Syllabus IAW MAWTS-1 Course Catalog.

Ordinance. None.

External Syllabus Support. None.

150. REQUIREMENTS, QUALIFICATIONS, AND DESIGNATIONS (RQD)

1. RQD Overview

a. Purpose. To determine qualification for designation in specific flight skills, systems, knowledge, and flight leadership traits.

b. General. This section enables squadrons to document completion of flight leadership check rides.

(1) For RQD-600 the evaluating pilot shall be a designated NATOPS Evaluator. For RQD-601 the evaluating pilot shall be a designated Instrument Evaluator.

(2) Prerequisites. See OPNAVINST 3710.7, OPNAVINST 4790.2, and the CH-46E NATOPS Flight Manual.

c. Crew Requirements. P/P/CC/ (AO if NVGs are used).

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training. Incorporated in the flight training (14 Flights, 21 Hours)

RQD-600 1.5 E 1 CH-46E A/S (N)(NS)

Goal. Conduct annual NATOPS evaluation and evaluate utilization of all aspects of the CH-46E as a weapons system.

Requirement

(1) Discuss. All emergency procedures and Standardization Manual maneuvers.

(2) Introduce. None.

(3) Review. None.

Performance Standards

The performance expected by the evaluator in this flight shall be commensurate with the experience of the pilot under evaluation.

Prerequisite. CSIX-182.

Ordnance. None.

External Syllabus Support. WST/APT (If sim is utilized).

RQD-601 1.5 E 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

(1) Discuss. Instrument procedures IAW Instrument Flight Manual.

(2) Introduce. None.

(3) Review. None.

Performance Standards

Pilots shall demonstrate performance in handling instrument related emergencies to include unusual attitude recoveries.

Prerequisite. IAW OPNAV 3710.7x.

Ordnance. None.

External Syllabus Support. Instrument capable WST/APT.

2. Flight Leadership (FL)

a. Purpose. To demonstrate tactical skills in a flight leadership role.

b. General

(1) This section enables squadrons to document flight leadership workups and evaluations.

(2) For RQD-600, 604 and 605 the evaluating pilot shall be a designated NATOPS Instructor or ANI. For RQD-601 the evaluating pilot shall be a designated Instrument Evaluator.

(3) Instruction in a given flight leadership level can be provided by a pilot with that designation. The evaluation flight for a given flight leadership level shall be provided by a pilot at least one flight leadership level higher.

(4) Initial designation requires completion of all flight leadership events specific to a designation. Re-designation requires re-fly of senior flight leadership level event.

c. Crew Requirements. P/P/CC/(AO).

d. Ground/Academic Training. MAWTS-1 Assault Support Package.

e. Flight Training. (6 Flights, 9.0 Hours).

FL-602 1.5 C E 1 CH-46E/WST A/S

Goal. Conduct day HAC review. Emphasize emergency procedures. Fly at (or simulate) high gross weight condition.

Requirement

(1) Discuss. Aircraft commander duties and responsibilities.

(2) Introduce. None.

(3) Review. Flight maneuvers, aircraft systems.

Performance Standards

Pilots shall demonstrate satisfactory performance in basic pilot skills and CRM with emphasis on decision making.

Prerequisite. IAW NATOPS, Squadron SOP.

Ordinance. None.

External Syllabus Support. None.

FL-603 1.5 C E 1 CH-46E/WST) A/S N NS

Goal. Conduct night HAC review. Night and NVG. Emphasize emergency procedures. Fly at (or simulate) high gross weight condition.

Requirement

- (1) Discuss. Aircraft commander duties and responsibilities.
- (2) Introduce. None.
- (3) Review. Flight maneuvers, aircraft systems.

Performance Standards

Pilots shall demonstrate satisfactory performance in basic night and NVG pilot skills and CRM with emphasis on decision making.

Prerequisite. IAW NATOPS, Squadron SOP, and NSQ.

Ordnance. None.

External Syllabus Support. None.

FL-604

1.5 C E 1 CH-46E A

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

- (1) Discuss. Aircraft commander duties and responsibilities.
- (2) Introduce. None.
- (3) Review. Flight maneuvers, aircraft systems.

Performance Standards

Pilots shall demonstrate satisfactory performance in basic pilot skills and CRM with emphasis on decision making.

Prerequisite. IAW NATOPS, Squadron SOP, FL-602, and FL-603.

Ordnance. None.

External Syllabus Support. None.

FL-605

1.5 C E 1 CH-46E A N NS

Goal. Conduct night HAC check. Night and NVG. Emphasize emergency procedures. Fly at (or simulate) high gross weight condition.

Requirement

- (1) Discuss. Aircraft commander duties and responsibilities.
- (2) Introduce. None.
- (3) Review. Flight maneuvers, aircraft systems.

Performance Standards

Pilots shall demonstrate satisfactory performance in basic night and NVG pilot skills and CRM with emphasis on decision making.

Prerequisite. IAW NATOPS, Squadron SOP, and FL-604.

Ordinance. None.

External Syllabus Support. None.

FL-606

1.5 C 2 CH-46E A

Goal. Conduct day section leader training.

Requirement. SLUI will plan, brief, lead, and debrief a day section tactical flight to include escort and fire support considerations.

Performance Standards

Pilots shall conduct this flight IAW the standards in T&R Program Manual and MCO 3501.4A, MCCRES. Use NWP 3-22.5-CH46E Volumes 1 and 2 Tactical Manuals as source documents for planning. Flight shall include escorts (actual or notional).

Prerequisites. FL-604 and 605, TAC-371 or TAC-374.

Ordinance. As required.

External Syllabus Support. CAL sites, authorized TERF area.

FL-607

1.5 C 2 CH-46E A N NS

Goal. Conduct night section leader training.

Requirement. SLUI will plan, brief, lead, and debrief a night section tactical flight to include escort and fire support considerations.

Performance Standards

Pilots shall conduct this flight under the standards required in T&R Program Manual and MCO 3501.4A, MCCRES. Use NWP 3-22.5-CH46E Volumes 1 and 2 Tactical Manuals as source documents for planning. Flight shall include escorts (actual or notional).

Prerequisite. FL-606 or TAC-372 or 375.

Ordinance. As required.

External Syllabus Support. Authorized TERF area, CAL site.

FL-608

1.5 C, R E 2 CH-46E A (N)(NS)

Goal. Section leader check or section leader review.

Requirement. SL or SLUI will plan, brief, lead, and debrief a day or night section tactical flight to include escort, fire support considerations and aerial gunnery.

Performance Standards

Pilots shall conduct this flight under the standards required in T&R Program Manual and MCO 3501.4A, MCCRES. Use NWP 3-22.5-CH46E Volumes 1 and 2 Tactical Manuals as source documents for planning. Flight shall include escorts (actual or notional).

Prerequisite. FL-607.

Ordnance. 200 rounds .50 cal per aircraft, 20 chaff and 40 flares.

External Syllabus Support. Aerial gunnery range, EW range, authorized TERF area, CAL site.

FL-609

1.5 C 3 OR MORE CH-46E A

Goal. Conduct day division leader training.

Requirement. DLUI will plan, brief, lead, and debrief a day division tactical flight to include escort and fire support considerations.

Performance Standards

Pilots shall conduct this flight IAW T&R Program Manual and MCO 3501.4A, MCCRES. Use NWP 3-22.5-CH46E Volumes 1 and 2 Tactical Manuals as source documents for planning. Flight shall include escorts (actual or notional).

Prerequisite. FL-608.

Ordnance. As required.

External Syllabus Support. Authorized TERF area, CAL site.

FL-610

1.5 C 3 OR MORE CH-46E A N NS

Goal. Conduct night division leader training.

Requirement. DLUI will plan, brief, lead, and debrief a night division tactical flight to include escort and fire support considerations.

Performance Standards

Pilots shall conduct this flight IAW T&R Program Manual and MCO 3501.4A, MCCRES. Use NWP 3-22.5-CH46E Volumes 1 and 2 Tactical Manuals as source documents for planning. Flight shall include escorts (actual or notional).

Prerequisite. FL-609.

Ordinance. As required.

External Syllabus Support. Authorized TERF area, CAL site.

FL-611

1.5 C,R E 3 OR MORE CH-46E A (N) (NS)

Goal. Division leader check or division leader review.

Requirement. DLUI will plan, brief, lead, and debrief a day division tactical flight with fire support considerations and actual escorts.

Performance Standards

Pilots shall conduct this flight IAW T&R Program Manual and MCO 3501.4A, MCCRES. Use NWP 3-22.5-CH46E Volumes 1 and 2 Tactical Manuals as source documents for planning. Flight shall include escorts.

Prerequisite. FL-610.

Ordinance. 200 rounds .50 cal per aircraft, 20 chaff and 40 flares.

External Syllabus Support. Aerial gunnery range, EW range, authorized TERF area, CAL site, RW and/or FW escort.

FL-612

1.5 C,R E 5 OR MORE CH-46E A (N)(NS)

Goal. Flight leader check or flight leader review.

Requirement. FLUI or FL will plan, brief, lead, and debrief a multi-division tactical flight. Flight shall include fire support considerations and actual escorts.

Performance Standards

Pilots shall conduct this flight IAW T&R Program Manual and MCO 3501.4A, MCCRES. Use NWP 3-22.5-CH46E Volumes 1 and 2 Tactical Manuals as source documents for planning. Demonstrate ability to plan, coordinate and control all supporting arms, escorts and agencies in meeting mission requirements.

Prerequisite. FL-611, and TAC-375.

Ordnance. 200 rounds .50 cal per aircraft, 20 chaff and 40 flares.

External Syllabus Support. Aerial gunnery range, EW range, authorized TERF area, CAL site, RW and/or FW escort.

FL-613

1.5 C,R E (+2 Div) (N) (NS)

Goal. Air mission commander check or review.

Requirement. AMCUI or AMC will plan, brief, lead, and debrief a multi-division tactical mission. AMCUI should be evaluated on ability to integrate six functions of Marine Aviation. Preferably executed from a C&C platform.

Performance Standards

Pilots shall conduct this flight IAW T&R Program Manual and MCO 3501.4A, MCCRES. Use NWP 3-22.5-CH46E Volumes 1 and 2 Tactical Manuals as source documents for planning.

Prerequisite. FL-612, and TAC-402.

Ordnance. 200 rounds .50 cal per aircraft, 20 chaff and 40 flares.

External Syllabus Support. Aerial gunnery range, EW range, authorized TERF area, CAL site, RW and/or FW escort.

151. GRADUATE LEVEL COURSES

1. General. There are five graduate level courses that qualify instructors for specific portions of the T&R syllabus. These courses are as follows:

- a. Weapons and Tactics Instructor (WTI).
- b. Terrain Flight Instructor (TERFI).
- c. Night Systems Familiarization Instructor (NSFI).
- d. Night Systems Instructor (NSI).
- e. Defensive Measures Instructor (DMI).

2. The current MAWTS-1 Course Catalog lists the above courses by training codes. 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.

152. SPECIAL TRAINING FLIGHTS. The purpose of this section is 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.

1. Arctic Weather Training (AWT)

a. Purpose. To teach the fundamentals of, and/or develop proficiency in any aspect of flying in cold weather with snow on the ground.

b. General

(1) Ambient air temperatures will normally be below 10 degrees Fahrenheit with snow on the ground. Pilots must note that cold dry conditions with blowing snow will significantly increase the difficulty of arctic weather flight.

(2) Aircrew shall be NSQ for all NVG flights.

c. Crew Requirements. P/P/CC/ (AO if NVGs are used).

d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (1 Flight, 2.0 Hours)

AWT-620 2.0 1 CH-46E A (N)(NS)

Goal. Introduce helicopter operations in a cold weather environment.

Requirement

(1) Discuss

- (a) Cold dry conditions.
- (b) Blowing snow.
- (c) White-out conditions.
- (d) Aircraft cold weather limitations.
- (e) Aircraft anti-ice.
- (f) Icing.

(2) Introduce. Snow landing techniques.

(3) Review. NATOPS Chapter 13.

Performance Standards

Pilots shall fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 2 rotors of intended point of landing, demonstrate ability to perform no-hover landings.

Prerequisite. CAL-211.

Ordinance. None.

External Syllabus Support. Snow on the ground.

2. Desert Operations (DES)

- a. Purpose. To develop proficiency in aspects of flying in a dusty, high temperature, high density altitude desert environment.
- b. Crew Requirement. P/P/CC (AO if NVGs are used).
- c. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.
- d. Flight and Simulator Event Training (1 Flight, 2.0 Hours)

DES-630 2.0 1 CH-46E A (N)(NS)

Goal. Introduce helicopter operations in a desert environment.

Requirement

- (1) Discuss
 - (a) High density altitude.
 - (b) Blowing sand.
 - (c) Brown-out conditions.
 - (d) Aircraft hot weather performance limitations.
- (2) Introduce. Desert landing techniques.
- (3) Review. NATOPS Chapter 13.

Performance Standards

Pilots shall fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 2 rotors of intended point of landing, demonstrate ability to perform no-hover landings.

Prerequisites. CAL-211.

Ordinance. None.

External Syllabus Support. Desert environment.

3. CRM Training

- a. Purpose. To conduct annual CRM training.
- b. Crew Requirement. P/P.
- c. Flight and Simulator Event Training (1 Event, 2.0 Hours)

SCRM-640 2.0 E C,R 1 CH-46E S/A

Goal. Practice/review CRM principles presented in the CH-46E CRM Training course while executing a simulated mission scenario.

Requirement

(1) Discuss

- (a) Decision making.
- (b) Assertiveness.
- (c) Mission analysis.
- (d) Communication.
- (e) Leadership.
- (f) Adaptability/flexibility.
- (g) Situational awareness.

(2) Introduce. None.

(3) Review. None.

(4) Evaluate

- (a) Decision making.
- (b) Assertiveness.
- (c) Mission analysis.
- (d) Communication.
- (e) Leadership.
- (f) Adaptability/Flexibility.
- (g) Situational Awareness.
- (h) CRM during emergencies and system failures.

Performance Standards

Pilots shall demonstrate effective use of the CRM seven critical skills areas.

Prerequisite. Completion of the CH-46E CRM course.

Ordnance. None.

External Syllabus Support. WST/APT.

4. Water Landings (WTR)

- a. Purpose. To develop water landings skills.
- b. General. Pilots shall practice landings in fresh water.
- c. Crew Requirements. P/P/CC.
- d. Flight and Simulator Event Training (1 Flight, 1.0 Hour)

WTR-650

1.0

C,R 1 CH-46E A/S

Goal. Demonstrate the ability to conduct day water takeoffs and landings.

Requirement

(1) Discuss

- (a) CRM requirements for water landings.
- (b) Water landing checklist.
- (c) Waterfall effect and salt encrustation.
- (d) Rescue with the side door down procedures and limitations.
- (e) Inadvertent HEFS deployment.
- (f) Ditching.

(2) Introduce

- (a) Water taxi.
- (b) Vertical water takeoff.
- (c) Vertical water landing.
- (d) Running water takeoff.
- (e) Running water landing.

(3) Review. Over-water rescue hoist operations.

Performance Standards

Pilots shall recognize and control closure and descent rates, perform vertical landing and takeoff, perform water taxi.

Prerequisite. CAL-211.

Ordinance. None.

External Syllabus Support. Authorized fresh water landing area.

5. Air Combat Maneuvering (ACM)

- a. Purpose. To introduce ACM in the simulator.
- b. General. Conduct ACM with a section of helicopters against one or two RW/FW bandits.
- c. Crew Requirements. P/P.
- d. Ground/Academic Training. Utilize academic courseware as outline in the MAWTS-1 Course Catalog.

e. Flight and Simulator Event Training (1 Event, 2.0 Hours)

SACM-660 2.0 C,R S

Goal. Introduce helicopter ACM.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) Lookout doctrine.

(d) Common terminology.

(e) Closure rate/radius of turn/energy state.

(f) Use of ALE-39/APR-39/ALQ-157/AAR-47.

(g) Use of .50 cal machine guns.

(2) Introduce. Helicopter ACM in a section versus RW/FW bandits per the MAWTS-1 Helicopter ACM Guide.

(3) Review. None.

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 IAW DM training rules and NATOPS limits, demonstrate effective threat evaluation, appropriate threat response, effective inter and intra cockpit communication, meet learning objectives as established by MAWTS-1 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.

Ordinance. None.

External Syllabus Support. ACM capable WST/APT.

6. Functional Check Flights (FCF)

a. Purpose. To obtain an FCF designation.

b. General. Conduct the full range of FCF procedures to include ECCS.

c. Crew Requirements. P/P/CC.

d. Ground/Academic Training. NATOPS Chapter 10, Functional Check Flight checklist, squadron SOP for maintenance flights, and 4790 parameters and requirements.

e. Flight and Simulator Event Training. (2 Events, 4.0 Hours)

FCF-670

2.0

C,R E 1 CH-46E A

Goal. Functional Check Flight designation.

Requirement. Effectively demonstrate the ability to perform a full card Functional Check Flight.

(1) Discuss

(a) Maintenance test procedures.

(b) Troubleshooting techniques.

(c) Squadron SOP for maintenance flights.

(d) MIMS.

(2) Introduce. None.

(3) Review. NATOPS Chapter 10, Functional Check Flight Checklist.

Performance Standards

Pilots shall demonstrate the ability to conduct a full-card Functional Check Flight correctly, efficiently, and demonstrate the ability to troubleshoot aircraft problems.

Prerequisite. Squadron FCF syllabus and reading.

Ordnance. None.

External Syllabus Support. None.

FCF-671

2.0

C,R E 1 CH-46E/WST A/S

Goal. Introduce/evaluate ECCS techniques of instruction.

Requirement

(1) Discuss. (ref: CH 46E ECCS NATOPS Manual/CH-46E Flight Standardization Manual)

(a) ECCS system

1 Theory of operation.

2 Preflight/start checklist.

3 Shutdown checklist.

4 Normal mode operation.

5 Manual mode operation.

(b) Emergencies (instructional technique)

1 Single engine failure takeoff.

2 Single engine failure in HOGE.

3 Single engine failure in flight.

4 Compressor stall.

5 ECCS failure in flight.

6 Flex shaft failure in flight.

7 Sprag clutch slippage.

8 Practice autorotations.

(2) Introduce/Evaluate

(a) Normal engine start.

(b) Normal shutdown.

(3) Emergencies (instructional technique)

(a) Single engine failure takeoff.

(b) Single engine failure in flight.

(c) Compressor stall.

(d) ECCS failure in flight.

(e) Flex shaft failure in flight.

(f) Sprag clutch slippage.

(g) Practice autorotations.

Performance Standards

Pilot shall demonstrate knowledge of ECCS, NATOPS checklists and instructional technique with ECCS.

Prerequisite. FAM-195.

Ordnance. None.

External Syllabus Support. None.

160. ORDNANCE REQUIREMENTS

PLT's REQ'D TO BE CORE COMPETENT	# CC & AG/O REQ'D TO BE CORE COMPETENT		T&R CODE	INDIVIDUAL REQUIREMENTS					
				EXPENDABLES		.50 CAL		OTHER	
				TOTAL CHF/FLR REQ'D PER "X"		RNDS REQ'D PER "X"		ORD REQ'D PER "X"	
CC	AG/O	CHAFF	FLARE	PILOT	CC/AG	SMKE	PYRO		
COMBAT CAPABLE (100 LEVEL)									
NO ORDNANCE REQUIRED									
COMBAT READY (200 LEVEL) CORE SKILLS									
12	6	6	AG 281			500*	500	2	
			282				500		
			283				500		
COMBAT QUALIFIED (300 LEVEL) CORE SKILLS									
12			AG 321	as req'd	as req'd	500*	500		
			332				500		
12			EW 331	40	20				
12			DM 441	40	20			2	any avl
12	6	6	TAC371	opt.	opt.				
			372	opt.	opt.	opt.			
			374	20	40	opt.	500		
			375	20	40	opt.	500		
FULL COMBAT QUALIFIED (400 level) CORE PLUS SKILLS (Note: DM 441/442 req'd to be DM qual'd)									
12	6	6	TAC401	20	40	500*	500		
			402	20	40	500*	500		
12	6	6	DM 441	20	40				
12	6	6	442	20	40				

100-400 LEVEL PHASES						
	CHAFF	FLARE	.50 CAL	SMOKE	PYRO	
Sub TOTAL:	200	280	0	4,500	4	Any avl.

Rounds required for pilots annotated with an asterisk (*) are shown for planning purposes only. In order to meet learning objectives for the event for an initial/Refresher/delinquent pilot shall be afforded the exposure to the requisite ordnance in order to be complete/qualified for the given event. Consideration should be given to meeting learning objectives by matching up an initial/Refresher/delinquent pilot with an initial/Refresher/delinquent crew chief, aerial gunner/observer who are required to expend the appropriate ordnance.

			UNIT REQUIREMENTS							
PLT's REQ'D TO BE CORE COMPETENT	# CC & AG/O REQ'D TO BE CORE COMPETENT		T&R CODE	EXPENDABLES		.50 CAL			OTHER	
	CC	AG/O		TOTAL CHF/FLR REQ'D TO BE CORE COMPETENT		TOTAL RND'S REQ'D PER TO BE CORE COMPETENT			TOTAL ORD REQ'D TO BE CORE COMPETENT	
				CHAFF	FLARE	PLT	CC	AG/O	SMKE	PYRO
(100 LEVEL)										
NO ORDNANCE REQUIRED										
(200 LEVEL)										
CORE SKILLS										
12	6	6	AG 281				3000	3000	24	
			282				3000	3000		
			283				3000	3000		
(300 LEVEL)										
CORE SKILLS										
12			AG 321				3000	3000		
			332				3000	3000		
12					EW 331	480	240			
12			DM 441	480	240				24	any avl
12	6	6	TAC371							
			372							
			374	240	480					
			375	240	480					
(400 LEVEL)										
CORE PLUS SKILLS (Note: DM 441/442 req'd to be DM qual'd)										
12	6	6	TAC401	240	480		3000	3000		
			402	240	480		3000	3000		
12	6	6	DM 441	240	480					
			442	240	480					

REQ'D TO ACHIEVE/MAINTAIN CORE COMPETENCY					
	CHAFF	FLARE	.50 CAL(CC&AG/O)	SMKE	PYRO
Sub TOTAL:	1,920	2,400	42,000	48	Any avl

DOES NOT INCLUDE ORD REQ'D FOR TAC 401/402 (CORE PLUS SKILLS)

INDIVIDUAL REQUIREMENTS									
PLT's REQ'D TO BE CORE COMPETENT	# CC & AG/O REQ'D TO BE CORE COMPETENT		T&R CODE	EXPENDABLES		.50 CAL		OTHER	
	CC	AG/O		TOTAL CHF/FLR REQ'D PER "X"		RND'S REQ'D PER "X"		ORD REQ'D PER "X"	
				CHAFF	FLARE	PILOT	CC/AG	SMKE	PYRO
INSTRUCTOR CERTIFICATION (500 LEVEL)									
		2	AG 540				500		
			541				500		
			542				500		
			543				500		
2	2		DM 580	40	20			2	Any avl
			581	20	40				
			582	20	40				

INSTRUCTOR PHASE						
	CHAFF	FLARE	.50 CAL		SMKE	PYRO
Sub TOTAL:	80	100	0	2,000	2	Any avl

UNIT REQUIREMENTS											
PLT's REQ'D TO BE CORE COMPETENT	# CC & AG/O REQ'D TO BE CORE COMPETENT		T&R CODE	EXPENDABLES			.50 CAL			OTHER	
				TOTAL CHF/FLR REQ'D TO BE CORE COMPETENT			TOTAL RNDS REQ'D PER TO BE CORE COMPETENT			TOTAL ORD REQ'D TO BE CORE COMPETENT	
	CC	AG/O		CHAFF	FLARE	PLT	CC	AG/O	SMKE	PYRO	
INSTRUCTOR CERTIFICATION											
	2		AG 540					1000			
			541					1000			
			542						1000		
			543						1000		
2	2		DM 580	80	40				4	Any avl	
			581	40	80						
			582	40	80						

REQ'D TO FOR INITIAL CERTIFICATION/CORE COMPETENCY						
	CHAFF	FLARE	.50 CAL		SMKE	PYRO
Sub TOTAL:	160	200	4,000		4	Any avl

INDIVIDUAL REQUIREMENTS											
PLT's REQ'D TO BE CORE COMPETENT	# CC & AG/O REQ'D TO BE CORE COMPETENT		T&R CODE	EXPENDABLES			.50 CAL			OTHER	
				TOTAL CHF/FLR REQ'D PER "X"			RNDS REQ'D PER "X"			ORD REQ'D PER "X"	
	CC	AG/O		CHAFF	FLARE	PILOT	CC/AG	SMKE	PYRO		
REQUIREMENTS, QUALIFICATIONS AND DESIGNATION (600 LEVEL)											
12			FL 602								
			603								
			604								
			605								
6			606	as req'd	as req'd	as req'd					
			607	as req'd	as req'd	as req'd					
			608	20	40	200					
4			609	as req'd	as req'd	as req'd					
			610	as req'd	as req'd	as req'd					
2			611	20	40	200					
2			612	20	40	200					
2			613								

	FLIGHT LEADERSHIP STAGE					
	CHAFF	FLARE	.50 CAL		SMOKE	PYRO
Sub TOTAL:	60	120	600	0	0	Any avl

PLT's REQ'D TO BE CORE COMPETENT	# CC & AG/O REQ'D TO BE CORE COMPETENT		T&R CODE	UNIT REQUIREMENTS							
				EXPENDABLES		.50 CAL			OTHER		
				TOTAL CHF/FLR REQ'D TO BE CORE COMPETENT		TOTAL RNDS REQ'D PER TO BE CORE COMPETENT			TOTAL ORD REQ'D TO BE CORE COMPETENT		
CC	AG/O	CHAFF	FLARE	PLT	CC	AG/O	SMKE	PYRO			
REQUIREMENTS, QUALIFICATIONS AND DESIGNATION (600 LEVEL)											
12	 		FL 602								
			603								
			604								
			605								
6	 		606								
			607								
			608	120	240			1200			
4	 		609								
			610								
2	 		611	80	160			800			
2	 		612	40	80			400			
	 		613								

	REQ'D FOR INITIAL DESIGNATION/CORE COMPETENCY				
	CHAFF	FLARE	.50 CAL(CC &AG/O)	SMKE	PYRO
Sub TOTAL:	240	480	2,400	0	Any avl

In order for an individual to meet all event requirements, the following ordnance is required:

	INDIVIDUAL REQUIREMENTS					
	EXPENDABLES		.50 CAL		OTHER	
	CHAFF	FLARE	PILOT	CC, AG/O	SMOKE	PYRO
TOTAL:	340	500	600	6,500	6	As req'd

In order for a unit to meet all core skill and core competency requirements, the following ordnance is required:

	UNIT REQUIREMENTS					
	EXPENDABLES		.50 CAL		OTHER	
	CHAFF	FLARE			SMOKE	PYRO
TOTAL:	2,320	3,080	48,400		52	As req'd

The above is not tied to annual requirements, rather to the attainment of core competency. Annual requirements (e.g. to maintain individuals proficiency, unit's core competency) may exceed the totals above due to a specific refly interval of less than 365 days (i.e. TAC codes).

T&R MANUAL, CH-46E

AIRCRAFT: CH-46E

MOS: 7562

CREW POSITION: PILOT

STAGE	EVENT TRNG CODE	HRS	REFLY INTERVAL	CRP	C	R	M	E	REMARKS
CORE SKILL INTRODUCTION									
SFAM	100	2.0	*	0.5	X	X	X		S
	101	2.0	*	0.5	X				S
	102	2.0	*	0.5	X				S
	103	2.0	*	0.5					S
	104	2.0	*	0.5	X	X	X		S
	105	2.0	*	0.5					S
	106	2.0	*	0.5					S
	107	2.0	*	0.5	X	X	X		S
	190	2.0	*	0.0	X	X	X		ECCS
	191	2.0	*	0.0	X	X	X		ECCS
FAM	108	0.0	*	0.0	X	X	X		PREFLIGHT
	109	1.5	*	1.0	X				A
	110	1.5	*	1.0	X				A
	111	1.5	*	1.0	X				A
	112	1.5	*	1.0					A
	113	1.5	*	1.0	X	X	X		A
	114	1.5	*	1.0	X				A
	115	1.5	*	1.0					A
	116	1.5	*	1.0	X	X	X		A
	117	1.5	*	1.0	X	X	X		A N
SFAM	118	2.0	*	0.5	X				S NS
	119	2.0	*	1.0	X	X			A NS
SINST	120	2.0	*	1.0	X	X	X		S
	121	2.0	*	1.0	X	X	X		S (N)
	122	2.0	*	1.0	X				S N
INST	123	1.5	*	1.0	X	X	X		A/S (N)
	124	1.5	*	1.0	X	X	X		A/S (N)
	125	1.5	*	1.0					A/S (N)
	126	1.5	*	1.0	X	X	X		A/S (N)
NAV	130	1.5	*	1.0					A
	131	1.5	*	1.0					A
	132	1.5	*	1.0					A N
	133	1.5	*	1.0					A NS
SCAL	140	2.0	*	0.5	X				S
CAL	141	1.5	*	0.5	X	X			A
	142	1.5	*	1.0	X				A NS
SFORM	150	2.0	*	0.5	X				S N
FORM	151	1.5	*	1.0	X	X			A 2 AIRCRAFT
	152	1.5	*	1.0	X				A 2 AIRCRAFT
SEXT	160	2.0	*	0.5	X				S
EXT	161	1.5	*	1.0	X	X			A
TERF	171	1.5	*	0.5	X	X			A
SREV	180	2.0	*	1.0	X	X			S
REV	181	1.5	*	1.0					A
CSIX	182	1.5	*	1.0	X	X	X	X	A

Figure 1-2.--MOS 7562 Refly Interval, Combat Readiness Percentage.

T&R MANUAL, CH-46E

AIRCRAFT: CH-46E MOS: 7562 CREW POSITION: PILOT

STAGE	FLT TRNG CODE	HRS	REFLY INTERVAL	CRP	C	R	E	REMARKS
CORE SKILL BASIC								
FAM	200	1.5	*	0.0	X		X	ECCS A/S
SFAM	201	2.0	*	0.3	X			S
FAM	202	1.5	6	0.3	X	X		A
	203	1.5	6	0.3	X			A N
SCAL	210	2.0	*	0.3	X			S
CAL	211	1.5	6	0.5	X			A
	212	1.5	6	0.5	X	X		A 2+AIRCRAFT
	213	1.5	12	0.3	X			A N
SEXT	220	2.0	*	0.3	X			S
EXT	221	1.5	12	0.5	X	X		A
SFORM	230	2.0	*	0.3	X			S
FORM	231	1.5	6	0.3	X	X		A 2 AIRCRAFT
STERF	240	2.0	*	0.3	X			S
TERF	241	1.5	6	0.5	X			A
	242	1.5	6	0.5	X			A
	243	1.5	6	1.0	X	X		A 2 AIRCRAFT
SNVG	250	2.0	*	0.3	X			S NS
NVG	251	1.5	6	0.5	X	X		A NS
	252	1.5	6	0.5	X			A 2 AIRCRAFT NS
	253	1.5	6	1.0	X	X		A 2 AIRCRAFT NS
	254	1.5	6	1.0	X			A 3+AIRCRAFT NS
	255	1.5	6	1.0	X			A NS
	256	1.5	6	1.0	X			A 2 AIRCRAFT NS
	257	1.5	6	1.0	X	X		A 2 AIRCRAFT NS
AG	281	1.5	12	0.5	X	X		A 1+AIRCRAFT
SCQ	290	2.0	*	0.5	X			S N NS
CQ	291	1.0	12	0.5	X			A
	292	1.0	12	0.5	X			A N
	293	1.0	12	0.5	X			A NS
CORE SKILL ADVANCED								
CQ	300	1.0	12	0.7	X			A
	301	1.0	12	1.0	X			A NS
SNVG	310	2.0	*	0.5	X			S/A NS
NVG	311	1.5	6	1.0	X	X		A NS
	312	1.5	6	1.0	X	X		A 2 AIRCRAFT NS
	313	1.5	6	1.5	X			A 3+ AIRCRAFT NS
	314	1.5	6	1.5	X	X		A 2 AIRCRAFT NS
AG	321	1.5	12	0.7	X	X		A NS

Figure 1-2.--MOS 7562 Refly Interval, Combat Readiness Percentage--Continued.

T&R MANUAL, CH-46E

AIRCRAFT: CH-46E MOS: 7562 CREW POSITION: PILOT

STAGE	FLT		REFLY		C	R	E	REMARKS
	TRNG	CODE	HRS	INTERVAL				
SEW	330		2.0	*	0.5	X		S/A
EW	331		1.5	12	0.5	X	X	A
SDM	340		2.0	*	0.5	X		S/A
DM	341		1.5	12	1.0	X	X	A 2 AIRCRAFT
SMAT	350		2.0	*	0.5	X		S/A
MAT	351		1.5	12	0.7	X	X	A/S
SHIE	360		2.0	*	0.3	X		S/A
HIE	361		1.0	12	0.7	X	X	A
	362		1.0	12	0.5	X		A NS
STAC	370		2.0	*	0.5	X		S/A (NS)
TAC	371		1.5	6	1.0	X		A 2+ AIRCRAFT
	372		1.5	6	1.0	X		A 2+ AIRCRAFT NS
STAC	373		2.0	*	0.5	X		S/A (NS)
TAC	374		1.5	6	1.5	X		A 2+ AIRCRAFT
	375		1.5	6	1.5	X	X	A 2+ AIRCRAFT NS
SNBC	380		2.0	12	0.3	X	X	S/A NS
SEXT	390		2.0	*	0.1	X		S NS
	392		1.5	12	0.5	X	X	A NS
CORE PLUS								
STAC	400		2.0	*	0.3	X		S (NS)
TAC	401		1.5	12	0.4	X		A 2+ AIRCRAFT
	402		1.5	12	0.4	X	X	A 2+ AIRCRAFT NS
EXT	420		1.5	12	0.3	X		A
NBC	430		1.0	12	0.3	X		A
	431		1.0	12	0.3	X	X	A NS
SDM	440		2.0	*	0.3	X		S
DM	441		1.5	12	0.3	X	X	A 2 V 1 R/W
	442		1.5	12	0.3	X	X	A 2 V 1 F/W
MAT	450		1.5	12	0.3	X		A 2 AIRCRAFT
	451		1.5	12	0.3	X	X	A NS
HIE	460		1.0	12	0.2	X		A
	461		1.0	12	0.2	X		A (NS)
	462		1.0	12	0.3	X		A
	463		1.0	12	0.3	X		A (N) (NS)
CQ	491		1.0	12	0.5	X		A N

Figure 1-2.--MOS 7562 Refly Interval, Combat Readiness Percentage--Continued.

PILOT FLIGHT UPDATE CHAINING

<u>STAGE</u>	<u>FLIGHT</u>	<u>FLIGHTS UPDATED</u>
FAM	200	
SFAM	201	
FAM	202	201
	203	201, 202
SCAL	210	201
CAL	211	201, 202, 210
	212	201, 202, 210, 211
	213	201, 202, 203, 210, 211
SEXT	220	201, 210
EXT	221	201, 202, 210, 211, 220
SFORM	230	201
FORM	231	201, 202, 230
STERF	240	201
TERF	241	201, 202, 240
	242	201, 202, 240, 241
	243	201, 202, 230, 231, 240, 241, 242
SNVG	250	201, 210
NVG	251	201, 202, 203, 210, 211, 250
	252	201, 202, 203
	253	201, 202, 203, 210, 211, 212, 250, 251, 252
	254	201, 202, 203, 210, 211, 212, 250, 251, 252, 253
	255	201, 202, 203, 240, 241, 242
	256	201, 202, 203, 230, 231, 240, 241, 242, 243, 252
	257	201, 202, 203, 210, 211, 212, 230, 231, 240, 241, 242, 243, 250, 251, 252, 253, 255, 256
AG	281	201, 202
SCQ	290	201, 210
CQ	291	201, 202, 210, 211, 290
	292	201, 202, 203, 210, 211, 290, 291
	293	201, 202, 203, 210, 211, 250, 251, 290, 291, 292, (310 LLL), (311 LLL)
CQ	300	201, 202, 210, 211, 290, 291
	301	201, 202, 203, 210, 211, 250, 251, 290, 291, 292, 293, 300, 491, (310 LLL), (311 LLL)
SNVG	310	200, 210, 250
NVG	311	201, 202, 203, 210, 211, 250, 251, 310
	312	201, 202, 203, 210, 211, 212, 250, 251, 252, 253, 310, 311
	313	201, 202, 203, 210, 211, 212, 250, 251, 252, 253, 254, 310, 311, 312
	314	201, 202, 203, 210, 211, 212, 230, 231, 240, 241, 242, 243, 250, 251, 252, 253, 255, 256, 257, 310, 311, 312
AG	321	201, 202, 203, 281

Figure 1-3.--Pilot Flight Update Chaining.

PILOT FLIGHT UPDATE CHAINING

<u>STAGE</u>	<u>FLIGHT</u>	<u>FLIGHTS UPDATED</u>
SEW	330	201, 240
EW	331	201, 202, 240, 241, 330
SDM	340	201, 230, 240, 330
DM	341	201, 202, 230, 231, 240, 241, 330, 331, 340
SMAT	350	201, 210
MAT	351	201, 202, 210, 211, 350
SHIE	360	201, 210
HIE	361	201, 202, 210, 211, 360
	362	201, 202, 203, 210, 211, 250, 251, 360, 361, (310 LLL), (311 LLL)
STAC	370	201, 210, 230, 240
TAC	371	201, 202, 210, 211, 212, 230, 231, 240, 241, 242, 243, 370
	372	201, 202, 203, 210, 211, 212, 230, 231, 240, 241, 242, 243, 251, 252, 253, 255, 256, 257, 370, 371, (310 LLL), (311 LLL), (312 LLL), (314 LLL)
STAC	373	200, 210, 230, 240, 370
TAC	374	200, 201, 210, 211, 212, 230, 231, 240, 241, 242, 243, 370, 371, 373
	375	201, 202, 203, 210, 211, 212, 230, 231, 240, 241, 242, 243, 251, 252, 253, 255, 256, 257, 370, 371, 372, 373, 374, (310 LLL), (311 LLL), (312 LLL), (314 LLL)
SNBC	380	201, 210
SEXT	390	201, 210, 220, 240
	392	201, 202, 203, 210, 211, 220, 221, 250, 251, 390, (310 LLL), (311 LLL)
STAC	400	201, 210, 230, 240, 340, 370, 373
TAC	401	201, 202, 210, 211, 212, 230, 231, 240, 241, 242, 243, 330, 331, 370, 371, 373, 374, 400
	402	201, 202, 203, 210, 211, 212, 230, 231, 240, 241, 242, 243, 251, 252, 253, 255, 256, 257, 330, 331, 370, 371, 373, 374, 375, 400, 401, (310 LLL), (311 LLL), (312 LLL), (314 LLL)
EXT	420	201, 202, 210, 211, 220, 221, 240, 241, 242, 390
NBC	430	201, 202, 210, 211, 380
	431	201, 202, 203, 210, 211, 250, 251, 380, 430, (310 LLL), (311 LLL)
SDM	440	201, 230
DM	441	201, 202, 230, 231, 440
	442	201, 202, 230, 231, 440

Figure 1-3.--Pilot Flight Update Chaining

PILOT FLIGHT UPDATE CHAINING

<u>STAGE</u>	<u>FLIGHT</u>	<u>FLIGHTS UPDATED</u>
MAT	450	201,202,210,211,212,350,351
	451	201,202,203,210,211,250,251,350,351,(310 LLL),(311 LLL)
HIE	460	201,202,210,211,220,221
	461	201,202
	462	201,202
	463	201,202
CQ	491	201,202,203,210,211,290,291,292,300
NSSI	550	201,202,203
	551	201,202,203,210,211,250,251,310,311
	552	201,202,203,210,211,250,251,310,311
NSFI	560	201,202,203
	561	201,202,203,210,211,250,251
	562	201,202,203,210,211,250,251
TERFI	570	201,202,220,221,240,241,242,390,420
	571	201,202,230,231,240,241,242,243
	572	201,202,240,241,242,243
DMI	580	230,231,240,241,330,331,340,341
	581	230,231,240,241,441 if versus RW OR 442 if versus FW
	582	230,231,240,241,441 if versus RW OR 442 if versus FW
NSI	590	201,202,203,211,250,251,290,291,292,293,(310 LLL),(311 LLL)
	591	201,202,203,210,211,220,221,250,251,390,392,(310 LLL),(311 LLL)
	592	201,202,203,210,211,212,250,251,252,253,(310 LLL),(311 LLL),(312 LLL),(314 LLL)
	593	201,202,203,210,211,212,240,241,242,243,250,251,252,253,255,256,257 (310 LLL),(311 LLL),(312 LLL),(314 LLL)
	594	201,202,203,210,211,220,221,250,251,290,291,292,293,311,390,392
	595	201,202,203,210,211,212,230,231,240,241,242,243,250,251,252,253,255,256,257,310,311,312,314

Figure 1-3.--Pilot Flight Update Chaining--Continued.