



**DEPARTMENT OF THE NAVY**  
HEADQUARTERS UNITED STATES MARINE CORPS  
3000 MARINE CORPS PENTAGON  
WASHINGTON, DC 20350-3000

NAVMC 3500.11D

C 466

24 OCT 2014

NAVMC 3500.11D

From: Commandant of the Marine Corps  
To: Distribution List

Subj: MV-22B TRAINING AND READINESS MANUAL

Ref: (a) NAVMC 3500.14C

Encl: (1) MV-22B T&R Manual


1. Purpose. In accordance with reference (a), enclosure (1) contains revised standards and regulations regarding the training of MV-22B aircrew.
2. Cancellation. NAVMC 3500.11C
3. Scope. Highlights of major Training and Readiness (T&R) planning considerations included in this MV-22B T&R Manual are as follows:
  - a. The Modified Refresher Program of Instruction has been added to the 1000 Phase, Core Skill Introduction Training.
  - b. A detachment concept has been developed to support detachments in increments of 8, 6, and 4 aircraft configurations.
  - c. Support of the Air Command and Control Mission Essential Task moves from the "Assault Support" function of Marine Aviation to "Control of Aircraft and Missiles."
  - d. A tracking code for Strategic Tanking has been added to assist in documentation of aerial refueling.

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

4. Information. Recommended changes to this Manual should be submitted via the syllabus sponsor and the appropriate chain of command to: Commanding General (CG), Training and Education Command (TECOM), Marine Air Ground Task Force Training and Education Standards Division (MTESD), (C 466), Aviation Standards Branch using standard Naval Correspondence or the Automated Message Handling System plain language address: CG TECOM MTESD.

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

6. Certification. Reviewed and approved this date.

  
J. W. LUKEMAN  
By direction

DISTRIBUTION: PCN 10033194700

CHAPTER 2

MV-22 PILOT/7532

INDIVIDUAL TRAINING AND READINESS REQUIREMENTS

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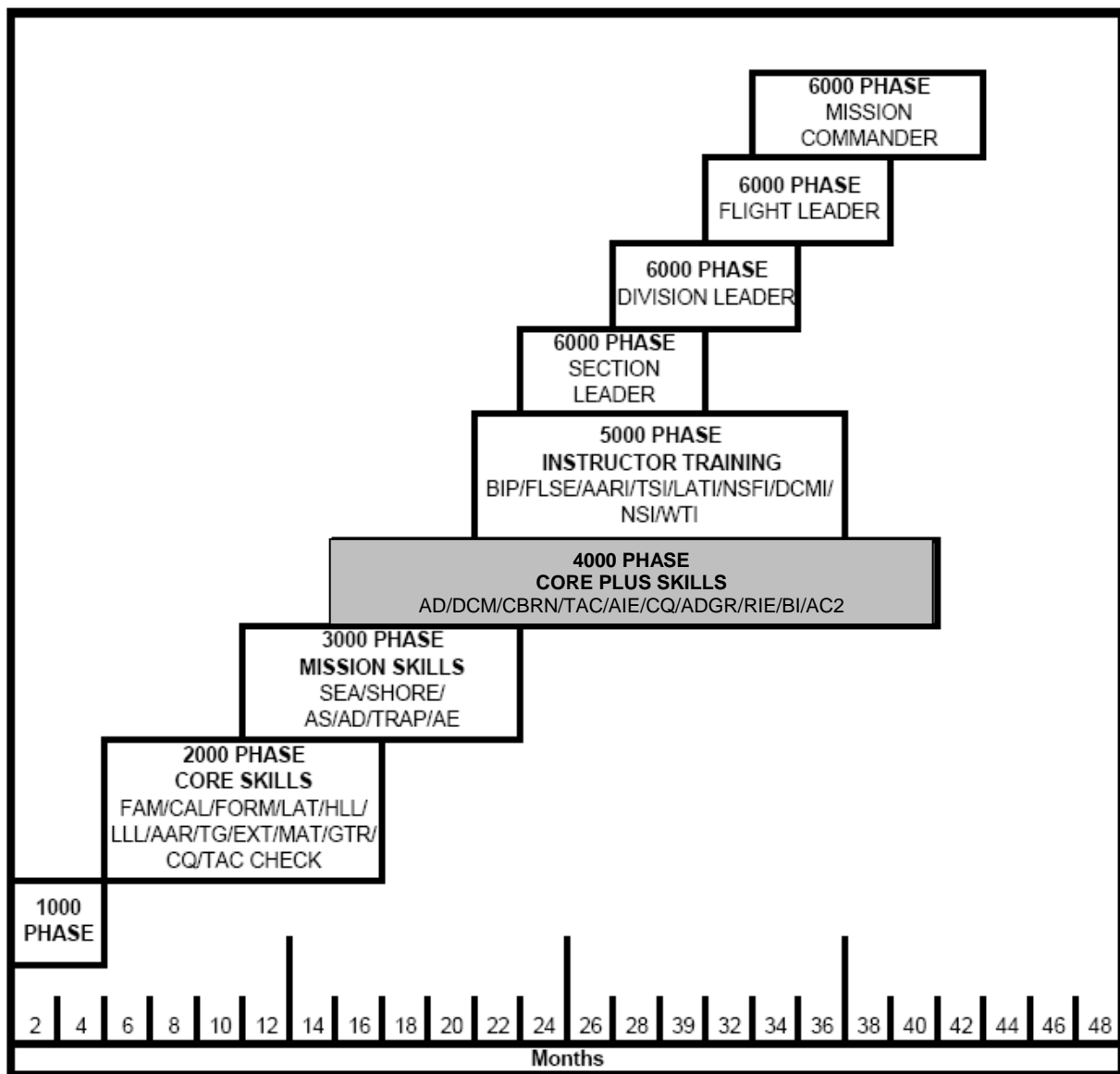
## CHAPTER 2

### MV-22 PILOT/7532

#### INDIVIDUAL TRAINING AND READINESS REQUIREMENTS

2.0 MV-22 PILOT/7532 INDIVIDUAL TRAINING AND READINESS REQUIREMENTS.  
This T&R Syllabus is based on specific goals and performance standards designed to ensure individual proficiency in Core and Mission Skills. The goal of this chapter is to develop individual and unit warfighting capabilities.

2.1. 7532 TRAINING PROGRESSION MODEL. This model represents the recommended training progression for the average MV-22 pilot. Units should use the model as a point of departure to generate individual training plans.



## 2.2 INDIVIDUAL CORE/MISSION/CORE PLUS SKILL PROFICIENCY REQUIREMENTS

2.2.1 Management of individual CSP/MSP/CPSP/CPMP serves as the foundation for developing proficiency requirements in DRRS.

2.2.2 Individual CSP/MSP is a "Yes/No" status assigned to an individual by Core Skill. When an individual attains and maintains CSP/MSP in a Core Skill/Mission Skill, the individual counts towards CMTS/CMMR Unit CSP/MSP requirements for that Core/Mission Skill.

2.2.3 Proficiency is attained by individual Core/Mission/Core Plus skill where the training events for each skill are determined by POI assignment.

2.2.4 Once proficiency has been attained by Core/Mission/Core Plus Skill (by any POI assignment) then the individual maintains proficiency by executing those events noted in the maintain table and in the "Maintain POI" column of the T&R syllabus matrix. An individual maintains proficiency by individual Core/Mission/Core Plus Skill.

**\*Note\***

Individuals may be attaining proficiency in some Core/Mission/Core Plus Skills while maintaining proficiency in other Core/Mission/Core Plus Skills.

2.2.5 Once proficiency has been attained, should one lose proficiency in an event in the "Maintain POI" column, proficiency can be re-attained by demonstrating proficiency in the delinquent event. Should an individual lose proficiency in all events in the "Maintain POI" column by Core/Mission/Core Plus Skill, the individual will be assigned to the Refresher POI for that Skill. To regain proficiency for that Core/Mission/Core Plus Skill the individual must demonstrate proficiency in all R-coded events for that Skill.

**\*Note\***

See Chapter 2 for amplifying information on POI updating.

## 2.2.6 Events Required to Attain and Maintain Individual Core Skill Proficiency (CSP)

MV-22B PILOT ATTAIN AND MAINTAIN MATRIX							
CORE SKILL (2000 Phase)							
ATTAIN PROFICIENCY						MAINTAIN PROFICIENCY	
BASIC POI		TRANSITION POI		REFRESHER POI		MAINTAIN POI	
STAGE	CODE	STAGE	CODE	STAGE	CODE	STAGE	CODE
FAM	A2010	FAM	A2010	FAM		FAM	
	A2011		A2011				
	L2020		L2020				
	S2030						
	S2031R		S2031R		S2031R		S2031R
CAL	A2110R	CAL	A2110R	CAL	A2110R	CAL	
	S2130		S2130				
	S2131R		S2131R		S2131R		
	2132		2132				
	2133R		2133R		2133R		2133R
	S2134R		S2134R		S2134R		
	2135		2135				
	2136R		2136R		2136R		2136R

MV-22B PILOT ATTAIN AND MAINTAIN MATRIX							
CORE SKILL (2000 Phase)							
ATTAIN PROFICIENCY						MAINTAIN PROFICIENCY	
BASIC POI		TRANSITION POI		REFRESHER POI		MAINTAIN POI	
STAGE	CODE	STAGE	CODE	STAGE	CODE	STAGE	CODE
FORM	A2160	FORM	A2160	FORM		FORM	
	A2161		A2161				
	S2180R		S2180R		S2180R		
	S2181R		S2181R		S2181R		S2181R
	2182R		2182R		2182R		2182R
	2183		2183				
LAT	A2210R	LAT	A2210R	LAT	A2210R	LAT	
	A2211R		A2211R		A2211R		
	A2212		A2212				
	L2220R		L2220R		L2220R		
	S2230R		S2230R		S2230R		
	2231		2231				
	S2232R		S2232R		S2232R		
	2233R		2233R		2233R		2233R
NS HLL	A2310	NS HLL	A2310	NS HLL		NS HLL	
	A2311		A2311				
	A2312R		A2312R		A2312R		
	A2313		A2313				
	A2314		A2314				
	S2230R		S2230R		S2230R		
	2331		2331				
	2332		2332				
	S2333		S2333				
	2334		2334				
	2335R		2335R		2335R		2335R
	2336R		2336R		2336R		
NS LLL	S2380R	NS LLL	S2380R	NS LLL	S2380R	NS LLL	
	2381						
	2382R		2382R		2382R		
	S2383		S2383				
	2384R		2384R		2384R		2384R
	2385R		2385R		2385R		2385R
AAR	A2410R	AAR	A2410R	AAR	A2410R	AAR	
	S2430		S2430				
	2431R		2431R		2431R		
	S2432		S2432				
	2433R		2433R		2433R		2433R
TG	A2510	TG	A2510	TG		TG	
	A2511		A2511				
	A2512		A2512				
	2532		2532				
	2535R		2535R		2535R		2535R
AD	A2610	AD	A2610	AD		AD	
	S2630R		S2630R		S2630R		
	2631R		2631R		2631R		2631R
MAT	A2710	MAT	A2710	MAT		MAT	
	S2730		S2730		S2730		
	S2731R		S2731R		S2731R		
	2732R		2732R		2732R		
	2733R		2733R		2733R		2733R

MV-22B PILOT ATTAIN AND MAINTAIN MATRIX							
CORE SKILL (2000 Phase)							
ATTAIN PROFICIENCY						MAINTAIN PROFICIENCY	
BASIC POI		TRANSITION POI		REFRESHER POI		MAINTAIN POI	
STAGE	CODE	STAGE	CODE	STAGE	CODE	STAGE	CODE
GTR	A2810	GTR	A2810	GTR		GTR	
	A2811		A2811				
	A2812		A2812				
	A2813		A2813				
	A2814		A2814				
	A2815		A2815				
	A2816		A2816				
	A2817R		A2817R		A2817R		
	L2820R		L2820R		L2820R		
	S2830		S2830				
	S2831R		S2831R		S2831R		S2831R
	S2832R		S2832R		S2832R		
CQ	A2910	CQ	A2910	CQ		CQ	
	S2930R		S2930R		S2930R		
	2931R		2931R		2931R		
	2932R		2932R		2932R		
	S2933R		S2933R		S2933R		
	2934R		2934R		2934R		
	2935R		2935R		2935R		2935R

2.3 Events Required to Attain and Maintain Individual Mission Skill Proficiency (MSP)

MV-22B PILOT ATTAIN AND MAINTAIN MATRIX							
MISSION SKILLS (3000 Phase)							
ATTAIN PROFICIENCY						MAINTAIN PROFICIENCY	
BASIC POI		TRANSITION POI		REFRESHER POI		MAINTAIN POI	
STAGE	CODE	STAGE	CODE	STAGE	CODE	STAGE	CODE
SHORE	A8630R	SHORE	A8630R	SHORE	A8630R	SHORE	
	A8660R		A8660R		A8660R		
	A3012		A3012				
	3030R		3030R		3030R		3030R
SEA	3130R	SEA	3130R	SEA	3130R	SEA	3130R
CAT	A3210R	CAT	A3210R	CAT	A3210R	CAT	
	A3211R		A3211R		A3211R		
	A3212R		A3212R		A3212R		
	A3213R		A3213R		A3213R		
	A3214R		A3214R		A3214R		
	A3215R		A3215R		A3215R		
	A3216R		A3216R		A3216R		
	L3220R		L3220R		L3220R		
	3230R		3230R		3230R		
	S3231R		S3231R		S3231R		
	S3232R		S3232R		S3232R		
	3233R		3233R		3233R		3233R
AE	A3310	AE	A3310	AE		AE	
	A3311		A3311				
	3330R		3330R		3330R		3330R
TRAP	A3410	TRAP	A3410	TRAP		TRAP	
	3430R		3430R		3430R		3430R
AD	S3530R	AD	S3530R	AD	S3530R	AD	S3530R



2.4 Events Required to Attain and Maintain Individual Core Plus Proficiency (CPP)

MV-22B PILOT ATTAIN AND MAINTAIN MATRIX							
CORE PLUS (4000 Phase)							
ATTAIN PROFICIENCY						MAINTAIN PROFICIENCY	
BASIC POI		TRANSITION POI		REFRESHER POI		MAINTAIN POI	
STAGE	CODE	STAGE	CODE	STAGE	CODE	STAGE	CODE
AD	4030R	AD	4030R	AD	4030R	AD	4030R
	S4031		S4031				
	4032R		4032R		4032R		
	4034R		4034R		4034R		4034R
AIE	A4111	AIE	A4111	AIE		AIE	
	A4112		A4112				
	4130R		4130R		4130R		4130R
	4131R		4131R		4131R		4131R
	4132R		4132R		4132R		4132R
	4133R		4133R		4133R		4133R
RI/E	4180R	RI/E	4180R	RI/E	4180R	RI/E	4180R
ADGR	A4210R	ADGR	A4210R	ADGR	A4210R	ADGR	
	L4220		L4220				
	4230R		4230R		4230R		4230R
BI	A4310R	BI	A4310R	BI	A4310R	BI	
	4330R		4330R		4330R		4330R
AC2	A4410R	AC2	A4410R	AC2	A4410R	AC2	
	A4420		A4420				
	4430R		4430R		4430R		4430R
DWS	A4510R	DWS	A4510R	DWS	A4510R	DWS	
	L4520R		L4520R		L4520R		
	L4521R		L4521R		L4521R		
	4531R		4531R		4531R		
	4533R		4533R		4533R		
	4534R		4534R		4534R		
	4536R		4536R		4536R		4536R
CBRN	L4620R	CBRN	L4620R	CBRN	L4620R	CBRN	
	S4630		S4630				
	S4631R		S4631R		S4631R		S4631R
RVL	4730R	RVL	4730R	RVL	4730R	RVL	4730R
CQ	S4780R	CQ	S4780R	CQ	S4780R	CQ	
	4781R		4781R		4781R		
	4782R		4782R		4782R		4782R
DCM	A4810	DCM	A4810	DCM		DCM	
	A4811		A4811				
	A4812		A4812				
	L4820R		L4820R		L4820R		
	S4830R		S4830R		S4830R		
	4831R		4831R		4831R		4831R
HTT	4930R	HTT	4930R	HTT	4930R	HTT	4930R

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

INDIVIDUAL QUALIFICATION REQUIREMENTS	
Qualification	Event Requirements
NATOPS	6010R, 6011R, 6012R, 6030R
Instrument	6013R, 6014R, 6015R, 6032R
LATQ	2230, 2231, 2232, 2233R
NSQ HLL	2330R, 2331, 2332R, 2333, 2334, 2335R
NSQ	2380R, 2381, 2382R, 2383, 2384R, 2385R
CQ	2930R, 2931R, 2932R, 2933R, 2934R, 2935R
DCMQ	4030R, 4031R
R = Refresher POI events required for re-qualification	

INDIVIDUAL DESIGNATION REQUIREMENTS	
Designation	Event Requirements
T2P	Successful completion of the Core Skill Introduction phase. 6030 also serves as the initial NATOPS Evaluation
BIP	5010R, 5030R, 5031R
TAC	6110, 6130, 6131, 6132
FRSI	Section Lead, 5140R, 5141R
NAVI	Section Lead, 5144R
INSTI	Section Lead, 5142R
CALI	Section Lead, 5143R
CARGOI	Section Lead, 5147R
FORMI	Section Lead, 5145R
STANI	Section Lead, 5147
SECTION LEAD	6210, 6211, 6220, 6221, 6222, 6223, 6224, 6225, 6230, 6231, 6232, 6233, 6234
DIVISION LEAD	6320, 6321, 6330, 6331, 6332, 6333
FLIGHT LEAD	6430
AMC	6530
FCP	6610, 6630, 6631
FLSE	5210R
AARI	5330, 5331R
TSI	5520, 5521R
LATI	5630, 5631, 5632R
LAT STANI	5633R
NSFI	5730, 5731, 5732R
DCMI	5830, 5831, 5832R
NSI	5930, 5931, 5932, 5933, 5934R, 5935R
WTI	Completion of MAWTS-1 WTI Course
R = Refresher POI events required for re-qualification	

## 2.6 PROGRAMS OF INSTRUCTION

2.6.1 Basic POI. Basic pilots shall be placed in the Basic POI and shall complete all events with the exception of CAL-1333, which is an Air Force POI event.

WEEKS	COURSE/PHASE	ACTIVITY
1-3	Ground School	Training Squadron
4-18	Core Skill Introduction	Training Squadron
19-70	Core Skill	Tactical Squadron
71-83	Mission Skill	Tactical Squadron
84-97	Core Plus Skill	Tactical Squadron

2.6.2 Transition POI. Pilots transitioning to the MV-22 shall be placed in the Transition POI and shall complete all events in the 1000 phase with the exception of CAL-1333, which is an Air Force POI event, and all events designated by a 'T' for the 2000-6000 phase. Event proficiency updating for aircrew assigned to the Transition syllabus is per Chapter 2 of the Aviation T&R Program Manual. When all T events in a stage are successfully completed, all remaining events in that stage are updated. Upon completion of the

Transition POI, aircrew shall be assigned to the Refresher POI and follow Refresher POI proficiency updating procedures.

<u>WEEKS</u>	<u>COURSE/PHASE</u>	<u>ACTIVITY</u>
1-3	Ground School	Training Squadron
4-18	Core Skill Introduction	Training Squadron
19-70	Core Skill	Tactical Squadron
71-83	Mission Skill	Tactical Squadron
84-97	Core Plus Skill	Tactical Squadron

2.6.3 Refresher POI. Previously designated MV-22 pilots who have been out of the MV-22 cockpit for more than 730 days shall be placed in the Refresher POI and complete the FRS Refresher syllabus designated by an 'R' in the 1000 phase. Upon completion of FRS Refresher training, pilots are assigned to the Refresher syllabus at the tactical squadron. Refresher training at the tactical squadron is predicated on the experience of the pilot. A Refresher pilot need not fly every event within a stage of training to regain proficiency in that stage. The unit commanding officer may tailor the Refresher syllabus to fit the experience of the Refresher pilot per the T&R Program Manual. Any modification to the Refresher syllabus by the unit commanding officer shall be documented in Section 3 of the pilot's APR prior to commencement of training. When all R-coded events in a stage are successfully completed, all remaining events in that stage that are proficient or delinquent are updated. NBA and Incomplete events are not updated and must be completed in addition to R-coded events. If the Refresher pilot has no previous proficiency in a stage or particular event, then the Refresher should fly the entire stage or all events not previously flown.

<u>WEEKS</u>	<u>COURSE/PHASE</u>	<u>ACTIVITY</u>
1-3	Ground School	Training Squadron
4-13	Core Skill Introduction	Training Squadron
14-39	Core Skill	Tactical Squadron
40-52	Mission Skill	Tactical Squadron
53-65	Core Plus Skill	Tactical Squadron

2.6.4 Modified Refresher POI. Previously designated MV-22 pilots who have been out of the MV-22 cockpit from 486 to 730 days shall be placed in the Modified Refresher POI and complete the FRS Mod Refresher syllabus designated by an 'MR' in the 1000 phase. A MOD Refresher may fly 'doubled up' events in any stage as long as all the learning objectives are met and a minimum of 1 hour per scheduled event is flown. If the Mod Refresher pilot has no previous proficiency in a stage or particular event, then the Refresher should fly the entire stage or all events not previously flown. Upon completion of Modified Refresher training, pilots are assigned to the Refresher syllabus at the tactical squadron, as described above in paragraph 2.6.3.

<u>WEEKS</u>	<u>COURSE/PHASE</u>	<u>ACTIVITY</u>
1-3	Ground School	Training Squadron
4-10	Core Skill Introduction	Training Squadron
	<i>Affects FRS only</i>	

2.6.5 Air Force POI. Air Force CV-22 pilots that are being trained in the 1000 phase shall be placed in the Air Force syllabus and shall complete all events designated by an 'AF'.

<u>WEEKS</u>	<u>COURSE/PHASE</u>	<u>ACTIVITY</u>
1-3	Ground School	Training Squadron
4-13	Core Skill Introduction <i>Affects FRS only</i>	Training Squadron

2.6.6 CV-22 to MV-22 FRS IP POI. The CV-22 to MV-22 FRS IP syllabus is located in both the Core Skill Introduction FRS Academic phase and 5100 stage of training. This syllabus is designed for Air Force CV-22 pilots assigned as instructors at the FRS. The syllabus includes CV-22 to MV-22 differences training as well as those sorties required to teach specific FRS events. Air Force instructors assigned to this syllabus shall complete all events designated by a 'CV'.

<u>WEEKS</u>	<u>COURSE/PHASE</u>	<u>ACTIVITY</u>
1-4	Ground School	Training Squadron
5-6	Core Skill Introduction <i>Affects FRS only</i>	Training Squadron

2.6.7 Fleet Replacement Squadron (FRS) IP POI. The FRS IP syllabus is a subset of the CV-22 to MV-22 FRS IP syllabus located in the 5100 stage of training. Marine pilots assigned to the FRS shall be placed in the FRS IP POI and complete all events designated by a 'F'.

<u>WEEKS</u>	<u>COURSE/PHASE</u>	<u>ACTIVITY</u>
1	Ground School	Training Squadron
2-3	Core Skill Introduction <i>Affects FRS only</i>	Training Squadron

2.6.8 Contract Instructor POI. The Contract Instructors syllabus includes the entire Core Skill Introduction FRS Academic Phase, the Core Skill Introduction phase, and the 5100 FRS IP stage of training. Contract Instructors assigned to instruct FRS simulator events shall be placed in the Contract Instructor POI and complete all events designated by a 'CI'.

<u>WEEKS</u>	<u>COURSE/PHASE</u>	<u>ACTIVITY</u>
1-2	Ground School	Training Squadron
3-16	Core Skill Introduction <i>Affects FRS only</i>	Training Squadron

## 2.7 ACADEMIC TRAINING

2.7.1 Academic training shall be conducted for each phase/stage of the syllabus. Academic Training consists of Advanced Distributed Learning (ADL), Academic Lectures (ACAD), and Chalk Talks / Laboratory events (LAB). ADLs are self-paced computer based modules on particular subjects. Lectures are stand up instruction given to an entire class by a qualified instructor. Chalk Talks and Laboratory events are instructor guided, free-play, and interactive events given to an individual or entire class by a qualified instructor. Responsibilities for development and delivery of these courses are as follows:

Core Skill Introduction. The training squadron is responsible for the requirements, content, and execution of all ground training events for the Core Skill Introduction phase to include Ground School except for those contained within the LAT and NS syllabi. MAWTS-1 is responsible for the development of the academic lectures that support LAT and NS; the Training Squadron is responsible for the delivery of these lectures.

Core Skill/Mission Skill/Core Plus Skill/Mission Plus Skill. MAWTS-1 is responsible for the development of the academic lectures that support these phases of training. These lectures will be available through the MAWTS-1 Academic Support Package. The individual tactical squadrons are responsible for the delivery of these academic training events for the Core Skill, Mission Skill, Core Plus Skill and Mission Plus Skill phases.

Aircrew Training References. Aircrews shall use the following references to ensure safe and standardized training and maintenance procedures, grading criteria, and aircraft operation:

ACPM Training	MAWTS-1
OPFRSINST 3710.7	NATOPS Gen Flt & Operating Inst
OPFRSINST 4790.2	Naval Aviation Maintenance Program
NAVAIR 00-80T-106	LHA/LHD/MCS NATOPS Manual
NWP-42	Shipboard Helicopter Ops Manual
NTTP 3-22.1-MV-22	MV-22 NTTP (Classified)
NTTP 3-22.3-MV-22	MV-22 NTTP (Unclassified)
A1-V22AB-NFM-000	MV-22 NATOPS Flight Manual
NAVMC 3500.14	T&R Program Manual
MCO P4790.12	Individual Training Standards
	Systems (MATMEP)
MCO 3500.27/OPNAV 3500.39	Operational Risk Management (ORM)
MCO P3500.12	Weapons and Tactics Training
	Program (WTTP)
MAWTS-1 NVD Manual	MAWTS-1 NVD Manual

## 2.8 SYLLABUS NOTES

2.8.1 Event Training Nomenclature. The following nomenclature is used to differentiate aircraft, simulator, cockpit trainer, cockpit management system part task trainer, computer based trainer, and classroom events. The aircraft is used for those events designated with an A, the flight simulator is used for those events designated with an S, the cockpit trainer is used for those events designated with a C, the cockpit management system part task trainer is used for those events designated with a CMS, the computer based trainer is used for those events designated with a CBT, and a classroom is used for those events designated with a CLSRM in the event header. To provide commanding officers the maximum amount of flexibility for training, some events allow for the optional use of simulators or aircraft and cockpit trainer or simulator. Those types of events will use the designator A/S for aircraft preferred, simulator optional and S/A for simulator preferred, aircraft optional and C/S for cockpit trainer preferred, simulator optional.

2.8.2 Environmental Conditions. Pilots shall fly events annotated with an N or NS at least 30 minutes after official sunset. Events shall be flown in accordance with environmental conditions listed in the matrix below:

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

2.8.3 Computer Based Training (CBT). CBT lessons comprise the majority of MV-22 Ground School training. All aircrew (Replacement Aircrew (RAC), Refreshers, etc.) shall complete the MV-22 Ground School as prescribed by the FRS Commanding Officer. Completion of CBT lessons shall be documented in the Aircrew Performance Record (APR). Courseware shall be reviewed on an annual basis to ensure proper content, concurrency with the aircraft, procedures, and tactics.

### 2.8.4. Training Event Performance Requirements

2.8.4.1 Purpose. To Familiarize the PUI with general syllabus expectations, definitions, and the observation scale found on the Integrated Aircrew Training Forms (IATF).

#### 2.8.4.2 General

This Manual generalizes mission guidance to allow for local conditions and to allow this Manual to remain unclassified. HQMC (DC AVN) and CG MCCDC encourage squadrons to use the full range of tactics contained in the tactical manuals and adopt the latest developed and proven tactics.

The 1000 phase syllabus includes all emergencies that are indicated with warnings, all emergency procedures with critical memory items, those with associated warnings, land immediately or land as soon as possible emergencies, and those that refer to any of the above. PUIs will be expected to memorize critical memory items and warnings associated with emergency procedures. They will be familiar with and be able to quickly look up other (non-memory) emergency procedures and their notes and cautions. To reinforce the latter, during flight briefs, PUIs will open PCLs to the appropriate page to review notes, cautions, and other non-memory items.

PUIs shall be familiar with, but will not be required to memorize numerical system limitations for those systems whose indications are displayed with a green, yellow or red scale on either the EICAS or MFDs.

All flights shall terminate with a comprehensive debrief with emphasis on aircrew performance and procedures or systems discussed. Instructors should use all available debriefing techniques.

#### 2.8.4.3 Definitions

##### Discuss

The IP shall discuss a system, procedure, or maneuver during the brief, in flight, or debrief.

The PUI shall demonstrate an understanding of all discussed items listed in the event description.

Demonstrate/Introduce flight events shall be discussed during the brief.

Emergencies listed in the event description are treated as discussion items during the brief and may be simulated during the flight at the option of the IP and in accordance with unit SOP. EPs for Simulator events will be treated as Demonstrate/Introduce items on the event in which they are listed and are subject to review during any subsequent event.

##### Demonstrate

IP performs the maneuver with accompanying description. At IP discretion, the PUI may fly the maneuver, but is not graded. Playback of recorded demonstrations may be used during simulator events.

The PUI observes the maneuver and is responsible for knowledge of the procedures during the brief.

##### Introduce

At his option, the IP may perform the maneuver with an accompanying description followed by the PUI flying the maneuver, or he may coach the PUI through the maneuver without demonstration.

The PUI shall perform the maneuver with coaching as necessary and is responsible for knowledge of the procedures prior to the flight. In general, the expectation is that the PUI will not consistently recognize errors and will frequently be outside performance standards.

Safe but limited proficiency. Requires frequent input from the instructor.

#### Practice

The PUI shall perform, with occasional coaching, a maneuver or procedure that has been previously introduced. The purpose is to continue to work towards attaining a specified level of performance.

Correct. Recognizes and corrects errors. Requires occasional input from the instructor.

#### Review

The IP observes and grades the maneuver with only minimal coaching.

The PUI is expected to perform the maneuver with minimal coaching and with only minor procedural errors. In general, the expectation is that the PUI will consistently recognize errors; however occasionally, corrections will not be timely with some excursions outside performance standards.

Correct, efficient, skillful and without hesitation. Requires minimal input from the instructor.

#### Evaluate

The IP observes and grades the maneuver without coaching the PUI. An airborne critique of the PUI's performance is at the option of the instructor.

The PUI is expected to perform the maneuver without coaching, with minor or no procedural errors, and at a level acceptable to warrant progress in the syllabus. The expectation is that the PUI will consistently apply timely corrections with very few and quickly corrected excursions outside performance standards.

Unusually high degree of ability. Requires no input from instructor.

#### Expose

The IP shall expose the PUI to the procedure or consideration during the brief, in flight or debrief.

The PUI is not responsible for the knowledge of the procedure or consideration prior to the flight.

Levels of Learning. The following table describes how the MAWTS grading scale correlates to the numerical observations for graded events. The MAWTS scale comments are designed to evaluate a student's performance.



Observation	Level of Learning	General	MAWTS Scale
5	Correlation (Evaluate)	Proactive. Ahead of the situation. Reacts correctly with changing conditions. And/or changing mission.	Unusually high degree of ability. Requires no input from instructor.
4	Application (Review)	Self / crew recognition of errors. Correct application of resources.	Correct, efficient, skillful, and without hesitation. Requires minimal inputs from the instructor.
3	Understanding (Practice)	Minor errors not detected. Crew Redundancy diminished.	Correct. Recognizes and corrects errors. Requires occasional input from the instructor.
2	Rote (Introduce)	Task accomplished mechanically and/or with limited situational awareness. Crew Redundancy Lost. Risk Increased.	Safe but limited proficiency. Requires frequent input from the instructor.
1	Unfamiliar	Unable	UNSAT - unsafe or complete lack of ability and/or knowledge. Requires substantial input from instructor for safe execution and /or mission accomplishment.

#### 2.8.4.4 Electronic Aircrew Training Forms (EATFs)

Also known as syllabus evaluation forms, EATFs are required for any initial event completed by a pilot in one of the formal POIs or as recommended by the Squadron Standardization Board.

If the commanding officer has waived a syllabus event, the squadron training officer shall place a waiver letter in section 3 of the APR.

2.8.4.5 Aircrew Evaluation Flights. All pilots shall have an appropriate NATOPS evaluation form completed annually upon completion of the following:

NATOPS Check (RQD-6030). A designated NATOPS Instructor/Assistant NATOPS Instructor shall evaluate RQD-6030.

Instrument Check (RQD-6032). A designated Instrument Instructor who is a member of the Instrument Flight Board shall evaluate RQD-6032.

#### 2.8.4.6 Instructor Requirements

For all simulator and flight events the instructor requirement is noted at the right margin of each event. If the event header does not contain an instructor requirement then the minimum requirement is an aircraft commander who is complete with the Basic Instructor Pilot syllabus, proficient in the given event, fulfilling the role of aircraft commander.

For Core Skill Introduction simulator events, designated contract instructors may fulfill the role of instructor. Additionally, when designated by the FRS Commanding Officer, a CI may instruct LAT and Night Systems simulator events. Certification as a CI may be withdrawn by the FRS Commanding Officer.

Basic networked events require a tactical network operator. Networked mission skill events and core plus STAC events require a scenario created and controlled by a qualified Tactical Simulation Instructor (TSI). During events designated as S-TEN (Tactical Environment Network) or S-TEN+ (Tactical Environment Network with additional networked simulator), the simulator(s) shall be configured (fuel, internal load, ordinance, etc.) in accordance with the flight brief and the mission scenario.

2.8.4.7 Crew Requirements/Position Designations. Crew requirements are listed for each stage of training. This Manual requires the use of an aerial observer for all external flights, NVD flights, Ground Threat Reaction (GTR), and all DCM flights. However, the squadron commanding officer may, at his discretion, employ an aerial observer on any flight event. The requirement for an aerial observer is intended to provide a second crewmember in the aircraft cabin section. A designated aerial observer or crew chief may fill this requirement. On NVD training flights a Crew Chief or Aerial Observer Under Instruction (CCUI/AOUI) may fill this requirement when flying with a Crew Chief Night Systems Instructor (CCNSI).

2.8.4.8 Event Completion. Event completion is predicated upon demonstrated proficiency. When an individual successfully accomplishes the requirements of an event per the performance standards, the individual should log completion of the event (enter the appropriate T&R code) in M-SHARP. When the event is entered into M-SHARP, the individual's proficiency date for that event is automatically updated to reflect the date the event was completed. When supervising individual events, unit instructors/leaders shall ensure that trainees demonstrate proficiency per T&R standards prior to logging

successful event completion. Evaluating individual proficiency in an event normally requires both objective and subjective assessment. If, in the instructor's opinion, the PUI does not adequately perform a required event, then all or parts of the sortie shall be repeated until adequate performance is demonstrated. If an individual fails to accomplish the requirements of an event per the performance standards, the individual should not log that event and the proficiency status for that event remains unchanged. Times indicated for each event are for planning purposes only.

2.8.4.9 Sequence. Training should be accomplished by flying events within a stage in sequence and stages in sequence when practical.

2.8.4.10 Weight & balance Form F and Load Computation. Unless otherwise annotated, the Joint Mission Planning System (JMPS) will be the primary method used to complete the preflight forms, with the Naval WT and Balance software program and the NATOPS (paper products) as the alternates in accordance with certification and flight clearance.

2.8.4.11 Joint Mission Planning System (JMPS). All tactical and non-tactical applications of the JMPS will be discussed in detail for each event.

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

2.8.4.13 Operational Risk Management (ORM). Aircrews shall brief those factors that affect risk mitigation decisions for every flight or mission.

2.8.4.14 Rules of Conduct For Defensive Combat Maneuvers (DCM)

Purpose. To standardize the training rules for tiltrotor aircraft conducting DCM training. These training rules apply to all DCM sorties. Subject matter experts review training requirements and qualification criteria for crewmembers and the inherent responsibilities of commanders and supervisory personnel to ensure crewmembers achieve training toward combat readiness by the safest and most realistic means available. The DCM training rules set forth herein and in the MV-22 NTP are minimum requirements. Squadron commanders should promulgate supplementary directives to delineate syllabus contents, proficiency levels, communications procedures, safety precautions, and other applicable areas of concern. Responsibility for the safe and efficient implementation of realistic combat training rests with all levels of command.

Scope. DCM training is designed to develop the high level of skill required to defend against the current and future threat. The T&R Program Manual, OPFRSINST 3710.7, the MV-22 NTP, and this Manual contain the overall policies, responsibilities, training syllabi, and flight objectives for DCM training. DCM consists of 2 tiltrotor vs. 1 F/W.

Authority. CG MCCDC tasks the Commanding Officer, MAWTS-1 with developing training courses (both ground and flight), establishing standards and presenting said courses in support of operating units. Appropriate T&R syllabi and the MAWTS-1 Course Catalog contain MAWTS-1 course topics, USMC standards of performance, and criterion for instructor certification. Authority and responsibility for overall supervision of DCM flight rests with operational commanders.

Safety. DCM will be conducted within the guidelines of this Chapter, the T&R Program Manual, and the MV-22 NTP. Squadron commanders

shall ensure that crewmembers conducting DCM training are properly qualified and appropriate flight leadership is represented within the flight.

Squadrons shall conduct training flights pursuant to the applicable T&R syllabus under direct supervision of experienced flight leaders. Moreover, the DCM lead shall thoroughly brief/debrief all participants in the conduct of the flight.

Unscheduled DCM is strictly prohibited.

#### DCM Training Areas

Training shall only be conducted in designated warning areas, restricted areas, Military Operating Areas (MOAs), appropriate blocks of controlled airspace as assigned by Air Traffic Control (ATC), or in other designated areas where safe separation from non-participants can be maintained.

At a minimum, designated DCM training areas shall be clear of Federal airways, control zones, and other areas of air traffic congestion, unless established pursuant to a letter of agreement with the Federal Aviation Administration (FAA) or host nation agreement.

DCM Flight Requirements. Crewmembers participating in DCM will conform to the following flight guidelines:

When all crewmembers of a flight are DCM qualified, the flight does not require a Defensive Combat Maneuvering Instructor (DCMI).

Minimum crew requirements shall be per the applicable T&R syllabus.

A non-DCM qualified pilot may participate in DCM training, provided the Tiltrotor Aircraft Commander is a designated DCMI. Non-DCM qualified aircrew serving in the cabin section may participate in DCM training, provided the other aircrew serving in the cabin section is a designated DCMI.

DCM shall be conducted in day conditions.

Minimum tiltrotor altitude is 200 feet AGL.

The tactical wingman is always responsible for separation during the engagement.

Minimum weather for DCM shall be 3000/5 with a definable horizon and shall not be conducted through an under/overcast.

Pilots of F/W aircraft participating in DCM shall be LAT qualified and proficient.

Minimum F/W altitude is 500 feet AGL.

No slow speed, high AOA maneuvering below 10,000 ft by F/W.

No supersonic flight is authorized.

DCM Syllabus. Squadrons shall conduct DCM training per the appropriate syllabus contained in the T&R Manual, the MAWTS-1 course catalog, and the MV-22 NTPP.

DCM Flight Briefs

Crewmembers shall brief DCM training rules per the MV-22 NTP, the T&R Program Manual, and OPNAVINST 3710.7 prior to DCM training.

DCM participants shall conduct face-to-face briefs. Operational commanders may waive DCM face-to-face brief requirements as outlined below.

At a minimum, 1 individual from each participating unit shall attend a face-to-face brief.

For units not co-located, a telephone brief may satisfy the face-to-face briefing requirement. The following guidelines for telephone briefs and debriefs apply:

The flight leaders shall conduct the telephone brief.

All applicable training rules shall be covered during the telephone brief.

The flight leaders receiving the telephone brief will brief all other participating crewmembers prior to their flights.

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2.9 CORE SKILL INTRODUCTION FRS ACADEMIC PHASE (GROUND SCHOOL)

2.9.1 Purpose. Prepare the student for the flight portion of the Core Skill Introduction phase. Emphasis is placed on major aircraft systems, Cockpit Management System (CMS), and pre-flight requirements such as Checklists, Course rules, and Load Computation.

2.9.2 General

2.9.2.1 Admin Notes

Ground school is set up in two parts. The first is ADLs followed by an ACAD class on the major aircraft systems. Major aircraft systems follow the Demo (ADL), Intro (ACAD), Review (Sim), and Evaluate (Aircraft) method of learning from ground school through the FAM stage. The second part focuses on the Cockpit Management System and pre-flight requirements such as Checklists, Course rules, and Load Computation.

The commanding officer of the resident FRS has the responsibility to define the required content, conduct reviews, forward required changes and approve the content for all Ground School events.

The commanding officer of the FRS has waiver authority over any event within Ground School.

ACAD-0100 1.5 \* B,T,R,MR,AF,CI CLS

Ground School Intro In-Brief

Goal. The PUI understands the expectations during Ground School and has the requisite knowledge of the course and where all the necessary references can be accessed to complete the Core Skill Introduction Phase.

1. Discuss:

- a. Overall Course Design for Ground School and the Core Skill Introduction Phase.
- b. Student Guide material
  - (1) Class Schedule.
  - (2) Systems reference material.
  - (3) ACAD handouts.
  - (4) Simulator and Flight Events Student Guides.
- c. List, Location, and access to all appropriate references that will be required through the Core Skill Introduction Phase.
- d. Expectations of PUI during Ground School to include work schedule, ACAD preparation, and event prerequisites.
- e. Squadron and MATSS processes, particularly scheduling.

2. Demonstrate:

a. Computer based training access. All students will log-on to the network and access the first ADL.

b. Basic operation of the ADL.

Performance Standards. None.

Prerequisite. Squadron operations department check-in.

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ADL-0001      1.5      \*      B,T,R,MR,AF,CI,CV      CBT

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Courseware Introduction

Goal. The PUI has completed all courseware introduction modules with a basic understanding of the CBT course and references.

Requirements. The following modules are required.

1. Courseware Tutorial.
2. Introduction to the V-22.
3. Manuals and Publications.

Performance Standards. Satisfactory completion of all modules.

Prerequisite. Squadron operations department check-in.

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ACAD-0101      2.5      \*      B,T,MR,R,AF,CI      CLS

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Crew Resource Management (CRM) Initial

Goal. The PUI understands the Risk and Resource Management (RRM) model and how the icons, processes, and seven principles apply to Crew Resource Management.

1. Discuss:
  - a. Seven principles.
  - b. RRM model.
    - (1) ABCD process.
    - (2) Available resources.
    - (3) Decision model.

Instructor. CRMF

Prerequisite. ACAD-0100.

ADL-0002      2.5      \*      B,T,R,MR,AF,CI      CBT

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Basic Airframe

Goal. The PUI has completed all Basic Airframe modules with a basic understanding of the V-22 airframe, landing gear, aircraft lighting and Emergency Exits.

Requirements. The following modules are required.

1. Airframes.
2. Aircraft Emergency Exits.
3. Landing Gear System (Nose Wheel Steering and Wheel Brake Systems).
4. Interior/Exterior lighting.

Performance Standards. Satisfactory completion of all modules.

Prerequisite. ADL-0001.

ADL-0003      2.5      \*      B,T,R,MR,AF,CI      CBT

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Introduction to Cockpit Management System (CMS)

Goal. The PUI has completed all Intro to CMS modules with a basic understanding of the cockpit, flight displays, and the basic elements of CMS.

Requirements. The following modules are required.

1. Introduction to the Cockpit.
2. Introduction to the Cockpit Management System (CMS) (Flight Display Symbology).

Performance Standards. Satisfactory completion of all modules.

Prerequisite. ADL-0001.

ADL-0004      2.0      \*      B,T,R,MR,AF,CI      CBT

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Electrical System

Goal. The PUI has completed all Electrical System modules with a basic understanding of the V-22 electrical system.

Requirements. The following electrical system modules are required.

1. AC Electrical System.
2. DC Electrical System.



3. External Power System.

Performance Standards. Satisfactory completion of all modules.

Prerequisite. ADL-0003.

ACAD-0102    3.0    \*    B,T,R,MR,AF,CI    CLS

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Electrical System

Goal. The PUI has an introductory knowledge of the V-22 electrical system, aircrew interaction and related EPs.

Requirements

1. Discuss:
  - a. Basic architecture and major components.
  - b. Recognition of a component failure.
  - c. MFD view of the contactor and crosstie status.
  - d. Impact of any Generator Failure with the help of the PCL.
  - e. Impact of any Regulated Converter Failure with the help of the CMS.
  - f. Impact of any AC Bus failure with the help of the CMS.
  - g. Impact of any DC Bus Failure with the help of the CMS.
  - h. Correct response to any component failure with the help of the PCL.

Prerequisites. ADL-0004. Required Reading - Electrical System Student Guide chapter.

ADL-0005    2.0    \*    B,T,R,MR,AF,CI    CBT

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Hydraulic System

Goal. The PUI has completed all Hydraulic System modules with a basic understanding of the V-22 hydraulic system.

Requirements. The following hydraulic system modules are required.

1. Hydraulic components and displays.
2. Hydraulic systems operation.
3. Utility systems.

Performance Standards. Satisfactory completion of all modules.

Prerequisite. ADL-0003.

ACAD-0103	4.0	*	B, T, R, MR, AF, CI	CLS
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Hydraulic System

Goal. The PUI has an introductory knowledge of the V-22 hydraulic system, aircrew interaction, and related EPs.

Requirements

1. Discuss:
  - a. Basic architecture and major components.
  - b. Normal operations of the hydraulic system.
  - c. Hydraulic system status and indications on CMS displays.
  - d. Functions available to the pilot via CMS displays.
  - e. Warnings/Cautions/Advisories on the CDU/EICAS.
  - f. Functions of the hydraulic system leak logic.
  - g. Correct response to any component failure with the help of the PCL.

Prerequisites. ADL-0005. Required Reading - Hydraulic System Student Guide chapter.

ADL-0006	3.5	*	B, T, R, MR, AF, CI	CBT
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Flight Control System (FCS)

Goal. The PUI has completed all FCS modules with a basic understanding of the V-22 FCS.

Requirements. The following FCS modules are required.

1. Cockpit Flight Controls.
2. FCS Cockpit Panels.
3. FCS Reference Systems.
4. Flight Control Laws.

Performance Standards. Satisfactory completion of all modules.

Prerequisite. ADL-0003.

ACAD-0104    3.0    \*    B,T,R,MR,AF,CI    CLS

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### Flight Control System

Goal. The PUI has an introductory knowledge of the V-22 FCS to include Air Data System, Flight Control Computers, Flight Controls, and Control Laws.

#### Requirements

1. Discuss:
  - a. Basic architecture and major components.
  - b. Recognition of a component failure of the FCS.
  - c. MFD view the status of the FCS on the MFD.
  - d. Difference between a CCDL failure and a Dual FCC failure, on the MFD or CDU.
  - e. Flight parameter that control the conversion corridor.
  - f. Impact of AFCS Disengage with the help of the CMS.
  - g. Impact of TCRS Disengage with the help of the CMS.
  - h. Single engine failure effects on TCL input.
  - i. Describe Interim Power and why it is used.
  - j. Describe Contingency Power and why it is used.
  - k. Correct response to any component failure.

Prerequisite. ADL-0006. Required Reading - FCS Student Guide chapter.

ADL-0007    2.5    \*    B,T,R,MR,AF,CI    CBT

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### Drive System

Goal. The PUI has completed the CBT with a basic understanding of the V-22 drive system.

Requirements. The following drive system modules are required.

1. Components.
2. Subsystems and Assemblies.
3. Displays and Limitations.
4. ELS and DSIU.
5. Proprotor System.

Performance Standards. Satisfactory completion of all modules.

Prerequisite. ADL-0003.

ACAD-0105	3.0	*	B, T, R, MR, AF, CI	CLS
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Drive System.

Goal. The PUI has an introductory knowledge of the V-22 drive system.

Requirements

1. Discuss:

- a. Basic architecture and major components.
- b. Describe the proprotors and proprotor hub assembly including the elastomeric bearings.
- c. Describe which accessory systems are mounted on L/R TAGB, and MWGB.
- d. Distinguish Drive system Warnings/Cautions/Advisories on the CDU/EICAS.
- e. Describe the impact of R TAGB pressure lost on the #2 GEN.
- f. Describe Emergency Lubrication System functions, and limitations.
- g. Describe PRGB status and indications on CMS displays.
- h. Describe TAGB status and indications on CMS displays.
- i. Describe the correct response for a PRGB failure.

Prerequisite. ADL-0007. Required Reading - Drive System Student Guide chapter.

ADL-0008	2.5	*	B, T, R, MR, AF, CI	CBT
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Powerplant Systems

Goal. The PUI has completed the CBT with a basic understanding of the V-22 powerplant system(s) to include the Engines, the Engine Control System and the APU.

Requirements. The following engine system modules are required.

1. Control System.

- a. Engine Air Management.
- b. Starting and Oil Systems.

- c. Ignition and Fuel Systems.
- d. Anti-Ice and Fire Detection/Suppression.
- e. Displays, Limitations and WCAs.

2. Auxiliary Power Unit (APU).

Performance Standards. Satisfactory completion of all modules.

Prerequisite. ADL-0003.

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ACAD-0106    3.0    \*    B,T,R,MR,AF,CI    CLS

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Powerplant Systems

Goal. The PUI has an introductory knowledge of the V-22 Engine System and APU, major components, aircrew interaction, and engine system EPs.

Requirements

1. Discuss:
  - a. AE 1107 Engine Basic architecture and major components.
  - b. Describe the components and functions of the following sub-systems: EAPS, FADECs, Fuel System, Oil System, Engine Anti-Ice System and TCRS.
  - c. Describe the engine Inner Loop and Outer Loop control system.
  - d. Understand the pilot displays and inputs available for control of the engine and various sub-assemblies.
  - e. Understand the levels of malfunctions and their indications within the WCA hierarchy.
  - f. Describe the correct response to engine malfunctions with help of the NATOPS Pocket Checklist.
  - g. Understand engine malfunctions as they relate to components of the engine.
  - h. Explain the purpose of the APU.
  - i. Explain where the APU gets its fuel.
  - j. Describe the difference between RUN ENGAGE and EMER RUN ENGAGE.
  - k. Identify the components that the APU drives through the MWGB.

Prerequisite. ADL-0008. Required Reading - Engine and APU Student Guide chapter(s).

ADL-0009      2.0      \*      B,T,R,MR,AF,CI      CBT

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Fuel System

Goal. The PUI has completed the CBT with a basic understanding of the V-22 fuel system.

Requirements. The following fuel system module is required.

1. Operation and Limitations.

Performance Standards. Satisfactory completion of all modules.

Prerequisite. ADL-0003.

ACAD-0107      2.0      \*      B,T,R,MR,AF,CI      CLS

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Fuel System

Goal. The PUI has an introductory knowledge of the V-22 fuel system architecture, major components, aircrew interaction, and fuel system EPs.

Requirements

1. Discuss:
  - a. Basic architecture and major components.
  - b. Operation of the fuel system.
  - c. Describe why the fuel system is a suction type.
  - d. Describe the major components of the fuel system.
  - e. Describe the Mission Auxiliary Tank System (MATS) (Self-Deploy and ADGR capabilities).
  - f. Describe how the pilot interfaces with the fuel system.
  - g. Describe the impact of an FMU failure on the fuel system.
  - h. Describe the problems with fuel dumping.

Prerequisite. ADL-0009. Required Reading - Fuel system Student Guide chapter.

ADL-0010      2.0      \*      B,T,R,MR,AF,CI      CBT

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Environmental Control System (ECS)

Goal. The PUI has completed the CBT with a basic understanding of the V-22 ECS, including OBOGS and OBIGGS.

Requirements. The following ECS modules are required.

1. Air Conditioning System.
2. OBOGS/OBIGGS.

Performance Standards. Satisfactory completion of all modules.

Prerequisite. ADL-0003.

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ACAD-0108	2.0	*	B, T, R, MR, AF, CI	CLS
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ECS including OBOGS and OBIGGS

Goal. The PUI has an introductory knowledge of the V-22 ECS architecture, major components, aircrew interaction, and ECS & OBOGS EPs.

Requirements

1. Discuss:
  - a. Basic architecture and major components of the ECS.
    - (1) Air Conditioning/Heating.
    - (2) OBOGS.
    - (3) OBIGGS.
    - (4) Avionics Cooling.
  - b. Operation of the ECS.
  - c. Identify malfunctions associated with the ECS.
  - d. Identify the proper response of ECS malfunctions.
  - e. Describe the relationship between the ECS and the IPS.

Performance Standards. None.

Prerequisite. ADL-0010. Required Reading - ECS Student Guide chapter.

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ADL-0011	2.5	*	B, T, R, MR, AF, CI	CBT
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Introduction to COMM/NAV/FD

Goal. The PUI has completed the CBT with a basic understanding of the V-22 communication, navigation and flight director systems.

Requirements. The following ECS modules are required.

1. Introduction to the Communication System.

- a. Introduction to the Radio System.
- b. Introduction to the IFF System.
2. Introduction to Navigation Systems (INAV and CMS).
3. Introduction to the Flight Director.

Performance Standards. Satisfactory completion of all modules.

Prerequisite. ADL-0003.

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LAB-0200      2.0      \*      B,T,R,MR,AF,CI,CV      CMS

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Overview and Basic CMS functions

Goal. The PUI has a basic understanding of the V-22 CMS, is able to navigate the layers in the different sections (Top keys), understands the color and key coding, and knows how to input data to the CMS.

Requirements

1. Demonstrate
  - a. General design, architecture, and components.
  - b. MFD Controls.
  - c. MFD Top Bezel Keys (T1- T5).
    - (1) Flight Displays.
    - (2) NAV control layer and HSD.
    - (3) FLIR.
    - (4) STAT.
    - (5) SYST.
  - d. CDU Controls.
  - e. CDU Layers.
  - f. EICAS Display.
  - g. CDU Keyboards.
    - (1) General data entry rules.
    - (2) Dedicated system keys.

Performance Standards. Satisfactory completion of all modules.

Instructor. FRSI.



Prerequisite. ADL-0011.

ADL-0012      2.0      \*      B,T,R,MR,AF,CI,CV      CBT

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Procedures Checklists

Goal. The PUI has completed the CBT with a basic understanding of the V-22 Normal Procedures checklists.

Requirements. The following modules are required.

1. Pre-start checklist procedures.
2. Start checklist procedures.
3. Shutdown checklist procedures.
4. Emergency Procedures Fundamentals.

Performance Standards. Satisfactory completion of all modules.

Prerequisite. LAB-0200. Required reading - NATOPS Ch 7 checklists from Cockpit Pre-Entry through Post Flight.

ADL-0013      1.5      \*      B,T,R,MR,AF,CI      CBT

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Aircrew Maintenance Systems

Goal. The PUI has completed the CBT with a basic understanding of the aircraft V-22 maintenance systems and their integration with maintenance ground systems.

Requirements. The following modules are required.

1. VSLED System and BIT.
2. Aircraft Maintenance Event Ground Station (AMEGS).
3. Blade Fold/Wing Stow System.

Performance Standards. Satisfactory completion of all modules.

Prerequisite. ADL-0003.

LAB-0201      2.0      \*      B,T,R,MR,AF,CI      CMS

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Comm (CDU), NAV, load brick.

Goal. The PUI understands and gains familiarity with the V-22 CMS and can execute the PRE-START checklist.

Requirements

1. Demonstrate:
  - a. Comm functions.
  - b. NAV sub-layers and functions.
  - c. Mission Data Loader (MDL) (Loading missions, and map data).
  - d. Maint pages.
    - (1) System STAT, WRA pages.
    - (2) BFWS.
2. Introduce. Pre-Start Checklist.

Instructor. FRSI

Prerequisite. ADL-0012.

ADL-0014	1.0	*	B, T, R, MR, AF, CI, CV	CBT
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Local Course Rules

Goal. The PUI has completed the CBT with a basic understanding of the local area course rules.

Requirements. The following module is required.

1. Local Course Rules.

Performance Standards. Satisfactory completion of all modules.

Prerequisite. Squadron operations department check-in.

ACAD-0109	3.0	*	B, T, R, MR, AF, CI	CLS
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Course Rules

Goal. The PUI has an introductory knowledge of the local course rules and satisfactorily completes the course rules exam.

Requirements

1. Discuss:
  - a. Identify significant features aboard MCAS.
  - b. Describe Taxi and Takeoff procedures for MCAS.
  - c. Identify local VFR Patterns.

- d. Identify VFR Entry/Exit Points.
  - e. Identify Special VFR Entry/Exit Points.
  - f. Identify Out Lying Fields (OLFs), Entry/Exit Points and Procedures.
  - g. Describe MV-22 Operations aboard MCB Complex.
  - h. Describe NVG Operations aboard MCAS.
2. Evaluate. Course Rules exam.

Performance Standards. Satisfactory completion of the course rules exam.

Prerequisite. ADL-0014. Required Reading - Local Base Operations SOP for course rules.

ADL-0015	2.0	*	B, T, R, MR, AF, CI	CBT
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V-22 Performance

Goal. The PUI has completed the CBT with a basic understanding of the V-22 performance charts, load computation and Form F.

Requirements. The following modules are required.

1. Aircraft Performance Charts.
  - a. Standard Data and Engines.
  - b. Takeoff and Climb.
  - c. Range and Level Flight.
  - d. Endurance and Descent.
  - e. Landing and Emergency Operations.
2. Weight and Balance.

Performance Standards. Satisfactory completion of all modules.

Prerequisite. ACAD-0106.

ACAD-0110	3.0	*	B, T, R, MR, AF, CI	CLS
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V-22 Performance and Weight & Balance

Goal. The PUI will have a basic understanding of V-22 performance and be able to use the NATOPS performance charts in mission planning. The PUI will produce a Load Computation and Weight & Balance Form F in preparation for CFAM-010.

Requirements

1. Discuss
  - a. V-22 performance in different modes of flight and how it is affected by altitude and temperature.
  - b. Use of V-22 NATOPS performance charts.
  - c. Completion of a V-22 Load Computation form.
  - d. Be familiar with the V-22 Wt & Bal Form F (Requirement for use and JMPS certification).

Prerequisite. ADL-0015. Required Reading - NATOPS Performance Charts.

ACAD-0111	5.0	*	B, T, R, MR, AF, CI	CLS
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Flight Aerodynamics Review

Goal. The PUI has a solid foundation of knowledge in flight aerodynamics.

Requirements

1. Discuss:
  - a. Fixed Wing basic aerodynamics.
  - b. Rotary Wing basic aerodynamics.
  - c. Stability and Control.
  - d. Performance.

Prerequisite. ADL-0002.

ACAD-0112	5.0	*	B, T, R, MR, AF, CI	CLS
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V-22 Aerodynamics

Goal. The PUI has an introductory knowledge of tiltrotor aerodynamics and how that is applied to the V-22.

Requirements

1. Discuss:
  - a. Tiltrotor basic aerodynamics.
  - b. VMS and its application to V-22 Stability and Control.
  - c. V-22 Lessons learned.

- (1) Vortex Ring State (VRS).
- (2) Pitch Up with Side Slip (PU/SS).
- (3) Flight envelope limitations.
  - (a) Critical Azimuth testing.
  - (b) Over rotation during lateral quickstop.
  - (c) Vne limits.
  - (d) Angle of Bank and Pitch limits.
- (4) Slow flight and Tailwind Phenomenon.
  - (a) Tailwinds in a hover.
  - (b) Rapid forward nacelle with a tailwind.
  - (c) High speed sideward flight.
- (5) Autorotation testing.
- (6) Roll On Deck (ROD).
- (7) Dynamic Interface (shipboard envelopes, AFCS saturation).
- (8) Formation roll-offs.

d. The "why" behind some Emergency Procedures.

Prerequisite. ACAD-0111. Required Reading - NATOPS Ch 11.

LAB-0223	2.0	*	B, T, MR, AF, CI	A	1	MV-22
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Description of major aircraft components.

Goal. The PUI has a basic knowledge of major aircraft components.

Requirements

1. Demonstrate:

a. Drive System.

- (1) PRGB.
- (2) TAGB.
- (3) MWGB.
- (4) ICDS.

b. Proprotor.

c. Electrical System.

- (1) Generators.
- (2) Converters.
- (3) Power Distribution (CktBkr) Panels.

d. Hydraulic Systems.

- (1) Pumps.
- (2) Actuators.
- (3) Control Modules.
- (4) Switching/Isolation Valves.

e. FCS.

- (1) FCC.
- (2) MC.

f. Engines.

g. Fuel Systems.

h. Landing Gear Systems.

i. BFWS.

Instructor. FRSI & FRSCCI.

Prerequisite. ACAD-0100 through ACAD-0108. ADL-0002 through ADL-0010.

2.10 CORE SKILL INTRODUCTION PHASE

2.10.1 General. The purpose of this phase is to instruct the copilot in MV-22 fundamentals and introduce mission elements. At the completion of this phase the PUI will be a NATOPS qualified T2P and rate the 7532 MOS as specified in RQD-6030. All cockpit trainer, simulator, and flight events require an Aviation Training Form (ATF) except CFAM-1030 and CFAM-1031.

2.10.1.1 Admin Notes. ROC will be per the T&R Program Manual.

2.10.1.2 Stages. The following stages are included in the Core Skill Introduction Phase of training.

Par No.	Stage Name
2.10.2	Familiarization (FAM)
2.10.3	Navigation (NAV)
2.10.4	Instrument (INST)
2.10.5	Confined Area Landing (CAL)
2.10.6	Formation (FORM)
2.10.7	Low Altitude Training (LAT)
2.10.8	Night Systems (NS)
2.10.9	Requirements, Qualifications, Designations (RQD)

## 2.10.2 FAMILIARIZATION (FAM)

2.10.2.1 Purpose. To teach the PUI basic V-22 aircraft control, normal procedures, normal checklists and Pilot Flying (PF) actions during Emergency Procedures (EPs). Focus of Effort (FOE): Basic aircraft control, tiltrotor aerodynamics, tiltrotor flying qualities, major aircraft systems, cue level of automation, and NATOPS Chapters: 2, 4, 7, 11, & 12.

### 2.10.2.2 General

CFAMs are events conducted to familiarize the pilot with the cockpit, CMS, start-up, and shutdown procedures prior to the first flight in the simulator. CFAMs may be conducted in an FFS, FTD, CFTD, Interactive Cockpit Learning Environment (ICLE) or other equivalent device. For CFAM events, a maximum of 2 PUI shall be scheduled per instructor.

EPs will be consistent with discuss items and with the flight profile of the event.

DTM will be a standard brick provided by the instructor for all events in the FAM stage. Starting with SFAM-1033, the PUI will fill out a load computation form by hand using NATOPS charts based on the conditions stated in the Student Guide.

Emphasis will be placed on NATOPS chapters 2, 4, 7, 11, and 12. PUI is responsible for reading all applicable NATOPS sections of the above chapters for each Simulator and Flight event.

If FAM-1043 is not flown within 5 days of SFAM-1042, SFAM-1042 shall be re-flown.

Crew Requirements. P/P for simulators, P/P/CC if flown in aircraft.

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ACAD-1010    1.0    \*    B,T,R,MR,AF,CI    CLS

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Goal. The PUI should have an introductory knowledge of the training syllabus for the familiarization stage and gain familiarity with the expectations and performance standards. Each PUI will be entered in and able to access the required web-based processes to include M-SHARP and the MATSS website for information and scheduling. Each PUI will also be checked out in the Simulator and Cockpit Trainer so that they may conduct training events or practice on their own.

Requirements

1. Discuss:

a. Introduction.

- (1) Purpose/FOE of the syllabus.
- (2) Syllabus outline and flow.
- (3) Applicable publications.
- (4) PUI performance expectations.

b. MATSS and Squadron scheduling.

- (1) MATSS Orientation and Utilization Login.
- (2) Squadron distribution of flight schedule.

c. M-SHARP.

- (1) Access/log-in.
- (2) Tutorial.
- (3) Filing of NAVFLIRS.

d. Device Operator (DO) Training.

Instructor. FRSI.

Prerequisites. ACAD-0100 through ACAD-0110, ADL-0001 through ADL-0015, and LAB-0200 through LAB-0201.

CFAM-1030	2.0	*	B,T,R,AF,CI	S	1	ICLE/FFS/FTD
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Goal. Gain familiarization with the overall cockpit and in particular the hardware communication interface(s). Conduct the PRE-ENTRY through POST ENGINE START checklists by integrating the basic CMS learned in LAB-0201 with the switches and displays in the cockpit trainer.

Requirements

1. Discuss:

a. Communication.

- (1) Comm/ICS side panels.
- (2) Remote Control Head (RCH).

b. Ground operations and limitations.

- (1) Battery.



- (2) External Power.
    - (3) APU.
  - c. Flight Controls.
    - (1) Functions on TCL.
    - (2) Functions on Cyclic.
  - d. Checklist flow / cockpit layout.
  - e. Aircraft response to NORM FLT OPS selection.
2. Demonstrate:
- a. ENGINE START.
  - b. POST ENGINE START.
3. Introduce:
- a. Comm/ICS.
    - (1) Side panels.
    - (2) RFIS.
    - (3) ARC-210 RCH operation.
  - b. Overhead panel.
    - (1) Switches vs Indicators.
    - (2) Lighting.
    - (3) All other overhead panels.
  - c. Center console.
    - (1) SFD, SFI, FD panel.
    - (2) LGCU, Track handle, Flaps, Parking brake, Nac cntrl disable switches.
  - d. Flight Controls.
    - (1) TCL.
    - (2) Cyclic.
    - (3) Pedals.
  - e. COCKPIT PRE-ENTRY (min 2).

f. COCKPIT PRE-START (min 2).

(1) BATTERY.

(2) EXTERNAL POWER.

4. Review. CMS functions within PRE-START checklist.

#### Performance Standards

1. Understands the function of the NORM FLT OPS configuration.
2. Demonstrates familiarity with the operation of the CMS.
3. Properly identifies all switches and MFD/CDU layers to execute PRE-ENTRY and PRE-START checklists.
4. Able to input a manual frequency in the RCH.

Instructor. FRSI.

Prerequisites. ACAD-0110, ACAD-1010.

CFAM-1031	2.0	*	B,T,AF,CI	S	1	ICLE/FFS/FTD
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Goal. Introduce and practice checklists. PUI should gain a familiarity with the location and function of cockpit switches and displays.

#### Requirements

1. Introduce:
  - a. ENGINE START (min 2).
  - b. POST ENGINE START (min 2).
  - c. Post Flight.
    - (1) AFTER LANDING.
    - (2) SHUTDOWN.
2. Practice:
  - a. COCKPIT PRE-ENTRY (min 2).
  - b. COCKPIT PRE-START (min 2).
  - c. EXTERNAL POWER.
  - d. BATTERY.
  - e. ALL START.

Performance Standards

1. Demonstrates familiarity with the operation of the CMS.
2. Properly identifies all switches and MFD/CDU layers to execute all prescribed checklists.
3. Able to properly execute all items from COCKPIT PRE-ENTRY to ENGINE START in less than 30 minutes.

Instructor.

Prerequisites. CFAM-1030.

CFAM-1032	2.0	*	B,T,R,AF,CI	S	1	ICLE/FFS/FTD
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Goal. Be able to properly execute all listed Normal Procedures checklists in a timely manner. Recognize and perform the proper steps for all Ground Emergencies.

Requirements

1. Discuss:
  - a. Load Computation.
  - b. Weight and Balance Form F.
  - c. Blade Fold/Wing Stow (BFWS) system.
    - (1) Full Stow and Flight Ready.
    - (2) Maintenance modes.
  - d. Uncommanded engine acceleration.
2. Introduce. BLADE FOLD/WING STOW.
  - a. Flight Ready to Full Stow.
  - b. Full Stow to Flight Ready.
3. Practice:
  - a. COCKPIT PRE-ENTRY.
  - b. COCKPIT PRE-START.
  - c. BATTERY.
  - d. ALL START.
  - e. ENGINE START.
  - f. POST ENGINE START.

- g. AFTER LANDING.
- h. SHUTDOWN.
- 4. Emergencies:
  - a. Abnormal starts.
  - b. Emergency shutdown.
  - c. Engine fire, nacelle fire, or wing fire on ground.

Performance Standards

- 1. Demonstrates familiarity with the operation of the CMS.
- 2. Properly identifies all switches and MFD/CDU layers to execute all prescribed checklists in a timely manner.
- 3. Able to properly execute all items from COCKPIT PRE-ENTRY through POST ENGINE START in less than 30 minutes.
- 4. Recognize indications, execute memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.

Instructor. FRSI.

Prerequisite. CFAM-1031.

SFAM-1033	2.0	*	B,T,AF,CI	S	1	FFS/FTD
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Goal. Timely execution of checklists and to introduce hover and nacelle drills. Develop PUI skill in using nacelle angle to control nose attitude and longitudinal aircraft control.

Requirements

- 1. Discuss:
  - a. Electrical system.
    - (1) Constant Frequency Generators (CFG).
    - (2) Variable Frequency Generators (VFG).
    - (3) Regulated Converters.
    - (4) AC and DC Busses.
    - (5) FCC Power sources.
  - b. Pitch up with sideslip.
  - c. Nacelle trim switch.

2. Introduce:

- a. Pilot Flying (PF) callouts.
- b. Checklists.
  - (1) PRE-TAXI/BREAKDOWN.
  - (2) PRE-TAKEOFF.
  - (3) AFTER TAKEOFF.
  - (4) LANDING CHECKS.
- c. Ground Taxi.
  - (1) Power steering on and off.
  - (2) Rearward Taxi.
- d. Vertical Takeoff (Power and systems check).
- e. Normal Hover and Hover Turns.
- f. Hover Nacelle Drills.
- g. Air Taxi Nacelle Drills.
- h. Square Pattern.
- i. Vertical landing.

3. Practice:

- a. Load Comp/Weight and Balance.
- b. Checklists.
  - (1) From ALL START #18 "Personnel Equipment" through POST ENGINE START.
  - (2) AFTER LANDING.
  - (3) SHUTDOWN.

4. Emergencies:

- a. Electrical system failures.
  - (1) CFG Failure.
  - (2) VFG Failure.
  - (3) AC Bus Failure.
  - (4) DC Bus Failure.

- b. Directional control problems.

Performance Standards

1. Understands all checklist items, knows where the required cockpit switches are, ability to access required CMS functions, and demonstrates proper crew coordination during the startup and shutdown with some coaching.
2. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
3. Recognize indications, execute memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.

Instructor. FRSI.

Prerequisite. CFAM-1032, ACAD-0112.

SFAM-1034	2.0	*	B,T,R,AF,CI	S	1	FFS/FTD
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Goal. Introduce approaches to landings (hover, no-hover, Run-on landing). Practice low work and introduce forward flight in CONV. Further enforce the PUI understanding and skill in using nacelles for longitudinal control.

Requirements

1. Discuss:
  - a. Hydraulic system.
  - b. Pitch coupling.
2. Introduce:
  - a. Transition from Hover.
  - b. CONV Pattern.
  - c. Normal Approach to a Hover Landing.
  - d. Normal Approach to a No-Hover Landing.
  - e. Run-on Landing.
  - f. Pilot Not Flying (PNF) duties and callouts.
  - g. Calculate Hover/Cruise Performance (HIGE, HOGE, MAX RNG/ENDU).
3. Practice:
  - a. Checklists.
    - (1) PRE-TAXI/BREAKDOWN.

(2) PRE-TAKEOFF.

(3) AFTER TAKEOFF.

(4) LANDING CHECKS.

b. Vertical Takeoff and Landing.

c. Hover Nacelle Drills.

d. Air Taxi Nacelle Drills.

4. Emergencies. Hydraulic System Failures (Hydraulic X failure).

Performance Standards

1. Understands all checklist items, know where the required cockpit switches are, be able to access required CMS functions, and demonstrate proper crew coordination with minimal coaching.
2. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
3. Properly recognize normal approach glideslope.
4. Recognize indications, execute memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.

Instructor. FRSI.

Prerequisite. SFAM-1033.

SFAM-1035	2.0	*	B,T,AF,CI	S	1	FFS/FTD
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Goal. Introduce conversions and transitions and practice CONV pattern and approaches. Develop the fundamental skills necessary for the APLN Pattern.

Requirements

1. Discuss:
  - a. VMS basic architecture/overview.
  - b. Primary Flight Control System (PFCS).
    - (1) FCCs.
    - (2) Electro-hydraulic controls.
    - (3) Flight Control Laws (CLAWS).
    - (4) Conversion protection system "Conversion Corridor."
    - (5) Structural Load Limiting.

- (6) PFCS Fail/Reset.
  - c. Automatic Flight Control System (AFCS).
    - (1) Full time and selectable modes of operation.
    - (2) Cyclic grip and TCL switches (AFCS unique).
    - (3) AFCS/PFCS Reset.
  - d. Vortex Ring State.
2. Introduce:
- a. Transition to APLN.
    - (1) Transition straight and level.
    - (2) Transition constant rate climb.
    - (3) Transition constant rate turns.
  - b. Conversion to CONV.
    - (1) Conversion straight and level.
    - (2) Conversion constant rate turn.
    - (3) Conversion constant rate turns.
  - c. Level Speed Changes
    - (1) CONV.
    - (2) APLN.
3. Practice:
- a. CONV Pattern.
  - b. Normal Approach to a Hover Landing.
  - c. Normal Approach to a No-Hover Landing.
  - d. Run-on Landing.
  - e. Pilot Not Flying (PNF) duties and callouts.
4. Emergencies:
- a. VMS Failures (AFCS failed [CONV and APLN]).
  - b. SINK (Vortex Ring State).

Performance Standards



1. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
2. Recognize indications, execute memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.

Instructor. FRSI.

Prerequisite. SFAM-1034.

SFAM-1036	2.0	*	B,T,AF,CI	S	1	FFS/FTD
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Goal. Introduce short takeoffs (STO) and rolling takeoff (RTO), APLN pattern, and steep approaches. Practice CONV pattern. Begin to develop initial building blocks that will be required for CALs and shipboard operations.

Requirements

1. Discuss:
  - a. Drive systems.
    - (1) Proprotor systems.
    - (2) Gearboxes and Nacelle Blower.
    - (3) Interconnecting Driveshaft System (ICDS).
    - (4) Drive System Interface Unit (DSIU).
  - b. Feathering/Flapping/Rotor Load (FFR) Indicator.
  - c. Structural Load Limiting (SLL).
2. Demonstrate. FD panel, FD cues, FD commands.
3. Introduce:
  - a. STO and RTO.
  - b. APLN pattern.
  - c. Steep approach to a Hover Landing.
  - d. Steep Approach to a No-Hover Landing.
  - e. Nose Low Steep Approach.
  - f. PF and PNF duties and callouts.
4. Practice:
  - a. CONV pattern.

- b. Normal Approach to a Hover Landing.
  - c. Normal Approach to a No-Hover Landing.
  - d. Level Speed Changes.
5. Emergencies:
- a. Drive system malfunction(s).
    - (1) PRGB/TAGB Oil Pressure Low/High.
    - (2) PRGB/TAGB/MWGB Oil Press/Temp Invalid.
    - (3) PRGB/TAGB/MWGB Chips.
  - b. Gearbox Failure (Warning).
  - c. ICDS Failure (Warning).
  - d. Feathering/Flapping High Hot.

Performance Standards

- 1. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
- 2. Properly recognize steep approach glideslope.
- 3. Recognize indications, execute memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.

Instructor. FRSI.

Prerequisite. SFAM-1035.

SFAM-1037	2.0	*	B,T,R,MR,AF,CI	S	1	FFS/FTD
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Goal. Introduce max gross weight operations.

Requirements

- 1. Discuss:
  - a. Powerplant systems.
    - (1) Engines.
    - (2) Engine control (FADEC, PDS).
    - (3) APU.
  - b. Interim power.
  - c. Single Engine Flight.

- (1) SE performance envelopes APLN/CONV/VTOL.
- (2) SE flight characteristics.
- d. TOLD (Takeoff and Landing Data Calculations).
- 2. Introduce:
  - a. TOLD (Takeoff and Landing Data calculations).
  - b. MGW Transition from Hover.
  - c. MGW landing.
  - d. Attitude capture takeoff.
- 3. Practice:
  - a. STO.
  - b. APLN pattern.
  - c. Steep Approach to a Hover Landing.
  - d. Steep Approach to a No-Hover
- 4. Review. CONV pattern.
- 5. Emergencies:
  - a. Single engine failure.
    - (1) In VTOL mode.
    - (2) In CONV mode.
    - (3) In APLN mode.
  - b. Single Engine landing.
  - c. Engine restart in-flight.

Performance Standards

- 1. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
- 2. Recognize indications, execute memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.

Instructor. FRSI.

Prerequisite. SFAM-1036.

SFAM-1038 2.0 \* B,T,AF,CI S 1 FFS/FTD

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Goal. Practice APLN pattern. Introduce slow flight APLN maneuvers and high AOB turns. Begin to develop the understanding of energy management in APLN mode for a V-22.

Requirements

1. Discuss:

- a. Fuel system.
- b. Cruise performance (range/endurance).
- c. Slow flight characteristics in airplane mode.
- d. Angle of bank/load factor vs. stall speed.

2. Introduce:

- a. Slow flight (APLN Mode).
- b. High AOB (APLN Mode).
  - (1) 8,000 ft MSL.
  - (2) FL 180.
- c. Overhead Break Entry.
- d. Touch and Go.

3. Practice:

- a. STO.
- b. APLN pattern.
- c. No-Hover landing.
- d. Run-on Landing.
- e. MGW transition from Hover.
- f. MGW Landing.
- g. PF and PNF duties and callouts.

4. Emergencies:

- a. Single Engine Failure in Hover (HIGE, HOGE).
- b. Single engine failure in-flight.

- (1) Single engine failure on takeoff to an abort.
- (2) Single engine failure on takeoff to a flyaway.
- c. Single Engine wave-off.
- d. Fuel system cautions.

Performance Standards

- 1. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
- 2. Recognize indications, execute memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.

Instructor. FRSI.

Prerequisite. SFAM-1037.

SFAM-1039    2.0    \*    B,T,R,MR,AF,CI    S    1    FFS/FTD

Goal. Practice APLN flight. Introduce power on/off stalls and dual engine failures.

Requirements

- 1. Discuss:
  - a. ECS.
  - b. OBIGGS/OBOGS.
  - c. Stall characteristics.
- 2. Introduce:
  - a. Stall Checklist.
  - b. Practice power on/off stalls.
  - c. Converting and Turning stall.
- 3. Practice:
  - a. High AOB (APLN Mode.)
  - b. Overhead Break Entry.
  - c. Steep approach.
  - d. PF and PNF duties and callouts.
  - e. APLN pattern.

- f. No-Hover landing.
- g. Touch and Go.
- 4. Emergencies:
  - a. SDC Failure.
  - b. Nacelle Blower Failure.
  - c. Dual engine failure NAC > 60.

Performance Standards

- 1. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
- 2. Recognize indications, execute memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.

Instructor. FRSI.

Prerequisite. SFAM-1038.

ACAD-0113	2.0	*	B, T, R, MR, AF, CI	CLS
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V-22 Slow Airspeed and Wind Limitations

Goal. The PUI has an introductory knowledge of aerodynamic phenomena associated with slow airspeed and tailwinds/crosswinds.

Requirements

- 1. Discuss Low Airspeed and Wind Limitations.
  - a. AFCS Saturation.
  - b. Linear and Non-Linear Control.
  - c. V-22 Lessons learned.
    - (1) Vortex Ring State (VRS).
    - (2) Pitch Up with Side Slip (PU/SS).
    - (4) Pitch Down with Tailwind (PD/TW).
    - (4) Rapid forward nacelle at low airspeed.
    - (5) Lateral airspeed Risks.
  - d. Case Study

Prerequisite. SFAM-1039

SFAM-1040 2.0 \* B,T,R,MR,AF,CI S 1 FFS/FTD

Goal. Introduce Emergency Landing Pattern (ELP), Fire emergency procedures, and landing gear malfunctions. Review previously introduced aircraft system WCAs.

Requirements

1. Discuss:
  - a. Fire protection systems.
  - b. Smoke and fume elimination.
  - c. Landing gear systems.
  - d. FADEC B Override Switch.
  - e. Use of briefing guide.
2. Introduce:
  - a. PF and PNF duties and callouts during in-flight emergencies.
  - b. ELP
3. Practice. Power on/off stalls.
4. Emergencies:
  - a. Dual Engine Failure Nac < 60.
  - b. In-flight fires.
    - (1) Engine fire.
    - (2) Wing fire.
    - (3) Cockpit or cabin fire.
  - c. Single engine failure with an ICDS failure.
  - d. Engine FADEC cautions.
    - (1) Dual FADEC failure.
    - (2) FADEC auto transfer failure.
  - e. Nacelle Interface Unit (NIU) failure.
  - f. Wing Interface Unit (WIU) failure.
  - g. Landing gear failures.
    - (1) Landing gear fails to extend.

(2) Landing with hung gear.

Performance Standards

1. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
2. Recognize indications, execute memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.

Instructor. FRSI.

Prerequisite. SFAM-1039.

SFAM-1041	2.0	*	B,T,R,MR,AF,CI	S	1	FFS/FTD
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Goal. Introduce flight control emergencies and degraded handling qualities.

Requirements

1. Discuss. VMS response to flight control and hydraulic failures.
2. Practice. Emergency Landing Profile (ELP).
3. Emergencies:
  - a. Critical Swashplate Fault (Caution).
  - b. Single or Multiple Swashplate Fault (AADV).
  - c. Pilot Nacelle Controller Failure (Caution).
  - d. Elevator Failure (Warning).
  - e. Critical Elevator Fault (Caution).
  - f. Flaperon Failure (Caution).
  - g. ADS Failures (Caution).
  - h. FCC 1/2 Fail (Caution).
  - i. FCC X/3 Fail (Caution).
  - j. Hydraulic 1/2 failure (Caution).
  - k. Hydraulic X/3 failure (Caution).
  - l. Fixed Nacelle Landing.

Performance Standards. Recognize indications, execute required memory items, exercise proper crew coordination and maintain control of the aircraft during simulated Emergency Procedures.



Instructor. FRSI.

Prerequisite. SFAM-1040.

SFAM-1042	2.0	*	B,T,AF,CI	S	1	FFS/FTD
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Goal. Stage review.

Requirements

1. Discuss. Aircraft limitations.
2. Introduce. Full flight gear and cockpit considerations (Helmet, vest, and gloves).
3. Review:
  - a. Checklists.
    - (1) COCKPIT PRE-ENTRY.
    - (2) COCKPIT PRE-START.
    - (3) BATTERY.
    - (4) ALL START.
    - (5) ENGINE START.
    - (6) POST ENGINE START.
    - (7) AFTER LANDING.
    - (8) SHUTDOWN.
  - b. Load Comp/Weight and Balance.
  - c. STO.
  - d. CONV pattern.
  - e. APLN pattern.
  - f. Hover landing.
  - g. No-hover Landing.
  - h. Run-on Landing.
  - i. Steep Approach.
  - j. MGW Transition from Hover.
  - k. MGW Landing.

- l. Slow flight (APLN Mode).
- m. High AOB (APLN Mode)
- n. Practice power on/off stalls.
- o. Overhead Break Entry.
- p. PF and PNF duties and callouts.

Performance Standards. Conduct all FAM maneuvers IAW MV-22 Maneuver Description Guide (MDG).

Instructor. FRSI.

Prerequisite. ACAD-0113, SFAM-1041.

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LAB-1020	3.5	*	B,T,R,MR,AF,CI,CV	A	1	MV-22
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Goal. Familiarize PUI with squadron procedures for flight. Be able to correlate components learned in ADLs and ACADs on the aircraft and execute the standard walk-around. Complete required V-22 egress training.

Requirements

- 1. Discuss:
  - a. Scheduling procedures.
  - b. Read and Initial File.
  - c. Items required for brief.
  - d. Aircraft checkout.
  - e. Flight equipment checkout.
  - f. MAF generation.
- 2. Introduce:
  - a. V-22 egress procedures.
  - b. Hotseat procedures.
  - c. Standard walk-around.
  - d. Cabin door use.
  - e. Ramp and cargo door use.
  - f. Aircrew duties.

Performance Standards

1. Be able to conduct the standard walk-around with minimal coaching.
2. Be able to execute the V-22 egress procedures without reference or coaching.

Instructor. FRSI.

Prerequisite. SFAM-1042.

External Syllabus Support. Static Aircraft.

FAM-1043	1.5	*	B,T,R,AF	A	1	MV-22
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Goal. Timely execution of checklists, particularly cockpit pre-start (from APU run/engage) and engine start. Introduce nacelle drills, hover and CONV pattern in the aircraft. Develop PUI skill in using nacelle angle to control nose attitude and longitudinal aircraft control. An additional 30 minutes shall be allotted for ground work and checklist practice.

Requirements

1. Discuss:
  - a. Electrical system.
  - b. VTOL Flying Qualities.
  - c. HOT REFUELING checklist.
2. Introduce:
  - a. Pilot Flying (PF) duties and callouts.
  - b. Ground Taxi.
    - (1) Power steering on and off.
    - (2) Rearward Taxi.
  - c. Vertical Takeoff. (d) Normal Hover and Hover Turns.
  - d. Hover Nacelle Drills.
  - e. Air Taxi Nacelle Drills.
  - f. Square Pattern.
  - g. Vertical landing. (i) Transition from Hover.
  - h. CONV pattern.

- i. Normal Approach to a Hover Landing.
  - j. Normal Approach to a No-Hover Landing.
3. Practice:
- a. Checklists
    - (1) COCKPIT PRE-ENTRY.
    - (2) COCKPIT PRE-START.
    - (3) BATTERY.
    - (4) ALL START.
    - (5) ENGINE START.
    - (6) POST ENGINE START.
    - (7) AFTER LANDING.
    - (8) SHUTDOWN.
4. Review:
- a. Load Comp/Weight and Balance.
  - b. COCKPIT PRE-START.
  - c. ENGINE START.
5. Expose:
- a. Crew chief actions and callouts.
  - b. APLN flight.
6. Emergencies:
- a. Electrical system failures.
  - b. Ground emergencies.

Performance Standards

- 1. Understands all checklist items, knows where the required cockpit switches are, able to access required CMS functions, and demonstrates proper crew coordination during the startup and shutdown with some coaching.
- 2. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
- 3. Be able to state indications, execute/recite memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.

Instructor. FRSI.

Prerequisite. SFAM-1042 flown within the past 5 days, LAB-1020.

FAM-1044	1.5	*	B,T,R,MR,AF	A	1	MV-22
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Goal. To develop the landing phase of PF skills. Practice low work and CONV pattern. Introduce MGW takeoff / landing, steep approach, transitions and conversions. Introduce OLF operations and Course Rules.

Requirements

1. Discuss:
  - a. Landing Gear System.
  - b. APLN/CONV Flying Qualities.
  - c. APLN/CONV course rules.
  - d. Radar Altimeter Low Setting.
2. Introduce:
  - a. Pilot Not Flying (PNF) duties and callouts.
  - b. MGW transition from hover (CONV only).
  - c. MGW Landing.
  - d. Steep Approach to a No-Hover.
  - e. Nose Low Steep Approach.
  - f. Level Speed Change (CONV Mode).
  - g. Course Rules.
  - h. Transition to APLN.
    - (1) Transition straight and level.
    - (2) Transition constant rate climb.
    - (3) Transition constant rate turns.
  - i. Conversion to CONV.
    - (1) Conversion straight and level.
    - (2) Conversion constant rate descent.
    - (3) Conversion constant rate turns.

3. Practice:
  - a. Checklists.
  - b. Vertical Takeoff.
  - c. Normal Hover and Hover Turns.
  - d. Hover Nacelle drills.
  - e. Air Taxi Nacelle drills.
  - f. Vertical Landing.
  - g. CONV pattern.
  - h. Normal Approach to a Hover Landing.
  - i. Normal Approach to a No-Hover Landing.
4. Emergencies:
  - a. Landing gear failures.
    - (1) Landing gear fails to extend.
    - (2) Landing with hung gear.

Performance Standards

1. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
2. Properly recognize normal approach glideslope.
3. Be able to state indications, execute/recite memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.

Instructor. FRSI

Prerequisite. FAM-1043

FAM-1045	1.5	*	B, T, R, AF	A	1	MV-22
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Goal. Develop the initial building blocks required for a tiltrotor to go from the enroute phase to landing. Introduce APLN pattern and have PUI practice PNF duties and callouts and Flight Director (FD) inputs.

### Requirements

1. Discuss:
  - a. Vehicle Management System (VMS).
    - (1) Hydraulic system.
    - (2) FCS.
    - (3) AFCS / PFCS.
2. Introduce:
  - a. APLN pattern.
  - b. Level speed change (APLN mode).
  - c. PNF use of FD cues for CRM.
  - d. Use of the Hover Page.
3. Practice:
  - a. CONV pattern.
  - b. Normal Approach to a Hover Landing.
  - c. Normal Approach to a No-Hover Landing.
  - d. Steep Approach to a Hover Landing.
  - e. Steep Approach to a No-Hover Landing.
  - f. Transition to APLN.
  - g. Conversion to CONV.
  - h. PF and PNF duties and callouts.
4. Emergencies:
  - a. VMS Failures.
  - b. Hydraulic System failures.

### Performance Standards

1. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
2. Properly recognize steep approach glideslope.
3. Be able to state indications, execute/recite memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.

Instructor. FRSI.

Prerequisite. FAM-1044.

FAM-1046	1.5	*	B,T,AF	A	1	MV-22
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Goal. To develop the skills and considerations required for heavy or high altitude tiltrotor operations from the enroute phase to landing. Introduce short takeoff (STO) and run on landing (ROL). Interim power should be selected ON where appropriate and all maneuvers flown with simulated minimal power margin.

Requirements

1. Discuss:
  - a. Drive system.
  - b. FFR indicator.
  - c. SLL.
  - d. VSLED.
2. Introduce:
  - a. STOs.
  - b. Run-on Landing.
3. Practice:
  - a. APLN pattern.
  - b. MGW Transition from Hover.
  - c. MGW Landing.
  - d. Normal approach.
  - e. Steep approach.
  - f. No-Hover landing.
  - g. PF and PNF duties and callouts.
4. Emergencies:
  - a. Drive system malfunction.
  - b. Gearbox Failure (Warning).
  - c. ICDS Failure (Warning).
  - d. Feathering/Flapping High Hot.



e. Rotor Load High.

Performance Standards

1. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
2. Be able to state indications, execute/recite memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.

Instructor. FRSI.

Prerequisite. FAM-1045.

FAM-1047	1.5	*	B, T, R, MR, AF	A	1	MV-22
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Goal. Develop understanding of APLN energy management. Review APLN pattern. Introduce slow flight, APLN maneuvers, high AOB turns and stalls. Emphasize PNF duties in the landing pattern.

Requirements

1. Discuss:
  - a. Powerplant systems.
    - (1) Engines.
    - (2) Engine control (FADEC, PDS).
    - (3) APU.
  - b. Single Engine Flight.
  - c. APLN Slow flight characteristics.
  - d. AOB/load factor vs. stall speed.
2. Introduce:
  - a. Slow flight (APLN Mode).
  - b. High AOB (APLN Mode).
  - c. Practice power on/off stalls.
  - d. Overhead Break Entry.
  - e. Touch and Go.
3. Practice:
  - a. STOs.
  - b. APLN pattern.

- c. Run-on Landing.
  - d. No-Hover Landing.
  - e. MGW Transition from Hover.
  - f. MGW Landing.
4. Emergencies
- a. Single engine failure in hover (HIGE, HOGE).
  - b. Single engine failure in-flight.
  - c. Single engine wave-off.

Performance Standards

- 1. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
- 2. Be able to state indications, execute/recite memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.

Instructor. FRSI.

Prerequisite. FAM-1046.

FAM-1048	1.5	*	B,T,AF	A	1	MV-22
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Goal. To prepare for FAM stage progress check and introduce the ELP.

Requirements

- 1. Discuss:
  - a. Fuel system.
  - b. Cruise performance (range/endurance).
- 2. Introduce:
  - a. ELP.
- 3. Practice:
  - a. Slow Flight (APLN Mode).
  - b. High AOB (APLN Mode).
  - c. Practice power on/off stalls.
  - d. Touch and Go.

4. Review:

- a. Hover Nacelle drills.
- b. Air Taxi Nacelle drills.
- c. CONV pattern.
- d. APLN pattern.
- e. STOs.
- f. Normal Approach.
- g. Steep approach.
- h. No-Hover Landing.
- i. Run-on Landing.
- j. Nose low steep approach.
- k. MGW Transition from Hover.
- l. MGW Landing.
- m. PF and PNF duties and callouts.

5. Emergencies:

- a. Dual Engine Failure.
- b. Fuel System Cautions.

Performance Standards

- 1. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
- 2. Be able to state indications, execute/recite memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.

Instructor. FRSI.

Prerequisite. FAM-1047.

FAM-1049	1.5	*	B,T,R,MR,AF	A	1	MV-22
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Goal. FAM Stage Progress check. Demonstrate appropriate level of learning for tiltrotor flying qualities, major systems, aircraft control, normal and emergency procedures.

Requirements

1. Discuss:
  - a. Any major aircraft system.
  - b. Any tiltrotor FQ or performance.
2. Practice:
  - a. ELP.
3. Evaluate:
  - a. Load Comp, Weight and Balance.
  - b. Checklists.
  - c. STOs.
  - d. APLN pattern.
  - e. No-Hover Landing.
  - f. Run-on Landing.
  - g. Steep approach.
  - h. MGW Transition from Hover.
  - i. MGW Landing.
  - j. Slow flight (APLN Mode).
  - k. High AOB (APLN Mode).
  - l. Practice power on/off stalls.
  - m. Overhead Break Entry.
  - n. PF and PNF duties and callouts.
4. Emergencies:
  - a. Any major system EP.

Performance Standards

1. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
2. Be able to state indications, execute/recite memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.

Instructor. FRSI.

Prerequisite. FAM-1048.

ACAD-1011    0.5    \*    B,T,AF,CI    CLS

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FLIR Theory and Introduction Lecture

Goal. The PUI will have an introductory knowledge of the FLIR.

Required Reading. NVD Manual Chapter 2, 4.

Instructor. NSI/NFSI.

Prerequisite. ACAD-1010.

ACAD-1012    0.5    \*    B,T,AF,CI    CLS

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FLIR Systems and Image Optimization Lecture

Goal. The PUI will have an introductory knowledge of FLIR systems and image optimization techniques.

Required Reading. NVD Manual Chapter 4.

Instructor. NSI/NSFI.

Prerequisite. ACAD-1011.

ACAD-1013    0.5    \*    B,T,AF,CI    CLS

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FLIR Operational Considerations Lecture

Goal. The PUI will have an introductory knowledge of FLIR operational considerations.

Required Reading. NVD Manual Chapter 5.

Instructor. NSI/NSFI.

Prerequisite. ACAD-1012.

ACAD-1014    1.0    \*    B,T,AF,CI    CLS

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MV-22B FLIR Lecture

Goal. The PUI will have an introductory knowledge of the MV-22B FLIR.

Required Reading. MV-22B NATOPS Chapter 16.8.

Instructor. NSI/NSFI.

Prerequisite. ACAD-1013.

SFAM-1050 2.0 \* B,T,R,MR,AF,CI N\* S 1 FFS/FTD

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Goal. Introduce FLIR and execute night unaided FAM maneuvers.

Requirements

1. Discuss:
  - a. Lighting systems.
    - (1) Interior lighting.
    - (2) Exterior lighting.
    - (3) Searchlight.
  - b. Night adaptation/visual effects.
  - c. Night scanning techniques.
  - d. Fixation tendencies.
  - e. Radar altimeter low setting.
2. Introduce:
  - a. Night ground operations.
  - b. Use of FLIR.
    - (1) FLIR calibration.
    - (2) Track Handle and TCL.
    - (3) FPV Mode.
    - (4) LACE.
    - (5) FWD Mode.
    - (6) MAN Mode.
    - (7) PT Mode.
    - (8) SCAN Mode.
    - (9) Gain/Level settings.
  - c. Use of Hover page.
3. Practice:
  - a. Vertical takeoff.
  - b. Hover Nacelle drills.

- c. Air Taxi Nacelle drills.
- d. STOs.
- e. CONV pattern.
- f. APLN pattern.
- g. Hover Landing.
- h. No-Hover Landing.
- i. Run-on Landing.
- j. Steep Approach.
- k. MGW Transition from Hover.
- l) MGW Landing.
- m. PF and PNF duties and callouts.

Performance Standards

1. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
2. Be able to state indications, execute/recite memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.
3. Basic understanding of FLIR use and manipulation.

Instructor. FRSI.

Prerequisite. SFAM-1042 and ACAD 1011-1013.

FAM-1051	1.0	*	B,T,R,AF	N*	A	1	MV-22
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Goal. Introduce FLIR and execute night unaided FAM maneuvers.

Requirements

1. Discuss:
  - a. Lighting systems.
    - (1) Interior lighting.
    - (2) Exterior lighting.
    - (3) Searchlight.
  - b. Night adaptation/circadian rhythms.
  - c. Civilian airfield lighting/Pilot controlled lighting.

- d. Radar altimeter low setting.
  - e. FLIR underlay pros/cons.
- 2. Introduce:
  - a. Night ground operations.
- 3. Practice:
  - a. Vertical Takeoff.
  - b. Hover Nacelle drills.
  - c. Air Taxi Nacelle drills.
  - d. Use of Hover page.
  - e. STOs.
  - f. CONV pattern.
  - g. APLN pattern.
  - h. Hover Landing.
  - i. No-Hover Landing.
  - j. Run-on Landing.
  - k. Steep approach.
  - l. MGW Transition from Hover.
  - m. MGW Landing.
  - l. Use of FLIR.
  - m. PF and PNF duties and callouts.

Performance Standards

- 1. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
- 2. Be able to state indications, execute/recite memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.
- 3. Basic understanding of FLIR use and manipulation.

Instructor. FRSI.

Prerequisite. SFAM-1050, FAM-1046.



### 2.10.3 NAVIGATION (NAV)

2.10.3.1 Purpose. To develop the ability to conduct day VFR navigation utilizing both chart and dead reckoning, and the navigation / mission management systems. FOE: CMS, JMPS, command levels of automation, and NATOPS Chapter 16 & 17.

2.10.3.2 General. The PUI will conduct route planning based on information provided by the IP. JMPS will be utilized to conduct route planning and to produce required printed documents and digital files. Charts and JMPS will be used to perform a thorough map study. Charts, the aircraft navigation system, and the aircraft mission management system will be used to follow the planned route and to arrive at the planned destination. During this phase of training the PUI will perform all cockpit duties as the PNF.

Admin Notes. Ground training will include a Navigation Stage Brief; associated lessons on the Advanced Distributive Learning (ADL) system; and JMPS training.

#### Crew Requirement

CNAV: Maximum of 2 PUI to 1 IP.

SNAV: IP/PUI.

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ACAD-1110	1.0	*	B,T,AF,CI	CLS
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Goal. To introduce the PUI to the training syllabus for the Navigation phase. The following will be discussed: the purpose of low altitude navigation; the documents and imagery available; the route planning considerations; the preflight planning requirements; the conduct of the training flights; and performance standards.

#### Requirements

##### 1. Discuss:

###### a. Introduction.

- (1) Purpose of Low Level Flight.
- (2) Syllabus description.
- (3) ADL lessons to be completed.
- (4) Performance standards.

###### b. Charts/Imagery.

- (1) Aeronautical Charts.
- (2) Satellite Imagery.
- (3) Use of various scales.

###### c. Route Planning.

- (1) Effects of weather and/or wind.
  - (2) Waypoint/IP/DP/Target selection.
  - (3) Expected visibility of selected waypoints at planned flight altitude.
  - (4) Mission planning using JMPS and the mission management system to meet a time on target.
  - (5) Final approach planning.
  - (6) Planning for INS Update.
- d. Pre-mission Planning/Brief.
- (1) JMPS.
  - (2) Produce Smart Pack. Smart Pack contents.
  - (3) Chart study: Linear/Limiting Features, Point Features, Timing Features, Catching Features, Funneling Features.
  - (4) Final Approach Planning/Preparation. LZ Sketch.
- e. Conduct of flight.
- (1) PF duties.
  - (2) PNF duties and communication during LLNAV flight.
  - (3) Use of the FD Cues/Commands.

Instructor. FRSI.

Prerequisite. SFAM-1042.

ADL-1101	2.0	*	B,T,R,MR,AF,CI	CBT
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DDMS and INAV functions

Goal. The PUI has completed all modules with a basic understanding the DDMS and INAV functions.

Requirements. The following modules are required.

- (1) Introduction to the DDMS.
- (2) INAV and CMS Navigation Control System.

Performance Standards. Satisfactory completion of all modules.

Prerequisite. SFAM-1042.

LAB-1120      6.0      \*      B,T,R,MR,AF,CI

LAB

Goal. To introduce the PUI to the mission planning station and the JMPS program. Following this instruction, the PUI should be able to use the mission planning computer and the JMPS program to plan a route, create a mission binder, load the mission to a DTM, and print required charts and documents.

Coordination. The digital mission files, and printed documents created during this training session will be used during CNAV-1130.Requirements

1. Discuss:
  - a. Operate the Mission Planning Station and the JMPS Program.
  - b. Create, Open, Save, Close Route files.
  - c. Edit climb cruise and descent performance profiles.
  - d. Create and edit a straight in tactical approach.
  - e. Create and edit approach legs.
  - f. Modify route properties.
  - g. Modify doghouse overlays.
  - h. Add, edit, delete, aircraft load.
  - i. Calculate and print Load Comp Form.
  - j. Calculate aircraft CG and discuss Form DD-365-F.
  - k. Create, open, save, and close Mission Binders.
  - l. Load Waypoint Set.
  - m. Load COMM Plan.
  - n. Write Mission to DTM.
  - o. Print required charts.
  - p. Print required kneeboard cards.

Instructor. FRSI.

Prerequisite. ACAD-1110, ADL-1101.

External Syllabus Support. JMPS with color printer.

LAB-1121      2.0      \*      B,T,R,MR,AF,CI      CMS

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Goal. To introduce the PUI to the cockpit operation of; the navigation system, the Mission Management system, and the Dual Digital Map system.

Requirements

1. Discuss:

a. Current aircraft navigation system flight restrictions and limitations.

2. Introduce:

a. Waypoint (WYPT) Management.

(1) Add, edit, display, and delete waypoints using CDU WYPT.

(2) Add waypoint using OFLY Store function.

b. Flight Plan (FPLN) Management.

(1) Build, edit, delete, flight plans using CDU FPLN.

(2) Utilize INAV Functions (FPLN, DIRECT, OFF).

(3) Activate and display the flight plan.

(4) Activate and display an Idle Leg.

(5) Edit and utilize the Cargo Summary (ACFT WHT/CG).

(6) Edit and utilize the Bingo FPLN.

(7) Display and utilize Fuel Summary.

(8) Display and utilize FPLN Summary to edit flight plan legs.

(a) Adjust the Leg Type and method of Sequence.

(b) Utilize TSO. Adjust CAS. Adjust TOT.

(c) Edit leg Wind data.

(d) Adjust leg WHT/BAL data.

c. Calculate Aircraft CG (WT/BAL NO FLT PLN).

d. Dual Digital Map Operation.

(1) Display scales of Charts and Satellite Imagery (CIB).

(2) Display DTED data and utilize the HAT and LOS functions.

(3) Add, edit, display, and delete waypoints.

(4) Utilize the declutter function.

(5) Build, activate, display, edit, and delete flight plans.

e. Conduct Aircraft INIT.

f. Upload Mission Data from DTM.

Instructor. FRSI.

Prerequisite. ACAD-1110, ADL-1101.

CNAV-1130	2.0	*	B,T,R,MR,AF,CI	S	1	FFS/FTD
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Goal. To review and practice the operation of; the mission planning station; the aircraft navigation system; and the aircraft mission management system; in preparation for a navigation flight.

Coordination. The digital mission files, and printed documents, created during LAB-1120 will be used during this training session.

Requirements

1. Preflight Preparation:

a. Operate the mission planning station and the JMPS program.

(1) Calculate and print Load Comp Form.

(2) Calculate aircraft CG.

(3) Write the mission to DTM.

(4) Print charts.

(5) Print kneeboard cards.

2. Discuss:

a. GPS.

b. INS.

(1) INS Alignment.

(2) INS Updates.

c. DIGMAP.

3. Introduce:

a. Flight Director Operation.

(1) Utilize Flight Director Panel to adjust and activate the Flight Director Cues and Commands.

(2) Utilize the Commands in both the APLN and CONV modes of flight.

4. Practice:

a. Aircraft Navigation/CMS/mission management system.

(1) Conduct INS land alignment.

(2) Conduct Aircraft INIT.

(3) Upload mission data from DTM.

(4) Calculate Hover/Cruise Performance using the CMS (HIGE, HOGE, MAX RNG/ENDU).

b. Waypoint (WYPT) Management.

(1) Add, edit, display, and delete waypoints using CDU WYPT.

(2) Add waypoint using Overfly Store function.

c. Flight Plan (FPLN) Management.

(1) Build, edit, delete, flight plans using CDU FPLN.

(2) Utilize INAV Functions (FPLN, DIRECT, OFF).

(3) Activate and display the flight plan.

(4) Activate and display an Idle Leg.

(5) Edit and utilize the Cargo Summary (ACFT WHT/CG).

(6) Edit and utilize the Bingo FPLN.

(7) Display and utilize Fuel Summary.

(8) Display and utilize FPLN Summary to edit flight plan legs.

(a) Adjust the Leg Type and method of Sequence.

(b) Utilize TSO. Adjust CAS. Adjust TOT.

(c) Edit leg Wind data.

(d) Adjust leg WHT/BAL data.

d. Dual Digital Map Operation.

(1) Display scales of Charts and Satellite Imagery (CIB).

(2) Display DTED data and utilize the HAT and LOS functions.

(3) Add, edit, display, and delete waypoints.

(4) Utilize the declutter function.

(5) Build, activate, display, edit, and delete flight plans.

Performance Standards

1. Be able to execute all functions with coaching.

2. Basic understanding of flight plan, waypoint and DDMS management.

Instructor. FRSI.

Prerequisites. LAB-1120, LAB-1121.

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SNAV-1131	2.0	*	B,T,AF,CI	S	1	FFS/FTD
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Goal. Introduce day VFR navigation (no lower than 500 feet AGL) utilizing printed charts and dead reckoning to arrive at an initial objective; and then utilizing the aircraft navigation system, the flight director system, and the aircraft mission management system, to arrive at a second objective.

Coordination. The IP shall issue to the student the position of a departure point, an initial objective, and a second objective. The distance between points should be less than 150 NM (40 minutes enroute). The IP shall provide forecast weather and winds for preflight planning.

The PUI shall be prepared to perform all cockpit tasks as the PNF. The PUI shall utilize the mission planning system to select waypoints and plan the routes to both objectives. Straight in tactical approaches will be utilized at both objectives. The PUI shall print the required charts/documents, and load the planned mission to a DTM. The PUI shall be prepared to navigate to the first objective using chart/dead reckoning only. The PUI shall be prepared to upload the mission to the aircraft and utilize the aircraft navigation system and mission management system to navigate to the second objective.

This event shall be conducted with the GPS failed to require both manual INS alignment and enroute INS updates. The student shall be prepared to conduct INS updates using both OFLY and TACAN methods.

Requirements

1. Preflight preparation:

a. Operate the mission planning station and the JMPS program.

b. Plan the routes as assigned.

(1) Create and edit straight in tactical approaches to both objectives.

(2) Add appropriate waypoints as required to conduct INS updates.

- c. Calculate and print a Load Comp Form.
  - d. Calculate aircraft CG.
  - e. Add an appropriate waypoint set to the mission binder. Add an appropriate Comm Plan to the mission binder. Write the mission to the DTM.
  - f. Print required Charts.
  - g. Print kneeboard cards.
  - h. Conduct chart study.
2. Discuss:
- a. Route Planning.
  - b. Pre-mission Planning/Brief.
  - c. Conduct of flight.
3. Introduce:
- a. Utilize paper chart and dead reckoning.
  - b. Utilize the aircraft navigation/CMS.
  - c. Utilize CRM during VFR navigation.
  - d. INS update (OFLY/TACAN).
4. Practice:
- a. Preflight NAV/CMS/MMS.
    - (1) Conduct INS land alignment.
    - (2) Conduct Aircraft INIT.
    - (3) Upload mission data from DTM.
    - (4) Calculate Hover/Cruise Performance using the CMS (HIGE, HOGE, MAX RNG/ENDU).
    - (5) Calculate aircraft CG (WHT/BAL NO FLT PLN).
  - b. Flight Plan (FPLN) Management.
    - (1) Utilize INAV Functions (FPLN, DIRECT, OFF).
    - (2) Activate and display the flight plan.
    - (3) Edit and utilize the Bingo FPLN.
    - (4) Display and utilize Fuel Summary.



- (5) Display and utilize FPLN Summary to edit flight plan legs.
  - (a) Adjust the Leg Type and method of Sequence.
  - (b) Utilize TSO. Adjust CAS. Adjust TOT.
  - (c) Edit leg Wind data.
  - (d) Adjust leg WHT/BAL data.
- c. Dual Digital Map Operation.
  - (1) Display scales of Charts and Satellite Imagery (CIB).
  - (2) Display DTED data and utilize the HAT and LOS functions.
  - (3) Add, edit, display, and delete waypoints.
  - (4) Utilize the declutter function.
  - (5) Build, activate, display, edit, and delete flight plans.
- d. Flight Director Operation.
  - (1) Utilize the Flight Director Panel to adjust and activate the Flight Director Cues and Commands.
  - (2) Utilize the Commands in both the APLN and CONV modes of flight.

#### Performance Standards

- 1. Accurately conduct mission preflight planning utilizing the mission planning station and JMPS. Produce all paper and digital files required.
- 2. Utilize accurate MSN Data Load, WYPT, FPLN, INAV, and MSN key functionality.
- 3. Execute a navigation route maintaining orientation +/- 1 nautical mile enroute.
- 4. Demonstrate the knowledge of time/distance checks, and fuel management.
- 5. Properly activate and operate the DDMS during VFR navigation.
- 6. Be able to accurately conduct an INS alignment and update.
- 7. Utilize CRM principles.

Instructor. FRSI.

Prerequisite. CNAV-1130.

SNAV-1132    2.0    \*    B,T,R,AF,CI    S    1    FFS/FTD

Goal. Practice day VFR navigation (no lower than 500 feet AGL) utilizing the aircraft navigation system, the flight director system, and the aircraft mission management system, to arrive at the objective(s). Introduce the use of Flight Director commands, coupled modes, and AUTO NAC during enroute and APPR flight.

Coordination. The IP shall issue to the student a mission that requires the transport of a specific number/weight of troops/cargo from a departure point to an objective. The distance between the departure point and the first objective should be less than 200 NM (55 minutes enroute). A tactical approach will be planned and conducted at the initial objective and a specific time for landing will be planned and flown. The aircraft will proceed to a second objective to await the extraction of the troops. A coupled approach leg will be planned at the second objective. The IP shall provide forecast weather and winds for preflight planning.

The PUI shall be prepared to perform all cockpit tasks as the PNF. The PUI shall utilize the mission planning system to select waypoints and plan the routes to both objectives. A straight in tactical approach will be planned and flown at the initial objective with the landing at the specified time. A coupled approach will be planned and utilized at the second objective. The PUI shall compile the required paper and digital files, and load the planned mission to a DTM. The PUI shall be prepared to upload the mission to the aircraft and to utilize the aircraft navigation system and mission management system to navigate to the objective and arrive at the assigned time.

#### Requirements

1. Preflight preparation:

- a. Operate the mission planning station and the JMPS program.
- b. Plan the routes as assigned.
  - (1) Create and edit a straight in tactical approach the first objective.
  - (2) Create and edit an approach leg to the second objective.
  - (3) Add appropriate waypoints as required to conduct INS updates.
- c. Add, edit, and delete the Aircraft Load as assigned.
- d. Calculate and print a Load Comp Form.
- e. Calculate aircraft CG.
- f. Add an appropriate waypoint set to the mission binder. Add an appropriate Comm Plan to the mission binder. Write the mission to the DTM.

- g. Print required charts.
  - h. Print kneeboard cards.
  - i. Conduct chart study.
2. Discuss. Conduct route preflight brief (conduct of flight portion of PCL).
3. Introduce:
- a. Flight director commands and coupled modes (Core modes, INAV, APPR).
  - b. Activate and display a coupled approach (APPR) leg.
4. Practice:
- a. Utilize the aircraft navigation/CMS to execute assigned mission.
  - b. Preflight NAV/CMS/MMS.
  - c. Flight Plan (FPLN) Management.
  - d. Dual Digital Map Operation.
  - e. Utilize CRM during VFR navigation.

Performance Standards

- 1. Accurately conduct mission preflight planning utilizing the mission planning station and JMPS. Produce all paper and digital files required.
- 2. Accurately operate MSN Data Load, WYPT, FPLN, INAV, and MSN key functionality.
- 3. Execute a navigation route maintaining orientation +/- 1 nautical mile enroute; +/- 500 meters in the objective area; and landing in the objective within +/- 1 minute.
- 4. Properly activate and operate the DDMS and the Flight Director during VFR navigation.
- 5. Utilize CRM principles.

Instructor. FRSI.

Prerequisite. SNAV-1131.

2.10.4 INSTRUMENTS (INST)

2.10.4.1 Purpose. To develop proficiency in instrument flight using all installed navigational equipment. FOE: JMPS, IMC planning and flying, CMS, Aircrew coordination, and coupled levels of automation.

#### 2.10.4.2 General

Instrument flights should be conducted under both day and night conditions. All instrument flights, day or night, should be conducted under instrument conditions for the PUI, using an instrument hood when necessary. One flight will be conducted at night (simulator or aircraft).

Refresher and Modified Refresher pilots will complete their annual instrument check at the end of this stage (RQD-6032). Therefore, they are required to have their semi-annual minimums and instrument ground school complete prior to RQD-6032.

Basic pilots whose instrument check will expire within 3 months of leaving the FRS will also meet the requirements listed in Para: 5.b.2.

Pilots whose instrument rating will remain current 3 months beyond designation as a T2P may waive the prerequisite requirement for the SINST-1236, thus enabling all instrument simulator events to be flown prior to the instrument aircraft events. Additionally, the RQD-6032 instrument evaluation flight is waived.

MPS flight planning will be used to the greatest extent possible.

Instrument ground school may be completed at any time but must be completed no earlier than 60 days prior to the RQD-6032.

The PUI shall be SFAM 1050 complete before conducting an instrument event at night in the aircraft.

#### Crew Requirement:

SINST-1233/1238, RQD-6032: Maximum of 2 PUI to 1 IP.

All others: IP/PUI (CC for aircraft events).

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ACAD-1210	1.0	*	B,T,AF,CI	CLS
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Goal. To introduce the PUI to the training syllabus for the Instrument phase.

#### Requirements

##### 1. Discuss:

##### a. Introduction.

- (1) Purpose of the syllabus.
- (2) Syllabus events.
- (3) Applicable publications.

- (4) PUI performance expectations.
- (5) Annual Instrument Minimums requirements.
- b. Aircraft navigation equipment and systems.
  - (1) Navigation equipment. Current status and flight restrictions.
    - (a) VOR.
    - (b) TACAN.
    - (c) ENAV.
    - (d) INAV - GPS/INS.
  - (2) Minimum aircraft equipment requirements.
  - (3) Fuel considerations.
    - (a) Fuel burn rates.
    - (b) NATOPS limitations.
    - (c) Squadron SOP.
- c. Preflight planning.
  - (1) PUI preflight planning.
  - (2) Common flight planning airspeeds.
  - (3) Minimum fuel requirements.
  - (4) Instrument Navigation Packet.
  - (5) Electronic filing of a DD-175 and receipt of a digital weather brief.
- d. Instrument flight in a "glass cockpit."
  - (1) Glass/Digital instrument scan.
    - (a) Instrument scanning techniques.
    - (b) Fixation tendencies.
  - (2) Flight Director scan.
- e. Aircrew coordination.
  - (1) PNF/PF Duties.
  - (2) Takeoff/Departure Brief.

(3) Instrument Approach Brief.

(4) Approach Checklist.

Instructor. FRSI.

Prerequisites. SFAM-1042.

ACAD-6013    6.0    365    B,T,R,MR,CI,CV    CLS/CBT

Instrument Ground School

Goal. The Instrument Ground School shall be a Commander Naval Air Forces (CNAF) approved syllabus and at a minimum cover the following topics:

1. Spatial disorientation.
2. CNO GPS Policy Statement and GPS fundamentals to include RNAV (GPS) and Required Navigation Performance (RNP).
3. Reduced Vertical Separation Minimums (RVSM) procedures.
4. Requirements and denial reports.
5. Use of non-DoD instrument approach/departure reports.
6. Use of non-DoD GPS NOTAMS systems (Jeppeson GPS NOTAMS and Databases).

Performance Standards. Successful completion of Instrument Ground School.

Prerequisites. ACAD-1210.

External Syllabus Support. MATSS/MCALMS.

ACAD-6014    2.0    365    B,T,R,MR,CI,CV    E    G

Open Book NATOPS Instrument Examination

Goal. The Open Book Instrument Examination shall consist of, but is not be limited to knowledge of the NATOPS, NATOPS Instrument Flight Manual, FAR/AIM and/or aeronautical publications which are applicable, normal/emergency instrument ground and flight procedures, weather, aircraft limitations, and performance, and any subject listed for in OPNST 3710.7 Series. The examination shall include questions on the following subjects.

1. Pertinent Navy or Marine Corps regulations, orders, and instructions.
2. Pertinent parts of the Federal Aviation Regulations (FAR), other regulations, and/or aeronautical publications which are applicable.

3. Interpretation of weather information normally used in flight planning.

Performance Standard. Achieve a minimum grade of qualified on the Open Book examination.

Prerequisite. ACAD-6013.

External Syllabus Support. MCALMS.

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LAB-1220	5.0	*	B,T,R,MR,AF,CI	LAB
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Goal. To continue PUI introduction to the mission planning station and the JMPS program. Following this instruction the PUI will be able to use the mission planning computer, and the JMPS program to; create a Waypoint Set; print a Waypoint Report; create a Communications Plan; and print an instrument kneeboard card.

Requirements

1. Introduce:
  - a. Create, open, edit, save, and close V-22 Waypoint set files.
  - b. Create waypoints using Graphical Tools, DAFIF Data, and Overlays.
  - c. Print a Waypoint Report.
  - d. Print Instrument Kneeboard Cards.
  - e. Create, open, edit, save, and close V-22 Communication Plan files.
  - f. Transport mission related digital files.
2. Practice
  - a. Operate the Mission Planning Station and the JMPS Program.
  - b. Create, Open, Edit, Save, Close Route files.
  - c. Edit climb cruise and descent performance profiles.
  - d. Print DD-175/1801 form.
  - e. Calculate and print Load Comp Form.
  - f. Calculate aircraft CG and print Form DD-365-F.
  - g. Load Waypoint Set.
  - h. Load COMM Plan.
  - i. Create, open, save, and close Mission Binders.

j. Write Mission to DTM.

Performance Standards

1. Accurately operate the JMPS planning station and software.
2. Successfully print required documents.
3. Successfully write the mission binder to the DTM and upload mission files to the aircraft.

Instructor. FRSI.

Prerequisite. ACAD-1210, SNAV-1132.

External Syllabus Support. JMPS.

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SINST-1230	2.0	*	B,T,R,AF,CI	(N*)	S	1	FFS/FTD
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Goal. Introduce Basic Instrument flight in both CONV and APLN. Introduce black cockpit operations, and unusual attitude recovery. Develop CRM skills by the proper use of Flight Director Cues.

Coordination. The flight will be conducted in an area local to the point of departure. IP will issue a departure clearance to the planned training area. During this flight the PUI will act as the PF.

Preflight Planning. The PUI shall prepare a DTM with the standard Squadron IFR Waypoint Set and Squadron Comm Plan. PUI shall print a Load Comp Form. No route planning or DD-175 is required for this flight.

Requirements

1. Discuss:
  - a. Aircrew coordination.
  - b. Cockpit set up for IMC/IFR flight.
  - c. Instrument Takeoff.
    - (1) Hover ITO.
    - (2) STO ITO.
  - d. CLIMB Checklist.
  - e. Basic Instrument Maneuvers.
  - f. Instrument Approach Brief.
  - g. APPROACH Checklist.
  - h. Unusual Attitudes.



- (1) Prevention of and overcoming Spatial Disorientation.
  - (2) Recovery procedures from an unusual attitude.
- i. Standby Flight Instruments/Panel.
- j. Approach Surveillance Radar (ASR).
- 2. Introduce:
  - a. Cockpit setup and Ground procedures.
  - b. Instrument Takeoff.
    - (1) Hover ITO.
    - (2) STO ITO.
  - c. Level speed change (APLN).
  - d. Transition in a climb.
    - (1) Cues only.
    - (2) Alt Command.
  - e. Conversion in a descent.
    - (1) Cues only.
    - (2) Alt Command.
  - f. Turn pattern.
  - g. Timed turns/compass turns.
  - h. Steep turns.
  - i. Oscar pattern.
    - (1) Cues only.
    - (2) Alt Command.
  - j. Vertical S-1.
  - k. Unusual Attitudes.
  - l. Black Cockpit operations.
    - (1) ASR.
    - (2) Timed turns/compass turns.
  - m. Voice Procedures.

3. Emergencies:

- a. Dual Mission Computer failures.
- b. Dual DEU failures.

Performance Standards

1. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
2. Maintain positive control of the aircraft, and situational awareness, while performing the Basic Instrument (BI) maneuvers as described in the MV-22 Maneuver Description Guide (MDG).
3. Accurately use the Flight Director Cues for heading, airspeed and altitude control.
4. Accurately identify and recover from unusual attitudes IAW MV-22 Maneuver Description Guide (MDG) without aggravating the unusual attitude.
5. Recognize indications, execute memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.
6. Maintain positive control of the aircraft using only the Standby Instruments/Flight Display and land the aircraft safely.

Instructor. FRSI.

Prerequisites. SNAV-1132, LAB-1220.

SINST-1231	2.0	*	B,T,R,MR,AF,CI	(N*)	S	1	FFS/FTD
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Goal. Introduce Non Precision Approaches, both low and high altitude. Develop CRM skills by the proper use of Flight Director Cues. During this flight the PUI will perform duties as both the PF and the PNF. One instrument approach shall be completed while the PUI acts as the PNF.

Coordination. IP will designate both departure airfield and the destination airfields where training is to be conducted. IP will issue a clearance, including a standard instrument departure, to the planned destination training area. Cruise altitude shall be high enough to require both climb and descent checklists, and to execute a high altitude approach.

Preflight Planning. The PUI shall prepare a DTM with a flight plan, waypoint set, and comm plan based off the IP designated departure and destination airfields. He shall print a Load Comp Form.

Requirements

1. Discuss:
  - a. Aircraft navigation systems, operation, and limitations.

- (1) TACAN.
    - (2) ENAV.
  - b. Enroute and descent procedures.
    - (1) ENAV Functions.
    - (2) Airway navigation procedures.
    - (3) DESCENT Checklist.
  - c. High Altitude instrument approach.
  - d. Aircraft approach categories.
  - e. Circling approach.
  - f. CRM during IFR navigation.
2. Introduce:
- a. Pre-takeoff Preparation (Departure Brief and procedures).
  - b. Departure (Standard Instrument Departure).
  - c. CLIMB Checklist.
  - d. Enroute procedures.
  - e. TACAN Point to point.
    - (1) TACAN needle/CDI only.
    - (2) ENAV FD pt to pt.
  - f. Descent procedures.
    - (1) Instrument descent.
    - (2) DESCENT Checklist.
  - g. Holding.
  - h. Instrument APPROACH Brief.
  - i. APPROACH Checklist.
  - j. Non precision approaches.
    - (1) High Altitude TACAN approach.
    - (2) TACAN approach.
    - (3) VOR approach.

- (4) LOC or LOC BC approach.
- k. Missed approach.
- l. CRM during IFR navigation.
- m. Aircraft configuration.
- n. Transition to visual landing.
- 3. Practice:
  - a. Voice Procedures.
  - b. STO ITO.
  - c. Transition in a climb.
  - d. Conversion in a descent.

Performance Standards

- 1. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
- 2. Execute Pilot Not Flying duties IAW with the MV-22 Maneuver Description Guide (MDG) in a timely manner with some coaching.
- 3. Accurately use the Flight Director Cues for heading, airspeed and altitude control.
- 4. During airways navigation remain within the lateral limits of the assigned airspace.
- 5. Execute non-precision approaches accurately and safely conducting all checklists in a timely manner.

Instructor. FRSI.

Prerequisite. SINST-1230.

SINST-1232 2.0 \* B,T,R,MR,AF,CI (N\*) S 1 FFS/FTD

Goal. Introduce Precision Approaches. Develop CRM skills by the proper use of Flight Director Cues. During this flight the PUI will perform duties as both the PF and the PNF. One instrument approach shall be completed while the PUI acts as the PNF.

Coordination. IP will designate both departure airfield and the destination airfields where training is to be conducted. IP will issue a clearance to the planned destination training area(s).

Preflight Planning. The PUI shall prepare a DTM with a flight plan, waypoint set, and comm plan based off the IP designated departure and destination airfields. He shall print a Load Comp Form and DD-365-F.

Requirements

1. Discuss:
  - a. Instrument Landing System (ILS).
    - (1) Approach lighting system (ALS).
    - (2) VASI.
  - b. Aircraft navigation systems, operation, and limitations.
    - (1) ILS.
    - (2) ENAV functions, operation, and limitations.
  - c. Aircraft approach categories.
  - d. CRM during IFR navigation.
2. Introduce (minimum PF x3, PNF x1).
  - a. Precision approaches.
    - (1) ILS approach.
    - (2) PAR approach.
  - b. Communication, Navigation, and IFF equipment operation.
3. Practice:
  - a. Pre-takeoff Preparation.
  - b. Hover ITO.
  - c. Departure.
  - d. Voice Procedures.
  - e. CRM during IFR navigation.
  - f. Enroute procedures.
  - g. Descent procedures.
  - h. Instrument APPROACH Brief.
  - i. APPROACH Checklist.
  - j. Transition to visual landing.
  - k. Missed approach.

Performance Standards

1. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
2. Execute Pilot Not Flying duties IAW with the MV-22 Maneuver Description Guide (MDG) in a timely manner with minimal coaching.
3. Accurately use the Flight Director Cues for heading, airspeed and altitude control.
4. During airways navigation remain within the lateral limits of the assigned airspace.

Instructor. FRSI.

Prerequisite. SINST-1231.

SINST-1233	2.0	*	B,T,CI	(N*)	S	1	FFS/FTD
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Goal. Conduct IFR Flight operations. Introduce operation of Flight Director Commands and the Mission Management systems. A complete flight shall be conducted including; flight planning, filing, clearance, departure, enroute/cruise, descent, and instrument approaches.

Coordination. IP shall designate a departure and destination location where training is to be conducted. The IP shall issue to the PUI appropriate information for preflight planning; including a DD-175-1, appropriate NOTAMS, and an aircraft load.

Preflight Planning. PUI will conduct all appropriate preflight planning to include: Load Comp, Form F, completed DD-175, and loading flight plan, waypoint set, and comm plan, on a DTM.

#### Requirements

1. Discuss:
  - a. JMPS flight planning (Flight plan flies loaded to the DTM).
  - b. Flight Plan/DD-175.
    - (1) Aircraft Designation/TD Code.
    - (2) Route, altitude, CAS vs TAS.
    - (3) V-22 Minimum fuel requirements.
    - (4) Alternate airfield selection.
  - c. Flight Director operation and limitations.
    - (1) Pre-takeoff preparation.
    - (2) During takeoff and departure.
    - (3) During the enroute and descent.

- (4) During the instrument approach.
  - (5) CRM during IFR navigation.
  - d. Standard Terminal Arrivals (STAR).
  - e. Approach criteria for Multi-piloted aircraft.
  - f. Closing of the Flight Plan.
2. Introduce:
- a. Flight planning.
  - b. FD ENAV Commands.
  - c. FD Coupled Core.
  - d. Mission Management System Operation.
    - (1) Weight and balance calculation.
    - (2) Hover/Cruise PERF.
    - (3) Fuel Summary.
    - (4) BINGO Planning.
  - e. Clearance compliance.
  - f. Airways navigation.
3. Practice:
- a. Instrument Takeoff.
  - b. Departure.
  - c. Enroute procedures.
  - d. Communication, Navigation, and IFF equipment operation.
  - e. Descent procedures.
  - f. Non precision Approaches.
  - g. Precision Approaches.
  - h. Transition to visual landing.
  - i. Missed approach.

Performance Standards

1. Accurately conduct preflight planning and complete required documents to conduct an IFR flight.

2. Accurately operate the JMPS planning station and software; successfully print required documents; and successfully write the mission binder to the DTM and upload mission files to the aircraft.
3. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
4. Execute Pilot Not Flying duties IAW with the MV-22 Maneuver Description Guide (MDG) in a timely manner with minimal coaching.
5. Accurate and timely use of the Flight Director Cues, Commands, and Coupled modes for IMC flight.

Instructor. FRSI.

Prerequisite. SINST-1232.

INST-1234	2.0	*	B,T,R,AF	(N*)	A	1	MV-22
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Goal. Practice non-precision approaches. Use Flight Director for Cueing, command bars and coupled core throughout the flight. During this flight the PUI will perform duties as the PF and the PNF. The PUI shall complete one instrument approach as the PNF.

Coordination. The PUI will plan the mission on JMPS creating an IFR flight plan and waypoint set. Use the current web-based system for filing, weather brief and NOTAMS for the planned route of flight.

Requirements

1. Discuss:
  - a. Levels of automation (Cues, Commands, Coupled).
  - b. Flight Operations above FL180.
  - c. Lost communications procedures.
  - d. IFF during emergencies.
  - e. Flight operations in Icing Conditions.
    - (1) Types of icing (structural, rime, clear).
    - (2) Aircraft de-ice and anti-ice systems.
    - (3) Associated WCAs.
    - (4) Icing displays/CMS information.
  - f. Turbulence and Thunderstorms.
  - g. CRM during IFR navigation.
2. Introduce. Flight plan filing.



3. Practice:

- a. Pre-takeoff preparation.
- b. Clearance compliance.
- c. Airways navigation.
- d. Instrument APPROACH brief.
- e. Conversion in a descent.
- f. Holding.
- g. Non-precision approaches (Min x3).
- h. Precision approaches (Min x1).
- i. Missed approach.
- j. Transition in a Climb.

Performance Standards

1. Accurately conduct preflight planning and complete required documents to conduct an IFR flight.
2. Accurately operate the JMPS planning station and software; successfully print required documents; and successfully write the mission binder to the DTM and upload mission files to the aircraft.
3. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
4. Execute Pilot Not Flying duties IAW with the MV-22 Maneuver Description Guide (MDG) in a timely manner with minimal coaching.
5. Accurate and timely use of the Flight Director Cues, Commands, and Coupled modes for IMC flight.

Instructor. FRSI.

Prerequisite. SINST-1232, FAM-1049.

INST-1235	2.0	*	B,T,R,MR,AF	(N*)	A	1	MV-22
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Goal. Practice Precision Approaches. Use Flight Director for Cues, commands and coupled core throughout the flight. During this flight the PUI will perform duties as the PF and the PNF. The PUI shall complete one instrument approach as the PNF.

Coordination. The PUI will plan the mission on JMPS creating an IFR flight plan and waypoint set. Use the current web-based system for filing, weather brief and NOTAMS for the planned route of flight.

In preparation for the INST CHECK, consideration must be given to the number and type of approaches the PUI will require to meet annual instrument minimums.

Requirements

1. Discuss:
  - a. Departure.
  - b. Standard Terminal Arrivals (STAR).
  - c. Type Approaches
    - (1) Visual approach.
    - (2) Contact approach.
  - d. Aircraft category.
  - e. Airspace classifications.
  - f. Terminal RADAR services.
  - g. Holding Procedures.
2. Introduce:
  - a. In flight filing.
  - b. IMC release.
3. Practice:
  - a. Flight plan filing.
  - b. Pre-takeoff Preparation.
  - c. Clearance compliance.
  - d. Airways navigation.
  - e. Instrument APPROACH Brief.
  - f. Conversion in a descent.
  - g. Holding.
  - h. Precision approaches (Minimum of 2).
    - (1) FD Commands.
    - (2) FD Coupled Core.
  - i. Non-precision approaches (Minimum of 1).

j. Missed approach.

Performance Standards

1. Accurately conduct preflight planning and complete required documents to conduct an IFR flight.
2. Accurately operate the JMPS planning station and software; successfully print required documents; and successfully write the mission binder to the DTM and upload mission files to the aircraft.
3. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
4. Execute Pilot Not Flying duties IAW with the MV-22 Maneuver Description Guide (MDG) in a timely manner with minimal coaching.
5. Accurate and timely use of the Flight Director Cues, Commands, and Coupled modes for IMC flight.

Instructor. FRSI.

Prerequisite. INST-1234.

SINST-1236	2.0	*	B,T,AF,CI	(N*)	S	1	FFS/FTD
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Goal. Conduct IFR Flight operations. Introduce Emergency Procedures during IFR Flight operations. Practice operation of the Flight Director and the Mission Management System. During this flight the PUI will perform duties as both the PF and the PNF. The PUI shall complete one instrument approach as the PNF.

Coordination. In preparation for the INST CHECK consideration must be given to the number and type of approaches the PUI will require to meet annual instrument minimums. IP shall designate a departure and destination location where training is to be conducted. The IP shall issue to the PUI appropriate information for preflight planning; including a DD-175-1, appropriate NOTAMS, and an aircraft load.

Preflight Planning. PUI will conduct all appropriate preflight planning to include; Load Comp, Form F, a completed DD-175, and loading all appropriate mission files on a DTM.

Requirements

1. Discuss:
  - a. CRM during in-flight emergencies.
  - b. Emergency services available.
  - c. Distress and Urgency Procedures.
  - d. Declaring an Emergency.
  - e. Use of AN/ARC-210 remote control head.

- f. Transponder code considerations.
2. Introduce:
- a. Emergency return to the departure airfield.
  - b. AN/ARC-210 remote control head operation.
  - c. Emergency procedures.
    - (1) Nacelle Blower Failure.
    - (2) Black Cockpit operations.
    - (3) Single Engine Failure.
3. Review:
- a. Instrument Takeoff.
  - b. Departure.
  - c. Clearance compliance.
  - d. Enroute procedures.
  - e. Descent procedures.
  - f. Instrument APPROACH Brief.
  - g. APPROACH Checklist.
  - d. Non-precision approaches.
  - e. Precision approaches.
  - f. Missed approach.

Performance Standards

1. Accurately conduct preflight planning and complete required documents to conduct an IFR flight.
2. Accurately operate the JMPS planning station and software; successfully print required documents; and successfully write the mission binder to the DTM and upload mission files to the aircraft.
3. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
4. Execute Pilot Not Flying duties IAW with the MV-22 Maneuver Description Guide (MDG) in a timely manner with minimal coaching.
5. Accurate and timely use of the Flight Director Cues, Commands, and Coupled modes for IMC flight.

6. Recognize indications, execute memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.

Instructor. FRSI.

Prerequisite. INST-1235.

ACAD-6015    1.0    365    B,T,R,MR,CI,CV    E    CLS

Oral NATOPS Instrument Examination

Goal. The Oral shall consist of, but is not be limited to knowledge of the NATOPS, NATOPS Instrument Flight Manual, FAR/AIM and/or aeronautical publications which are applicable, normal/emergency instrument ground and flight procedures, weather, aircraft limitations, and performance. Additionally, the instructor/evaluator may draw upon their individual experience to propose questions of a direct and positive manner to evaluate the airman's knowledge and understanding.

Performance Standards. Achieve a minimum grade of qualified on the Oral examination.

Instructor. INSTEVAL.

Prerequisite. ACAD-6014

RQD-6032    2.0    365    B,T,R,MR,CI,CV(N\*)    E    S/A    1    FFS/FTD

NATOPS Instrument Evaluation

Goal. Following completion of the ground evaluation events, an instrument flight/simulator evaluation event shall be flown and completed with a grade of "Qualified." The evaluator shall conduct an objective evaluation of the airman's knowledge of flight planning, filing, briefing, conduct of flight under normal operating conditions, emergency procedures, closing out flight plans, and debriefing.

Coordination. IP shall designate a departure and destination location where the evaluation is to be conducted. The IP shall issue to the PUI appropriate information for preflight planning; including a DD-175-1, appropriate NOTAMS, and an aircraft load of passengers and/or cargo.

Preflight Planning. PUI will conduct all appropriate preflight planning to include; Load Comp, Form F, a completed DD-175, and loading all appropriate mission files on a DTM.

Requirements

1. Evaluate:
  - a. CRM during IFR navigation.
  - b. Communication, Navigation, and IFF equipment operation.

- c. Flight Director operation limitations.
- d. Mission Management System operation.
- e. Voice procedures.
- f. Instrument Takeoff.
- g. Timed turns/compass turns.
- h. Steep turns.
- i. Unusual attitudes.
- j. Black Cockpit operations.
- k. Flight planning.
- l. Clearance compliance.
- m. TACAN point to point.
- n. Airways navigation.
- o. Non-precision approaches.
- p. Precision approaches.
- q. Transition to visual landing.
- r. Emergency procedures.

#### Performance Standards

1. Accurately conduct preflight planning and complete required documents to conduct an IFR flight.
2. Accurately operate the JMPS planning station and software; successfully print required documents; and successfully write the mission binder to the DTM and upload mission files to the aircraft.
3. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
4. Execute Pilot Not Flying duties IAW with the MV-22 Maneuver Description Guide (MDG) in a timely manner with minimal coaching.
5. Accurate and timely use of the Flight Director Cues, Commands, and Coupled modes for IMC flight.
6. Recognize indications, execute memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.
7. Execute flight and/or ground operations safely IAW OPNAV 3710.7 Series, Platform NATOPS, NATOPS Instrument Flight Manual, and local training SOPs. All areas on the instrument flight evaluation are

critical. An "Unsatisfactory" grade in any area shall result in an "Unsatisfactory" grade for the flight.

Instructor. INSTEVAL.

Prerequisites. SINST-1238, ACAD-6015.

External Syllabus Support. An Air Traffic Control role player is required if the flight is conducted in the simulator.

#### 2.10.5 CONFINED AREA LANDINGS (CAL)

2.10.5.1 Purpose. To develop proficiency in performing single aircraft takeoffs and landings in confined areas in day VMC. FOE: CAL patterns, unimproved surface landings, and integration of onboard cueing/displays with outside scan.

#### 2.10.5.2 General

The PUI must demonstrate the capability to safely takeoff and land in a confined area during the day.

All CALS and RVL profiles will be flown in zones that will not create dust-out conditions.

CAL-1333 is part of the Air Force and Contract Instructor POI only; Marine POIs exclude these events.

Crew Requirement. IP/PUI (CC for aircraft event).

ACAD-1310	1.0	*	B,T,AF,CI	CLS
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Goal. Be able to comprehend and understand the concepts of CALS and tactical approaches to an unimproved surface. Be able to understand the relationship of the CMS and aircraft unique systems and setup interrelated to the CAL environment.

#### Requirements

##### 1. Discuss:

##### a. Introduction.

- (1) Purpose of Low Level Flight.
- (2) Syllabus description.
- (3) Performance standards. CAL pattern CONV / APLN.
  - (a) Tactical Approaches.
  - (b) Hover / No-Hover Landings.
  - (c) CAL Departures.

- (d) LZ Selection.
- (e) CMS.
  - 1 MFD's setup (VSD, PFD, HOVER, NAV).
  - 2 Symbology.
  - 3 FDP (Modes, Cues, Commands).
  - 4 CDU (VV, Hover, INAV).
- (f) Performance planning (Performance charts).
- (g) Use of Interim Power.
- (h) Use of FLIR.
- (i) INS / GPS.
- (j) CRM (Terminology during CAL).
- (k) Augmented Hover CPLD.
- (l) RVL.
  - 1 Description.
  - 2 Profile.
  - 3 CRM.
  - 4 Setup.
  - 5 Departures.

Instructor. FRSI.

Prerequisite. FAM-1049.

SCAL-1330	2.0	*	B, T, AF, CI	S	1	FFS/FTD
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Goal. Introduce CONV and Tactical CALS at various sites IOT introduce the fundamental elements of tactical inserts and extracts.

Requirements

- 1. Discuss:
  - a. Phases of CALS (enroute, site evaluation, approach, hovering, landing, take off).
  - b. LZ Selection. Location, Size, Shape, Micro Topography, Surface, elevation, terrain, wind, weather, performance.
  - c. Scan, cockpit setup, aids, and automation.



- d. Power computations.
  - e. Closure Rate, Descent Rate.
  - f. Vortex Ring State (VRS).
  - g. Terminology.
  - h. PF and PNF duties and callouts.
2. Introduce:
- a. Scan, cockpit setup, aids and automation.
  - b. CONV CAL Patterns.
  - c. Straight-In Tactical Approach.
  - d. Hover and no hover landings (Minimum of 5 landings).
  - e. Power computations.
  - f. Takeoff.
    - (1) Normal.
    - (2) Slope.
    - (3) Max Gross Weight.
  - g. Jump Takeoff.
  - h. Waveoff.
4. Emergencies:
- a. PRGB HOT / TAGB HOT.
  - b. FLAPPING CRITICAL.
  - c. PLT NAC CONTR FAIL (L/R).

Performance Standards

- 1. Conduct all maneuvers IAW MV-22 FTM.
- 2. Recognize proper glideslope for CAL approaches.
- 3. Recognize criteria and execute wave off.
- 4. Recognize indications and execute required memory items, know associated warnings, and execute proper crew coordination during simulated emergency procedures and system failures.

Instructor. FRSI.

Prerequisite. ACAD-1310.

SCAL-1331	2.0	*	B,T,R,MR,AF,CI	S	1	FFS/FTD
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Goal. Practice the fundamental elements of tactical inserts and extracts, and introduce the RVL profile and use of FLIR.

Requirements

1. Discuss:

- a. Pitch up with side slip.
- b. Hover Coupled.
- c. Augmented Hover Coupled Landings.
- d. RVL Profile (R, AF POI only).
- e. Dual Digital Map operation.
- f. Scan, cockpit setup, aids and automation.
- g. CAL application of FLIR.

2. Introduce:

- a. Scan, cockpit set up, aids and automation.
- b. PF and PNF duties and callouts.
- c. RVL Profile (R, AF POI ONLY).
- d. Augmented Hover Coupled Landing.
- e. RVL Profile to a Augmented Hover Coupled Landing (R, MR, AF POI ONLY).
- f. RVL Waveoff (R, AF POI ONLY).
- g. Jump Takeoff.

3. Practice:

- a. CONV CAL Patterns.
- b. Straight-In Tactical Approach.
- c. Power computations.
- d. Waveoff.

4. Emergencies:

- a. Single Engine failures.

b. Single Engine Waveoffs.

Performance Standards

1. Conduct all maneuvers IAW MV-22 FTM.
2. Recognize proper glideslope for CAL approaches.
3. Recognize criteria and execute wave off.
4. Recognize indications and execute required memory items, know associated warnings, and exercise proper crew coordination during simulated emergency procedures and system failures.

Instructor. FRSI.

Prerequisite. SCAL-1330.

CAL-1332	2.0	*	B, T, R, MR, AF	A	1	MV-22
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Goal. Practice the fundamental elements of tactical inserts and extracts to include straight-in tactical approaches and augmented hover coupled landings.

Requirements

1. Discuss:
  - a. CMS setup.
    - (1) CONV Pattern.
    - (2) Straight-In Tactical Approach.
  - b. Hover CPLD Modes.
  - c. Scan, cockpit setup, aids and automation.
  - d. Downwash.
  - e. Slope Landings.
  - f. Terminology.
  - g. PF and PNF duties and callouts.
  - h. Crew chief actions and callouts.
2. Introduce:
  - a. Straight-In Tactical Approach.
  - b. Scan, cockpit setup, aids and automation.
3. Practice:

- a. Power computations.
  - b. CONV CAL Patterns.
  - c. Hover and No-Hover landings (Minimum 4 landings).
  - d. Augmented Hover Coupled Landing.
  - e. Waveoff.
4. Emergencies:
- a. PRGB/TAGB/MWGB HOT.
  - b. Single Engine Failure.

Performance Standards

- 1. Conduct all maneuvers IAW MV-22 FTM.
- 2. Recognize proper glideslope for normal and steep approaches.
- 3. Recognize and execute wave off criteria.
- 4. Recognize indications and execute required memory items, know associated warnings, and exercise proper crew coordination during simulated emergency procedures and system failures.

Instructor. FRSI.

Prerequisite. SCAL-1331.

CAL-1333	1.5	*	AF	A	1	MV-22
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Goal. Practice CALS, and RVL Profile, and Introduce 90°, 180° Offset Tactical Approaches.

Requirements

- 1. Discuss:
  - a. Performance at high altitudes and high GW.
  - b. Effects of Saturating Control Power.
  - c. Trim System.
  - d. Failures Leading to the Loss of Flapping Control, Limiting, Cueing Functions.
- 2. Introduce:
  - a. 90-degree Offset Tactical approach.
  - b. 180-degree Offset Tactical approach.

- c. RVL profile.
- 3. Practice:
  - a. CONV CAL Patterns.
  - b. Straight-IN Tactical approach.
  - c. Hover and No-Hover landings.
  - d. Augmented Hover Coupled landing.
- 4. Emergencies:
  - a. RALT TO BALT.
  - b. ABIU FAILURE.

Performance Standards

- 1. Conduct all maneuvers IAW MV-22 FTM and NTP.
- 2. Recognize proper glideslope for normal and steep approaches.
- 3. Recognize and execute wave off for RVL criteria.
- 4. Recognize indications and execute required memory items, know associated warnings, and exercise proper CRM during simulated emergency procedures and system failures.

Instructor. FRSI.

Prerequisite. CAL-1332.

2.10.6 FORMATION (FORM)

2.10.6.1 Purpose. To develop proficiency in cruise formation, rendezvous procedures, and execution of formation maneuvers. FOE: V-22 formation fundamentals in CONV and APLN flight.

2.10.6.2 General

At the completion of this stage, the PUI will be proficient at formation takeoffs and landings, section rendezvous, lead changes, formation maneuvers, and section IIMC procedures.

Section landings are not intended to be section CALs. CONV patterns will be used and the landing area will be an improved surface or large CAL site.

All SFORM flights should be conducted in a networked environment. Lead ship Record is acceptable if the network is unavailable.

Crew Requirements. IP/PUI/(CC for aircraft events).

ACAD-1410 1.0 \* B,T,AF,CI CLS

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Goal. To introduce the PUI to the training syllabus for the Formation phase. The following will be discussed: FORM syllabus, performance standards, CONV and APLN Cruise position, APLN parade position, and conduct of FORM flights.

Requirements

1. Discuss:
  - a. Introduction.
    - (1) Purpose of Formation.
    - (2) Syllabus description.
    - (3) Required readings.
    - (4) Performance standards.
  - b. Cruise Position.
    - (1) Visual Reference Points.
    - (2) Cruise principles.
      - (a) CONV, Radius of Turn, or use of NAC.
      - (b) APLN, Radius of Turn.
    - (3) Crossunders / Crossovers.
  - c. APLN Parade position and visual reference points.
  - d. AFCS saturation due to wake interference turbulence.
  - e. Sequence of Flight.
  - f. PF and PNF duties and callouts.
  - g. Crew chief actions and callouts.

Instructor. FRSI.

Prerequisite. FAM-1049.

SFORM-1430 2.0 \* B,T,AF,MR,CI S 2 FFS/FTD TEN+

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Goal. Introduce cruise formation during conversion and airplane modes and section landings.

Requirements

1. Discuss:

- a. Cruise position and visual reference points.
- b. Radius of turn principles.
- c. Use of nacelles to control airspeed.
- d. Closure rates.
- e. Formation Transitions and Conversions.
  - (1) Nr settings (84-100%).
  - (2) Nacelle rotation coordination/timing between aircraft.
  - (3) Nacelle rotation rates.
- f. Wingman responsibility for flight separation.
- g. Formation aborts and waveoffs.
- h. Loss of visual contact/rejoining of flight.
- i. Intra-flight communications and responsibilities.

2. Introduce:

- a. Section STO.
- b. Section takeoff.
- c. Running/Carrier rendezvous.
- d. Cruise position.
- e. Cross-over/cross-under.
- f. Turn patterns (CONV).
- g. Turn patterns (APLN).
- h. Breakup and rendezvous.
- i. Over-run/under-run.
- j. Formation Transition and Conversion.
- k. Lead changes.
- l. Section landings to a runway (Minimum of 2 as wingman).
- m. PF and PNF duties and callouts.

3. Emergencies. Discuss inter- and intra-cockpit communications/coordination during section emergencies.

Performance Standards. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).

Instructor. FRSI.

Prerequisite. ACAD-1410.

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SFORM-1431 2.0 \* B,T,R,AF,CI S 2 FFS/FTD TEN+

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Goal. Practice formation flight, introduce section landings to an LZ and IIMC procedures.

Requirements

1. Discuss:
  - a. APLN Parade position and visual reference points.
  - b. Considerations of close formation, closure rates and situational awareness.
  - c. Energy management as Lead/Wingman.
  - d. Lost Communication Procedures.
2. Introduce:
  - a. Section landings to an improved surface or large CAL site (Minimum of 2 as wingman).
  - b. IIMC breakup and rejoin.
3. Practice:
  - a. Section STO.
  - b. Section takeoff.
  - c. Running/Carrier rendezvous.
  - d. Cruise position.
  - e. Cross-over/cross-under.
  - f. Turn pattern (CONV).
  - g. Turn pattern (APLN).
  - h. Over-run or under-run.
  - i. Formation Transition and Conversion.
  - j. Lead changes.
  - k. PF and PNF duties and callouts.



Performance Standards. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG) and NATOPS.

Instructor. FRSI.

Prerequisite. SFORM-1430.

FORM-1432	2.0	*	B,T,AF	A	2	MV-22
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Goal. Introduce formation flight and procedures in the aircraft.

Requirements

1. Discuss:
  - a. Cruise position, Parade position, and visual reference points.
  - b. Energy management as Lead/Wingman.
  - c. Sun position in reference to lead aircraft.
  - d. PF and PNF duties and callouts.
  - e. Crew chief actions and callouts.
  - f. Formation aborts and waveoffs.
2. Expose. Parade formation in APLN Mode.
3. Introduce:
  - a. Section STO.
  - b. Section takeoff.
  - c. Running/Carrier rendezvous.
  - d. Cruise position.
  - e. Combat Cruise position (AF POI only).
  - f. Cross-over/cross-under.
  - g. Turn pattern (APLN).
  - h. Over-run/under-run.
  - i. IIMC breakup and rejoin.
  - j. Formation Transition and Conversion.
  - k. Lead changes.

1. Section landings to an improved surface or large CAL site (Minimum of 5 as wingman).

Performance Standards. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG) and NATOPS.

Instructor. FRSI.

Prerequisites. CAL-1332, SFORM-1431.

## 2.10.7 LOW ALTITUDE TACTICS (LAT) TRAINING

2.10.7.1 Purpose. To develop proficiency in LAT maneuvers and navigation with emphasis on the importance of crew coordination, comfort level, common terminology and energy management. It will also serve as a progress check for CMS and JMPS. FOE: LAT maneuvers/navigation, CMS, and JMPS.

### 2.10.7.2 General

A designated LATI is required for all LAT instructional events. A CI that has completed SFIT-5146 and the LATI academic syllabus per the MAWTS-1 Course Catalog may instruct initial SLAT events.

Maneuver descriptions may be found in the MV-22 Naval Tactics, Techniques, and Procedures (NTTP) Manual and the MV-22 Maneuver Description Guide (MDG) (FTM), and are explained in the current MAWTS-1 Academic Support Package.

Currency and altitudes are established and listed in the current edition of NAVMC 3500.14, T&R Program Manual.

The entire flight crew shall brief together for each flight.

LAB-1522 is the JMPS progress check and requires an ATF. The maximum instructor to PUI ratio is 1 to 3. This is a scheduled event for PUI and LATI.

LAT-1531 is the CMS progress check.

Crew Requirement. LATI/PUI/(CC for aircraft events).

ACAD-1510	1.0	*	B, T, R, MR, AF, CI	CLS
<u>Goal.</u> To prepare the PUI for the LAT stage of the curriculum.				

### Requirements

1. Discuss:
  - a. Purpose of LAT.
  - b. Syllabus description (PUI expectations).
  - c. Required readings.
  - d. Performance standards.

2. Introduce:

- a. LAT Planning, briefing, and execution.
- b. NTTP LAT mission planning guidance.
- c. PF and PNF duties and callouts.
- d. Crew actions and callouts.
- e. CRM during LAT.

Instructor. LATI.

Prerequisite. INST-1235.

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ACAD-1511	0.5	*	B, T, R, MR, AF, CI	CLS
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LAT I Lecture

Goal. The PUI will have an introductory knowledge of LAT terms and definitions.

Requirements

- 1. Introduce. LAT Philosophy, definitions, and Rules of Conduct.

Required Reading. T&R Program Manual paragraphs 300, 301, 305; NTTP 4.1.1, 4.2 - 4.2.3.

Instructor. LATI.

Prerequisite. ACAD-1510.

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ACAD-1512	0.5	*	B, T, R, MR, AF, CI	CLS
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LAT II Lecture

Goal. The PUI will have an introductory knowledge of LAT training considerations.

Requirements

- 1. Introduce. LAT Training Considerations.

Required Reading. NTTP 4.2.4 - 4.2.7.

Instructor. LATI.

Prerequisite. ACAD-1511.

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ACAD-1513	0.5	*	B, T, R, MR, AF, CI	CLS
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LAT III Lecture

Goal. The PUI will have an introductory knowledge of LAT maneuvers.

Requirements

1. Introduce. LAT Techniques and procedures.

Required Reading. NTTP 4.2.8 - 4.2.11.

Instructor. LATI.

Prerequisite. ACAD-1512.

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LAB-1520	6.0	*	B, T, R, MR, AF, CI	LAB
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Goal. Introduce JMPS functions for LAT mission planning and produce a loaded Data Transfer Module (DTM) for use on the SLAT-1530.

Requirement

1. Discuss. Military Training Routes (MTRs) as they relate to the AP-1/B.

2. Introduce:

- a. Route Study and preparation.

- (1) MTR Overlays.

- (2) Route creation.

- (3) Altitude Planning.

- (a) Minimum Safe Altitude (MSA).

- (b) Emergency Safe Altitude (ESA).

- (c) Vertical Terrain Analysis using JMPS.

- b. Order of Battle.

- c. JMPS Drawing file properties/colors.

- (1) Corridors.

- (2) Avoid Areas.

- (3) Phase Lines.

- (4) Doghouses.

- (5) Modification of default JMPS properties.

- d. Chart Update Manual (CHUM) properties.

(1) Electronic CHUM (ECHUM).

(2) Manual CHUM (MCHUM).

e. Create Digital flight brief.

f. JMPS Route Card Generation (MSA, ESA calculation and input).

Performance Standard. Loaded DTM with all required mission data for the SLAT-1530.

Instructor. LATI.

Prerequisite. ACAD-1513.

External Syllabus Support. JMPS.

LAB-1521	2.0	*	B, T, R, MR, AF, CI	CMS
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Goal. Introduce LAT CMS functions and manipulation.

Requirements

1. Discuss:

a. Digital Terrain Elevation Data (DTED) verification.

b. LAT CRM principles (PF/PNF).

2. Introduce:

a. DDMS Threat manipulation.

(1) Threat Placement.

(2) Detection/Engagement parameters.

(3) Use of intervisibility.

b. Dual Digital Map operation.

(1) Line of Sight (LOS).

(2) Height Above Terrain (HAT).

(3) Chart selection/use.

(4) Map Zoom.

(5) Map CTR/DCTR use.

(6) TRN/Sun azimuth/Elevation.

(7) Advanced waypoint manipulation.

(a) Use of Moving Waypoints.

(b) Category declutter.

c. INAV operations.

Instructor. LATI.

Prerequisite. ACAD-1520.

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SLAT-1530	2.0	*	B,T,R,MR,AF,CI	S	1	FFS/FTD
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Goal. Demonstrate/introduce LAT maneuvers and route execution using a DTM created by the PUI.

Requirements

1. Discuss:

a. LAT Rules of Conduct.

b. LAT Dive Recovery Rules.

c. Vertical Maneuver Rules.

(1) 5 Degree Rule.

(2) 50 Percent Rule.

(3) Small Descent Rule.

d. LAT Turns and Altitude Recovery.

e. 'G' generation.

(1) Aerodynamic limits (stall).

(2) Structural Load Limiting (SLL).

f. Task loading.

(1) Terrain Clearance Tasks (TCTs).

(2) Mission Tasks (MTs).

(a) Critical Tasks (CTs).

(b) Non-Critical Tasks (NCTs).

g. RADALT use/setup/limitations (Altitude deviation, acknowledgment and response).

h. Emergency Procedures in the LAT environment.

2. Demonstrate. LAT dive recovery to 200 ft AGL.

3. Introduce:

- a. Low level and contour flight profiles.
- b. APLN Mode Turn Radius Maneuvers.
- c. Converting Turn Maneuver.
- d. CONV mode LAT at 50'AGL.
- e. Bunt Maneuver (CONV/APLN).
- f. Roll Maneuver (CONV/APLN).
- g. Level Quick Stop.
- h. Zoom Climb Maneuver.
- i. Inertia Maneuver.
- j. Max angle of Climb Maneuver.
- k. Straight Oblique.
- l. LAT dive recovery to 200 ft AGL.
- m. LAT Navigation on a Low Level MTR.
- n. FLIR functionality during LAT.
- o. Minimum Altitude Capable (MAC) flight.
- p. Altitude deviation acknowledgment/response.

4. Review:

- a. Flight Plan (FPLN) management (INAV Functions).
- b. Dual Digital Map operation.
- c. PNF duties and callouts.
- d. CRM during LAT.

5. Emergencies:

- a. Single Engine Failure at low altitude.
- b. Stall and Recovery at Low Altitude.

Performance Standards

- 1. Demonstrate proper procedures for LAT maneuvers IAW the MV-22 Air Naval Tactics, Techniques, and Procedures (NTTP) Manual and the MV-22 Maneuver Description Guide (MDG) (FTM).

2. Execute CMS procedures in a timely manner with minimal assistance.
3. Maintain Rules of Conduct (ROC) IAW T&R Program Manual.
4. Recognize indications, execute required memory items, exercise proper crew coordination and maintain control of the aircraft during simulated Emergency Procedures.

Instructor. LATI.

Prerequisite. LAB-1520, LAB-1521.

LAB-1522	4.0	*	B, T, R, MR, AF, CI	LAB
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Goal. Successful completion of the JMPS progress check. Build and load a LAT mission from the AP-1/B to a DTM for use during the LAT-1531. PUI will create a digital flight brief for use in briefing the LAT-1531.

Requirements

1. Introduce. Digital Flight Brief.
2. Practice:
  - a. Route Study and Preparation.
    - (1) MTR Overlays.
    - (2) Route creation.
    - (3) Altitude Planning.
      - (a) Minimum Safe Altitude (MSA).
      - (b) Emergency Safe Altitude (ESA).
      - (c) Vertical Terrain Analysis using JMPS.
  - b. Order of Battle.
  - c. JMPS Drawing file properties/ colors.
    - (1) Corridors.
    - (2) Avoid Areas.
    - (3) Phase lines.
    - (4) Doghouses.
  - d. Chart Update Manual (CHUM) properties.
    - (1) Electronic CHUM (ECHUM).



(2) Manual CHUM (MCHUM).

e. JMPS Route Card Generation (MSA and ESA manipulation).

Performance Standards. PUI successfully generates a complete JMPS LAT mission profile and loads it to a DTM with limited assistance.

Instructor. LATI.

Prerequisite. SLAT-1530.

External Syllabus Support. JMPS.

LAT-1531	2.5	*	B,T,R,MR,AF	A	1	MV-22
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Goal. Demonstrate/introduce LAT maneuvers, navigation and aircraft performance in the LAT environment. Evaluate the PUI's use of CMS to successfully complete the CMS progress check.

Requirements

1. Discuss:

- a. LAT Rules of Conduct.
- b. LAT Dive Recovery Rules.
- c. Aircraft performance limits and characteristics.
- d. CONV/ APLN Stall -vs- AOB considerations.
- e. RADALT use.
- f. Aircrew duties during LAT navigation.
- g. Lookout doctrine.
- h. FLIR, DIGMAP, and INAV operations during LAT navigation.
- i. Fuel management considerations.
- j. Navigation system failures.
- k. Bird strikes.

2. Demonstrate. LAT dive recovery to 200 ft AGL.

3. Introduce:

- a. Low level and contour flight profiles (Speed rush baseline).
- b. APLN Mode Turn Maneuvers.
- c. Converting Turn Maneuver.

- d. Bunt Maneuver.
- e. Roll Maneuver.
- f. Level Quick Stop.
- g. Zoom Climb Maneuver.
- h. Inertia Maneuver.
- i. Max angle of Climb Maneuver.
- j. Straight Oblique.
- k. LAT dive recovery to 1000 ft AGL(min 2).
- l. LAT mission management.
  - (1) TOT mission management.
  - (2) CMS wind setup.
  - (3) BINGO flight plan / no flight plan.
  - (4) Fuel summary layer.
- 4. Review:
  - a. Altitude deviation acknowledgment/response.
  - b. INS update (OFLY/TACAN).
  - c. Waypoint management (add, edit, display, and delete waypoints using the CDU (manual entry, track-handle, and Overfly Store).
  - d. Threat management (add, edit, display, and delete threats using the CDU (manual entry) and the track handle).
  - e. Digital Map Operation.
    - (1) Build, activate, display, edit, and delete flight plans.
    - (2) TRN / Sun azimuth / Elevation function.
    - (3) Height Above Terrain (HAT).
    - (4) LOS function.
  - f. MMS Operation (using the cargo summary page, add and remove cargo weights using stations and zones).

#### Performance Standards

- 1. Demonstrate proper procedures for LAT maneuvers IAW the MV-22 Air Naval Tactics, Techniques, and Procedures (NTTP) Manual and the MV-22 Maneuver Description Guide (MDG) (FTM).

2. Maintain Rules of Conduct (ROC) IAW T&R Program Manual.
3. Execute CMS procedures in a timely manner with minimal assistance.
4. Arrive at last checkpoint within +/- 1 minute of intended TOT.
5. Recognize indications, execute required memory items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.

Instructor. LATI.

Prerequisite. LAB-1522.

#### 2.10.8 NIGHT SYSTEMS (NS)

2.10.8.1 Purpose. To provide initial exposure to operations while using night vision goggles under light levels greater than or equal to .0022 lux (HLL) as predicted by the Solar/Lunar Almanac Prediction (SLAP) module. FOE: NVGs, HUD and FLIR.

#### 2.10.8.2 General

A designated NSI or NSFI is required for all NS instructional events. A CI that has completed the simulator portion of the NSFI syllabus may instruct initial SNS events.

All aircraft events shall be conducted under HLL conditions.

Crew Requirement. P/PUI/CC/AO.

Academic Training. Prior to beginning flight training the PUI shall be familiar with the appropriate chapters of the MV-22 NTP, the MAWTS-1 Helicopter NVD Manual and the SLAP module.

ADL-1601	2.0	*	B, T, R, MR, AF, CI	CBT
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#### Night Vision Devices and functions

Goal. The PUI has completed all modules with a basic understanding NVDs and the night environment.

Requirements. The following modules are required.

- (1) Introduction to the Night Vision Device.
- (2) Use of Night Vision Devices.
- (3) FLIR System Basic Theory.
- (4) The FLIR System.

Performance Standards. Satisfactory completion of all modules.

Prerequisites. SINST-1233.

ACAD-1610    0.5    \*    B,T,R,MR,CI    CLS

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Goal.    To prepare the PUI for the NS stage of the curriculum.

Requirements

1. Discuss:
  - a. Purpose of NS.
  - b. Syllabus description (PUI expectations).
  - c. Required readings.
  - d. Performance standards.
2. Introduce:
  - a. Solar Lunar Almanac Prediction (SLAP) software.
  - b. NVG Composition.
  - c. NVG Setup and Focusing procedures.
  - d. NVD HUD.
  - e. FLIR Basics.

Instructor.    NSI/NSFI.

Prerequisites.    CAL-1332, ADL-1601.

ACAD-1611    1.0    \*    B,T,R,CI    CLS

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MV-22 HUD Lecture

Goal.    The PUI will have an introductory knowledge of the function and operation of the MV-22 HUD.

Required Reading.    MV-22 NATOPS Chapter 2.3.9.

Instructor.    NSI/NSFI.

Prerequisite.    ACAD-1610.

SNS-1630    2.0    \*    B,T,R,MR,CI NS    S    1    FFS/FTD

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Goal.    Introduce HLL NVD FAM maneuvers in the simulator.

Requirements

1. Discuss:

- a. NVG Considerations.
    - (1) NVG preflight and adjustments.
    - (2) NVG field of view.
    - (3) NVG Scan techniques/fixation tendencies.
    - (4) NVG failures.
  - b. FLIR Considerations.
    - (1) Calibration.
    - (2) Field of View -vs- Field of Regard.
    - (3) Atmospheric Considerations.
  - c. Weather brief/Atmospheric Considerations (Effects on FLIR/NVGs).
  - d. Goggle/de-goggle procedures.
  - e. Cockpit lighting/MFD preflight.
  - f. Visual illusions.
  - g. Emergency procedures during NVD operations.
  - h. Aircrew actions and callouts during NVD operations.
2. Introduce:
- a. NVD HUD symbology/control panel/declutter modes/ failure.
  - b. Ground taxi.
  - c. Normal Hover and Hover Turns.
  - d. Transition from Hover.
  - e. CONV Pattern.
  - f. APLN Pattern.
  - g. STOs.
  - h. Normal approach.
  - i. Steep approach.
  - j. Run-on Landing.
  - k. No-hover landing.
3. Emergencies:

- a. HUD Failure.
- b. PF NVG Failure.

Performance Standards

- 1. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
- 2. Demonstrate proper NVD operation and HUD function IAW the MAWTS-1 NVD Manual and the MV-22 NATOPS Manual.
- 3. Recognize indications, execute memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.

Instructor. NSI/NSFI.

Prerequisite. SFAM-1050, ACAD-1611.

NS-1631	1.5	*	B,T,R	NS	A	1	MV-22
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Goal. Introduce HLL NVD FAM maneuvers in the aircraft.

Requirements

- 1. Discuss:
  - a. Review discussion items from SNS-1630.
  - b. NVD briefing guide.
  - c. Loss of visual acuity/ distance estimation using NVGs.
  - d. Scanning Techniques.
  - e. Cockpit/aircraft configuration and lighting.
  - f. Use of SLAP.
    - (1) Solar/Lunar illumination data.
    - (2) Nautical twilight (CNT, EENT, BMNT).
- 2. Introduce:
  - a. Normal Hover and Hover Turns.
  - b. Transition from a Hover.
  - c. CONV Pattern.
  - d. APLN Pattern.
  - e. STOs.

- f. Run-on Landing.
  - g. Normal approach.
  - h. Steep approach.
  - i. No-hover landing.
  - j. Aircrew actions and callouts during NVD operations.
  - k. Scanning Techniques.
3. Practice:
- a. NVG HUD operation.
  - b. Ground taxi.

Performance Standards

- 1. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
- 2. Demonstrate proper NVD operation and HUD function IAW MAWTS-1 NVD Manual and the MV-22 NATOPS Manual.

Instructor. NSI/NSFI.

Prerequisite. SNS-1630 and FAM-1051.

SNS-1632	2.0	*	B, T, R, MR, CI NS	S	1	FFS/FTD
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Goal. Introduce NVG CALs (HLL) at various CAL sites utilizing NVDs in the simulator.

Requirements

- 1. Discuss:
  - a. Artificial Light Sources.
  - b. Cockpit setup for NVG landings.
  - c. CMS and DDMS setup.
  - d. FLIR operations.
  - e. Terrain Shadowing.
  - f. Standard terminology.
  - g. Loss of visual contact with the ground/reference points.
  - h. Vortex ring state.
  - i. Aircrew actions and callouts during NVD operations.

j. Power requirements/performance charts (HIGE, HOGE, height velocity diagram) with JMPS considerations.

2. Introduce:

- a. Power computations.
- b. CAL site evaluation.
- c. CONV CAL Pattern.
- d. Straight-in Tactical approach.
- e. Steep approach.
- f. Hover Landing.
- g. No-Hover Landing.
- h. Jump Takeoff.
- i. MGW Takeoff.
- j. MGW Landing.
- k. Waveoff.

3. Practice:

- a. NVG HUD operations.
- b. FLIR operations.
- c. Scanning Techniques.

4. Emergencies:

- a. Single Engine Failures.
- b. High Sink Rate in VTOL Mode.
- c. FLIR Failure.

Performance Standards

- 1. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
- 2. Demonstrate proper NVD operation and HUD function IAW MAWTS-1 NVD Manual and the MV-22 NATOPS Manual.
- 3. Recognize indications, execute memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.

Instructor. NSI/NSFI.



Prerequisites. SNS-1630.

NS-1633	1.5	*	B,T,R,MR	NS	A	1	MV-22
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Goal. Introduce NVG HLL CALs at various CAL sites utilizing NVDs in the aircraft.

Requirements

1. Discuss:
  - a. Review discussion items from SNS-1632.
  - b. Performance calculations.
  - c. Vortex Ring State.
  - d. Scanning Techniques.
  - e. Closure rates.
  - f. Use of searchlights.
2. Introduce:
  - a. CAL site evaluation.
  - b. CONV CAL Pattern.
  - c. Straight-in Tactical Approach.
  - d. Steep Approach.
  - e. Hover Landing.
  - f. No-Hover Landing.
  - g. Jump Takeoff.
  - h. MGW Takeoff.
  - i. MGW Landing.
  - j. Wave-off.

Performance Standards

1. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
2. Demonstrate proper NVD operation and HUD function IAW MAWTS-1 NVD Manual and the MV-22 NATOPS Manual.
3. Recognize excessive closure rates.

Instructor. NSI/NSFI.

Prerequisites. NS-1631, SNS-1632.

SNS-1634	2.0	*	B,T,CI	NS	S	2	FFS/FTD TEN+
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Goal. Introduce night FORM utilizing NVGs (HLL) in the simulator.

Requirements

1. Discuss:

- a. Aircraft lighting and use.
- b. NVG formation considerations.
  - (1) Position.
  - (2) Visual reference points at night.
  - (3) Nacelle angle cuing.
- c. Night scan/fixation tendencies.
- d. Depth perception/relative motion at night.
- e. Use of NVG HUD.

2. Introduce:

- a. Section STO.
- b. Section Takeoff.
- c. Running/Carrier rendezvous.
- d. Cruise Position.
- e. Cross-over/cross-under.
- f. Turn pattern (CONV).
- g. Turn pattern (APLN).
- h. Over-run/under-run.
- i. Formation Transition and Conversion.
- j. Lead changes.
- k. Wave-offs.
- l. Section landings to an improved surface or large CAL site (Minimum of 3 landings as wingman).
- m. IIMC breakup and rejoin.

3. Practice. Aircrew actions and callouts during NVD operations.
4. Emergencies. Take-off aborts.

Performance Standards

1. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
2. Demonstrate proper NVD operation and HUD function IAW MAWTS-1 NVD Manual and the MV-22 NATOPS Manual.
3. Recognize excessive closure rates.
4. Recognize indications, execute memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.

Instructor. NSI/NSFI.

Prerequisites. FORM-1432, SNS-1632.

NS-1635	2.0	*	B,T	NS	A	2	MV-22
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Goal. Introduce night FORM utilizing NVDs (HLL) in the aircraft.

Requirements

1. Discuss:
  - a. NVD briefing guide.
  - b. Aircraft lighting and use.
  - c. Position/visual reference points at night.
  - d. Night scan/fixation tendencies.
  - e. Depth perception/relative motion at night.
  - f. Night formation hazards.
  - g. Use of NVD HUD.
  - h. Moon position/cultural lighting in reference to lead aircraft.
  - i. CRM.
2. Introduce:
  - a. Section STO.
  - b. Section Takeoff.
  - c. Running/Carrier rendezvous.

- d. Cruise Position.
- e. Cross-over/cross-under.
- f. Turn pattern (APLN).
- g. Over-run/under-run.
- h. Formation Transition and Conversion.
- i. Lead changes.
- j. Wave-offs.
- k. Section landings to an improved surface or large CAL site (Minimum of 5 as wingman).
- l. IIMC breakup and rejoin.

Performance Standards

- 1. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
- 2. Demonstrate proper NVD operation and HUD function IAW MAWTS-1 NVD Manual and the MV-22 NATOPS Manual.
- 3. Recognize excessive closure rates.

Instructor. NSI/NSFI.

Prerequisites. FORM-1432, NS-1633, SNS-1634.

2.10.9 CORE SKILL INTRODUCTION CHECK (RQD)

2.10.9.1 Purpose. To review all areas of instruction and demonstrate proficiency and knowledge of all maneuvers to certify the PUI as a Tiltrotor Second Pilot (T2P). FOE: T2P Check-ride.

2.10.9.2 General. The PUI will demonstrate proficiency through the Core Skill Introduction phase. Upon completion of RQD-6030, the PUI will be designated a T2P. RQD-6030 meets the requirements for the 7532 MOS and will serve as the initial NATOPS evaluation. The NATOPS open and closed book exams shall be completed, graded, and recorded prior to beginning the Core Skill Introduction Check Stage.

Crew Requirement. IP/PUI/CC.

Prerequisites. All previous Core Skill Introduction phases complete.

ACAD-6010    3.0    365    B,T,R,MR,AF,CI    E    CLS

Open Book NATOPS Examination

Goal. The Open Book Examination shall consist of, but not be limited to the NATOPS question bank. The purpose of the open book examination is to evaluate the airman's knowledge of the appropriate publications and the aircraft.

Performance Standard. Achieve a minimum grade of qualified on the Open Book examination.

ACAD-6011	1.0	365	B, T, R, MR, AF, CI	E	CLS
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Closed Book NATOPS Examination

Goal. The Closed Book Examination shall be limited to the NATOPS question bank. The purpose of the closed book examination portion is to evaluate the airman's knowledge of the concerning normal/emergency procedures and aircraft limitations.

Performance Standard. Achieve a minimum grade of qualified on the Closed Book examination.

Prerequisite. ACAD-6010.

SREV-1830	2.0	*	B, T, R, MR, AF, CI	S 1	FFS/FTD
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Goal. Review emergency procedures.

Requirement. PUI will be prepared to describe and conduct any previously introduced emergency procedure. At a minimum, the following will be reviewed:

1. Review/Evaluate:
  - a. In-flight fires.
  - b. Single Engine Failure.
  - c. Gearbox Failure (Warning).
  - d. ICDS Failure (Warning).
  - e. Elevator Failure (Warning).
  - f. Pilot Nacelle Controller Failure (Caution).
  - g. Critical Elevator Fault (Caution).
  - h. FCC 1/2 Fail (Caution).
  - i. ADS Failures (Caution).
  - j. Force Feel Failure.
  - k. Single Engine Landing.
  - l. Nacelle Blower Failure (Caution).

m. SDC Failure (Caution).

Performance Standards. Recognize indications, execute required memory items, know associated warnings, maintain control of the aircraft and exercise proper crew coordination during simulated Emergency Procedures.

Instructor. FRSI

Prerequisite. Core Skill Introduction complete, ACAD-6011.

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SREV-1831    2.0    \*    B,T,R,AF,CI    S    1 FFS/FTD

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Goal. Review previous flight maneuvers.

Requirement

1. Review/Evaluate. The PUI will be prepared to describe and conduct maneuvers from FAM and CAL stages of training. The following will be conducted at a minimum:

- a. Ground Taxi.
- b. Normal Hover and Hover Turns.
- c. CONV Pattern.
- d. Normal Approach.
- e. No Hover Landing.
- f. Steep Approach.
- g. STOs.
- h. APLN Pattern.
- i. Run-on Landing.
- j. Transition to APLN.
- k. Conversion to CONV.
- l. High AOB (APLN).
- m. Flight Director Operation.
- n. CONV CAL Patterns.
- o. Straight-in Tactical Approach.
- p. Practice power on/off stalls.

Performance Standards. Demonstrate proper procedures and execution of all previously introduced maneuvers.

Instructor. FRSI.

Prerequisite. SREV-1830.

REV-1832      1.5      \*      B,T,AF      (N)      A      1      MV-22

Goal. Review Core Skill Introduction phase maneuvers.

Coordination. The PUI shall bring a pre-coordinated DTM, and Load Comp.

Requirement

1. Discuss. All previously introduced flight maneuvers, emergency procedures, aircraft limitations, and aircraft systems.
2. Review. PUI must be able to safely demonstrate flight proficiency and knowledge of all maneuvers and procedures covered in the Core Skill Introduction stage. The IP will set the itinerary for the conduct of the event. At a minimum, conduct all FAM maneuvers (do not conduct stalls) listed in SREQ-1831.

Performance Standards. Demonstrate the capability to perform all functions of a T2P.

Instructor. FRSI.

Prerequisite. SREQ-1831.

ACAD-6012      1.0      365      B,T,R,MR,AF,CI      E      CLS

Oral NATOPS Examination

Goal. The Oral shall consist of, but not be limited to the NATOPS question bank. The evaluator may draw upon their experience to propose questions of a direct and positive manner and in no way be opinionated to evaluate the airman's knowledge of the concerning normal/emergency procedures, aircraft limitations, and performance.

Performance Standard. Achieve a minimum grade of qualified on the Oral examination.

Instructor. NI/ANI.

Prerequisite. REV-1832, ACAD-6011.

RQD-6030      1.5      365      B,T,R,MR,AF,CI      E      A      1      MV-22

Goal. Conduct an objective evaluation of the airman's knowledge of mission planning, briefing, normal operating procedures (flight and ground), crew resource management, aircraft systems, performance criteria, emergency procedures, and debriefing. The focus is on normal and emergency procedures, not tactical execution. Emphasis shall be placed on the aforementioned items with the addition of USMC Admin SOP,

local course rules, local SOP addendum, and admin flight procedures. The NATOPS evaluation is intended to evaluate compliance with NATOPS procedures. The NATOPS evaluation is the means to measure the airman's efficiency in the execution of normal operating procedures and reaction to emergencies and malfunctions. The NATOPS evaluation process should be as much a learning tool and/or experience as it is an evaluation.

Coordination. The pilot under evaluation shall bring a completed NATOPS evaluation card, pre-coordinated DTM, and Load Comp.

Requirement

1. The proficiency expected by the evaluator in this flight shall be commensurate with the experience level and highest flight leadership designation of the pilot under evaluation.
2. Brief/discuss all previously introduced flight maneuvers, emergency procedures, aircraft limitations, and aircraft systems.
3. PUI must be prepared to safely demonstrate flight proficiency and knowledge of all maneuvers and procedures covered in the Core Skill Introduction phase of training. The IP may or may not require the PUI to perform maneuvers from each area of the Core Skill Introduction syllabus (do not conduct stalls). The IP will set the itinerary for the conduct of the event.

Performance Standards

1. The pilot under evaluation must be prepared to safely demonstrate flight proficiency and knowledge of all maneuvers and procedures described within the Maneuver Description Guide (MDG), NATOPS, OPNAV 3710.6 and in accordance with all SOPs. Upon successful completion of this event, the evaluator shall log the appropriate training code for tracking purposes.
2. Demonstrate proficiency in all maneuvers performed in previous flight stages as selected by the IP.
3. Perform all functions of a T2P.

Instructor. NI/ANI.

Prerequisite. ACAD-6012.



## 2.11 CORE SKILL PHASE

2.11.1 Purpose. To teach the PUI the enabling Core Skills required to support mission skill execution.

### 2.11.2 General

#### 2.11.2.1 Admin Notes

Refer to paragraph 209 of the Aviation T&R Program Manual for the ACPM lectures required for this phase of training.

All ACAD and LAB events can be found in the MAWTS-1 ASP.

All references to NTP are directed to the NTP 3.22.3 MV-22 (unclassified) unless otherwise noted.

2.11.2.2 Stages. The following stages are included in the Core Skill Phase of training.

Par No.	Stage Name
2.11.3	Familiarization (FAM)
2.11.4	CAL
2.11.5	FORM
2.11.6	LAT
2.11.7	NS HLL
2.11.8	NS LLL
2.11.9	AAR
2.11.10	TG
2.11.11	AD
2.11.12	MAT
2.11.13	GTR
2.11.14	CQ

### 2.11.3 Familiarization (FAM)

2.11.3.1 Purpose. To review aircraft flight characteristics, limitations, emergency procedures, day/night familiarization maneuvers, and instrument procedures.

2.11.3.2 General. The PUI must be qualified as a T2P prior to beginning this stage of training.

Crew Requirements. P/P for simulators, P/P/CC if flown in aircraft.

ACAD-2010 1.0 \* B,T CLS

#### MV-22 SINGARS / HAVEQUICK Lecture

Goal. The PUI will have an introductory knowledge of SINGARS and HAVEQUICK radio waveforms and their utilization in the MV-22.

Prerequisite. T2P. Required Reading - NATOPS Ch 15.15 - 15.17.

ACAD-2011 1.0 \* B,T CLS

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MV-22 SATCOM

Goal. The PUI will have an introductory knowledge of the SATCOM radio waveform and its utilization in the MV-22.

Prerequisite. T2P. Required Reading - NATOPS Ch 15.10.

LAB-2020 2.0 \* B,T CLS

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ARC-210 Remote Control Head Lab

Goal. The PUI will have an introductory knowledge of the functions of the ARC-210 Remote Control Head.

Prerequisite. T2P. Required Reading - NATOPS Ch 15.21.

SFAM-2030 2.0 \* B (N) S/A 1 FFS/FTD

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Goal. Review familiarization maneuvers and conduct an area familiarization if required.

Requirements

1. Discuss:
  - a. Squadron SOPs.
  - b. Local course rules.
  - c. Delegation of communication responsibilities.
  - d. Aircraft lighting and use.
2. Review:
  - a. Familiarization maneuvers.
  - b. Day HUD utilization.

Performance Standards

1. Demonstrate the ability to utilize HAVEQUICK, SINCGARS, and SATCOM communications.
2. Demonstrate proficiency in familiarization maneuvers.

Prerequisites. ACAD-2010, ACAD-2011, LAB-2020. Required Reading - Local Airfield Operations Manual, Squadron Flight Operations Manual, NTTP Ch 1, ASTACSOP.

SFAM-2031 2.0 365 B,T,R,M (N) S/A 1 FFS/FTD

Goal. Review instrument procedures.

Requirements

1. Discuss:
  - a. Squadron SOP for instrument flight.
  - b. Icing.
  - c. ICAO flight plans and procedures.
  - d. Discuss flight plans to MTRs, tanker tracks, and ships.
  - e. Approach Mode.
2. Introduce. Approach mode.
3. Review:
  - a. Instrument flight procedures.
  - b. Emergency procedures.

Performance Standards. Demonstrate proficiency in instrument flight planning, instrument procedures, and local squadron instrument SOPs.

Prerequisite. T2P. Required Reading - NATOPS Ch 13 & 14.3, NTTP Ch 1 & 9.

2.11.4 Confined Area Landings (CAL)

2.11.4.1 Purpose. To develop proficiency in single, section, and division takeoffs and landings and tactical approaches to confined, unprepared, and reduced visibility areas.

2.11.4.2 General. All maneuver descriptions are in the NTTP. It is expected that FORM-2183 will be flown in conjunction with CAL-2136.

Crew Requirements. P/P for simulators, P/P/CC for aircraft events, P/P/CC/AO for CAL-2133.

ACAD-2110 0.5 \* B,T,R CLS

Reduced Visibility Landing Procedures

Goal. The PUI will have an introductory knowledge of the procedures for reduced visibility landings in the MV-22.

Prerequisite. T2P. Required Reading - NATOPS Ch 9.9 & 14.4 - 14.5, NTTP Ch 3.

SCAL-2130    2.0    \*    B,T    S    FFS/FTD

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Goal. Review single aircraft CALs. Demonstrate/introduce low and medium altitude tactical approaches and departures to a confined area.

Requirements. For planned landing zones, prepare LZ diagrams and brief landing plan in accordance with ASTACSOP and NTTP. Evaluate useful load and determine eight digit landing points appropriate for each zone.

1. Discuss:

- a. Approach considerations (medium vs. low, threat, weather, size of flight).
- b. Landing zone considerations per the ASTACSOP and NTTP.
- c. Tactical approach planning and JMPS considerations.
- d. Cockpit set-up and CRM during tactical approaches.

2. Introduce:

- a. Slope landings with respect to tail and nacelle clearance.
- b. Low altitude tactical approaches, landings and departures to a confined area. (minimum of 1 of each low altitude tactical approach in the NTTP).
- c. Medium altitude tactical approaches, landings, and departures to a confined area (minimum of 1 of each medium altitude tactical approach in the NTTP).
- d. CALs and departures at low power margins.

Performance Standards

1. Demonstrate proper procedures for tactical CAL approaches IAW the NTTP.
2. Maintain the proper glideslope/departure profile for obstacle clearance.
3. Maintain assigned landing heading within 10 degrees.
4. Land within 0.1 nm of intended point of landing.

Prerequisite. ACAD-2110. Required Reading - NTTP Ch 3.

SCAL-2131 2.0 \* B,T,R S FFS/FTD

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Goal. Demonstrate/Introduce single ship RVL procedures.

Requirements

1. Discuss:
  - a. Landing zone evaluation and selection.
    - (1) Soil composition.
    - (2) Elevation and density altitude.
    - (3) Micro terrain, obstacles, and aircraft clearances.
    - (4) Wind effects.
  - b. Standard approach procedures to RVLs.
  - c. RVL procedures.
    - (1) No Hover.
    - (2) HIGE Hover Coupled.
    - (3) HOGE Hover Coupled.
    - (4) Approach to Hover.
  - d. Cockpit set-up and crew resource management during RVLs.
  - e. Wave-off criteria for RVL.
  - f. Takeoff procedures.
2. Introduce:
  - a. RVLs in all levels of the landing scale (minimum of 10 for initial events).
  - b. Takeoffs and departures with various levels of obscuration.

Performance Standards

1. Demonstrate the proper procedures for RVLs IAW the NTTP.
2. Maintain assigned landing heading within 10 degrees.
3. Land within 0.2 nm of intended point of landing.
4. As PF and PNF, recognize and respond correctly to deviations from RVL profile conditions.

Prerequisite. ACAD-2110. Required Reading - NTTP Ch 3.

CAL-2132	2.0	365	B,T	A	1	MV-22
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Goal. Introduce low and medium tactical approaches, landings, and departures to a confined area.

Requirements. For planned landing zones, prepare LZ diagrams and brief landing plan in accordance with ASTACSOP and NTTP. Evaluate useful load and determine eight digit landing points appropriate for each zone.

1. Discuss:

- a. Approach considerations (medium vs. low, threat, weather, size of flight).
- b. Landing zone considerations per the ASTACSOP and NTTP.
- c. Tactical approach planning and JMPS considerations.
- d. Cockpit set-up and CRM during tactical approaches.
- e. JMPS and aircraft systems navigation considerations and sources of error (NATOPS 16.1.2).

2. Introduce. Tactical approaches, landings and departures to a confined area (minimum of 5 for initial sorties).

Performance Standards

1. Demonstrate proper procedures for tactical CAL approaches IAW the NTTP.
2. Maintain the proper glideslope/departure profile for obstacle clearance.
3. Maintain assigned landing heading within 10 degrees.
4. Land within 100 m of intended point of landing.

Prerequisite. SCAL-2130.

External Syllabus Support. Suitable landing site with 15nm radius of protected airspace to 13,000' AGL.

CAL-2133	1.5	180	B,T,R,M	A	1	MV-22
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Goal. Introduce day RVLs in RVL scale level 1-3.

Requirements

1. Discuss:

- a. Landing zone evaluation and selection.
  - (1) Soil composition.

- (2) Elevation and density altitude.
- (3) Micro terrain, obstacles, and aircraft clearances.
- (4) Wind effects.
- b. Standard approach procedures to RVLs.
- c. RVL procedures.
  - (1) No Hover.
  - (2) HIGE Hover Coupled.
  - (3) HOGE Hover Coupled.
  - (4) Approach to Hover.
- d. Hasty Approach Mode (Approach to Hover) applications.
- e. Cockpit set-up and crew resource management during RVLs.
- f. Wave-off criteria for RVL.
- g. Takeoff procedures.
- 2. Introduce:
  - a. RVLs with various levels of obscuration (minimum of 5 for initial events).
  - b. Takeoffs and departures with various levels of obscuration.
  - c. Set up for Approach to Hover.

Performance Standards

- 1. Demonstrate the proper procedures for RVLs IAW the NTTP.
- 2. Maintain assigned landing heading within 10 degrees.
- 3. Land within 0.1 nm of intended point of landing.
- 4. As PF and PNF, recognize and respond correctly to deviations from RVL profile conditions.

Prerequisite. SCAL-2131. Required Reading - NTTP Ch 3.

External Syllabus Support. Suitable landing site with 7nm radius of protected airspace to 5000' AGL.

SCAL-2134	2.0	*	B,T,R	S	2	FFS/FTD	TEN+
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Goal. Demonstrate/introduce section low and medium tactical approaches and departures to a confined area.

Requirements. For planned landing zones, prepare LZ diagrams and brief landing plan in accordance with ASTACSOP and NTTP. Evaluate useful load and determine eight digit landing points appropriate for each zone.

1. Discuss:

- a. Lead and wingman responsibilities.
- b. Loss of visual contact/rejoining the flight.
- c. Lead ship wake interaction.
- d. Section Approach Mode considerations.
- e. Relationship between Landing Plan and Ground Tactical Plan.
- f. Formation brevity codes/prowords (visual, blind, tally, no-joy).

2. Introduce:

- a. Section low altitude tactical approaches, landings and departures to a confined area (minimum of 1 of each low altitude tactical approach in the NTTP as wing).
- b. Section medium altitude tactical approaches, landings, and departures to a confined area (minimum of 1 of each medium altitude tactical approach in the NTTP as wing).

Performance Standards

- 1. Demonstrate proper procedures for tactical CAL approaches IAW the NTTP.
- 2. Maintain the proper glideslope/departure profile for obstacle clearance.
- 3. Maintain assigned landing heading within 10 degrees.
- 4. Lead ship land within 0.1 nm of the waypoint. Wing land within 30 secs and 100m.
- 5. With discrete landing waypoints, lead and wing each land within 0.1nm of their assigned waypoint within 30secs.
- 6. Maintain the proper formation position for section CALs.

Prerequisite. SCAL-2132. Required Reading - NTTP Ch 5.

CAL-2135	2.0	365	B,T	A	2	MV-22 A
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Goal. Introduce section low and medium altitude tactical approaches, landings, and departures to a confined area.



Requirements. For planned landing zones, prepare LZ diagrams and brief landing plan in accordance with ASTACSOP and NTTP. Evaluate useful load and determine eight digit landing points appropriate for each zone.

1. Discuss:
  - a. Closure rates.
  - b. Section departure considerations.
  - c. Landing formation considerations.
  - d. Lead ship fixation.
  - e. Formation VTOL/CONV minimum separation.
  - f. Loss of visual contact/rejoining of flight.
2. Introduce. Section tactical approaches, landings, takeoffs, and departures to a confined area (minimum of 3 as wing for initial sorties).
3. Review:
  - a. Running and Carrier rendezvous.
  - b. Cruise principles.
  - c. Lead changes.

Performance Standards

1. Demonstrate proper procedures for tactical CAL approaches IAW the NTTP.
2. Maintain assigned landing heading within 10 degrees.
3. Lead ship land within 0.1 nm of the waypoint. Wing land within 30 secs and 100m.
4. With discrete landing waypoints, lead and wing each land within 0.1nm of their assigned waypoint within 30secs.
5. Maintain the proper formation position for section CALs.
6. Maintain the proper glideslope/departure profile for obstacle clearance.

Prerequisite. CAL-2132, SCAL-2134.

External Syllabus Support. Suitable landing site with 15nm radius of protected airspace to 13,000' AGL.

CAL-2136      1.5      365      B,T,R,M                      A      3      MV-22

Goal. Introduce division low and medium altitude tactical approaches, landings, and departures to a confined area.

Requirements. For planned landing zones, prepare LZ diagrams and brief landing plan in accordance with ASTACSOP and NTTP. Evaluate useful load and determine eight digit landing points appropriate for each zone.

1. Discuss:

- a. Division approach considerations.
- b. Division landing considerations.
- c. Landing sites and landing points.
- d. Air to Air TACAN considerations.

2. Introduce:

- a. Division terminal area procedures.
- b. Division tactical approaches, landings, takeoffs, and departures to a confined area (minimum of 3 as dash 3 or 4 for initial sorties).

Performance Standards

- 1. Demonstrate proper procedures for tactical CAL approaches IAW the NTTP.
- 2. Maintain assigned landing heading within 10 degrees.
- 3. Lead ship land within 100 m of the waypoint. Wingmen land within 30 secs and 100 m.
- 4. With discrete landing waypoints, lead and wingmen each land within 100 m of their assigned waypoint within 30secs.
- 5. Maintain the proper formation position for division CALs.
- 6. Maintain the proper glideslope/departure profile for obstacle clearance.

Prerequisite. CAL-2135. Required Reading - NTTP Ch 2.

External Syllabus Support. Suitable landing site with 15nm radius of protected airspace to 13000' AGL.

2.11.5 Formation (FORM)

2.11.5.1 Purpose. To introduce tactical formations, lost contact procedures, tactical formation maneuvering, and formation instrument procedures.

2.11.5.2 General. All maneuver descriptions are in the NTTP. It is expected that FORM-2183 will be flown in conjunction with CAL-2136.

Crew Requirements. P/P for simulators, P/P/CC/AO for aircraft events.

ACAD-2160 1.0 \* B,T CLS  
MV-22 Tactical Formation

Goal. The PUI will have an introductory knowledge of Tactical Formation Maneuvering in the MV-22.

Prerequisite. T2P. Required Reading - NTTP Ch 5.

ACAD-2161 1.0 \* B,T CLS  
MV-22 IFR Formation Flight

Goal. The PUI will have an introductory knowledge of IFR Formation Procedures in the MV-22.

Prerequisite. T2P. Required Reading - NTTP Ch 5.

SFORM-2180 1.0 \* B,T,R S 2 FFS/FTD TEN+

Goal. Introduce tactical formations, tactical formation maneuvering, and lost contact procedures.

Requirements

1. Discuss:
  - a. Formation principles.
  - b. Formation communications.
  - c. Lookout doctrine.
  - d. Inter/intra-plane coordination.
  - e. Roles and responsibilities.
2. Introduce:
  - a. Combat spread and combat cruise.
  - b. All tactical formation maneuvers in the NTTP (each in lead and wing).
  - c. Tactical lead changes.
  - d. IIMC break up and rendezvous.
  - e. Lost visual contact and rejoin.

3. Review. Cruise principles.

Performance Standards

1. Execute all tactical formation maneuvers IAW the NTTP.
2. Demonstrate the ability to control the flight through the use of tactical formation maneuvers IAW NTTP.

Prerequisites. SFAM-2130, ACAD-2160.

SFORM-2181	2.0	180	B,T,R,M	S	2	FFS/FTD	TEN+
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Goal. Introduce trail formation procedures.

Requirements. Prepare a flight plan to include a Standard Instrument Departure, Victor Route Navigation, Standard Terminal Area Arrival and Instrument approach procedures.

1. Discuss:
  - a. OPNAV 3710 requirements for section IFR.
  - b. FAA JO 7110.65T requirements for section IFR.
  - c. Planning considerations.
  - d. Flight Director Panel utilization.
  - e. Departure, enroute, and arrival procedures.
  - f. Intra-flight communication.
  - g. Lead/wingman responsibilities and contracts.
  - h. Icing considerations.
2. Introduce:
  - a. Section trail departure and arrival procedures in IMC.
  - b. ATC coordination (standard and non-standard formation, radar vectors).
  - c. Enroute weather penetration.
  - d. Lost communications procedures.

Performance Standards

1. Demonstrate proper procedural knowledge of section trail operations IAW NTTP.
2. Maintain proper trail formation positioning and execute proper procedures for all climbs/descents and routing changes.

Prerequisites. SFAM-2031, ACAD-2161.



- f. IIMC break up and rendezvous procedures.
- 2. Introduce:
  - a. Division formations.
  - b. Division formation maneuvers.
  - c. Loss of visual contact/rendezvous and holding.

Performance Standards

- 1. Maintain proper formation position during division formation maneuvers.
- 2. Demonstrate situational awareness during division formation maneuvers.

Prerequisites. FORM-2182. Required Reading - NTTP Ch 5.

2.11.6 Low Altitude Tactics (LAT)

2.11.6.1 Purpose. To develop proficiency in day LAT operations.

2.11.6.2 General

All maneuver descriptions are in the NTTP.

Non-proficient aircrew are required to fly with a LAT Instructor.

The PUI is LAT qualified upon completion of this stage and written designation by the unit commanding officer.

LAT altitude restrictions and currency requirements are IAW the T&R Program Manual.

Events should be flown in areas with significant vertical relief.

Crew Requirements. P/P for simulators, P/P/CC/AO for aircraft events.

ACAD-2210	0.5	*	B,T,R	CLS
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LAT IV: Planning, Briefing and Debriefing

Goal. The PUI will have an introductory knowledge of planning, briefing, and debriefing a LAT sortie.

Prerequisite. ACAD-2160. Required Reading - AP-1B Ch 1-1 through 1-3, 2-1, 2-2, NTTP Ch 5.

ACAD-2211    0.5    \*    B,T,R    CLS

Tactical Aircrew Coordination

Goal. The PUI will have an introductory knowledge of required coordination between the pilots and aircrew during LAT.

Prerequisite. ACAD-2160.

ACAD-2212    0.5    \*    B,T    CLS

Route Planning Considerations Lecture

Goal. The PUI will have an introductory knowledge of systems route planning considerations.

Prerequisites. CAL-2135. Required Reading - NTTP Ch 1.

LAB-2220    0.5    \*    B,T,R    CLS

LAT Maneuver Walk Through

Goal. The PUI will be able to walk through all LAT maneuvers prior to executing them in the aircraft.

Prerequisites. ACAD-2210. Required Reading - NTTP Ch 4.

SLAT-2230    2.0    \*    B,T,R    S    1    FFS/FTD    TEN

Goal. Introduce LAT maneuvers and navigation on a route in the contour profile.

Requirement. Plan a contour profile route of 150nm (100nm APLN, 50nm CONV) incorporating no fewer than 5 check points with significant vertical relief and threats. Prepare all applicable JMPS/DTM handouts and briefing products. Conduct a route brief in accordance with the NTTP and ASTACSOP.

1. Discuss:

- a. Dive Recovery Rules.
- b. Small descent rule.
- c. Optical flow.
- d. Speed rush baseline.
- e. LAT risk assessment.
  - (1) Time to impact calculations.
  - (2) Turning and looking.

(3) G available / required.

f. Crew Responsibilities.

(1) Terrain Clearance Tasks (TCT).

(2) Mission Tasks (MT).

(a) Critical (CT).

(b) Non Critical (NCT).

(3) Mission Crosscheck Time (MCT).

g. Display utilization.

(1) DIGMAP.

(2) HAT.

(3) Terrain and Sunshading.

(4) LOS

h. FLIR.

i. Route Properties.

(1) Weather, SLAP & Wind Considerations.

(2) Route Checkpoint Selection (Tactically relevant vs. MTR).

(3) Vertical Planning.

(4) Altitude/Speed Profiles.

(5) L-Hour Planning.

(6) Aircraft Performance.

j. LAT Briefing Requirements (including LAT ROC)

2. Introduce:

a. Max Performance Turns.

b. Vertical Maneuvers.

c. Dive entry using 50% rule.

3. Review:

a. Navigation of a route.



- (1) Minimum of 100nm in airplane mode.
- (2) Minimum of 50nm in conversion mode.
- b. LAT maneuvers.
- c. Mission Management.
  - (1) Route.
  - (2) Fuel.
  - (3) L-hour management.
  - (4) Flight Director usage.
- d. Day HUD utilization.
- e. Emergencies in the LAT environment.

Performance Standards

- 1. Complete all mission planning tasks related to JMPS and DTM loads, to include selecting tactically relevant checkpoints.
- 2. Brief the route IAW the NTTP with LATI assistance.
- 3. Execute all LAT maneuvers IAW the NTTP.
- 4. Remain oriented within the planned lateral boundaries of the route.
- 5. Land at the planned LZ within +/-100 meters and +/- 30 seconds of L-hour.
- 6. Employ proper CRM in the LAT regime.
- 7. Comply with ROC IAW T&R Program Manual and other governing directives.

Instructor. LATI.

Prerequisites. SCAL-2130, LAB-2220. Required Reading - NTTP Ch 4.

LAT-2231	2.0	365	B,T	A	1	MV-22
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Goal. Review LAT maneuvers and navigation on a route in the contour profile.

Requirement. Plan a contour profile route of 100nm incorporating no fewer than 5 check points with significant vertical relief and threats. Prepare all applicable JMPS/DTM handouts and briefing products. Conduct a route brief in accordance with the NTTP and ASTACSOP.

1. Discuss:

- a. Stress and fatigue while flying LAT.
- b. Aircrew coordination during LAT.
- c. Squadron SOP for required equipment.
- d. T&R Program Manual.
  - (1) Altitude Restrictions and Currency Requirements.
  - (2) LAT Training with Embarked Troops.
- e. FENCE Checks.
- f. Sensor Integration.
- g. FLIR calibration.
- h. Turbulence.
- i. Bird strikes.

2. Review:

- a. Route Briefing.
- b. Max Performance Turns.
- c. Vertical Maneuvers.
- d. Dive entry using 50% rule.
- e. Navigation of a route of 100 nautical miles in the contour profile.
- f. Update EOB inflight.

Performance Standards

- 1. Complete all mission planning tasks related to JMPS and DTM loads, to include selecting tactically relevant checkpoints.
- 2. Brief the route IAW the NTTP.
- 3. Execute all LAT maneuvers IAW the NTTP.
- 4. Remain oriented within the planned lateral boundaries of the route.
- 5. Properly insert and edit threat utilizing CMS.

6. Land at the planned LZ within +/-100 meters and +/- 30 seconds of L-hour.
7. Employ proper CRM in the LAT regime.
8. Comply with ROC IAW T&R Program Manual and other governing directives.

Instructor. LATI.

Prerequisites. CAL-2132, ACAD-2211, ACAD-2212, SLAT-2230. Required Reading - NTTP Ch 4.

External Syllabus Support. Approved route/range space with vertical relief.

SLAT-2232	2.0	*	B,T,R	S	2	FFS/FTD	TEN+
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Goal. Introduce section LAT maneuvers and navigation on a route in the contour profile.

Requirement. Plan a contour profile route of 150nm (100nm APLN, 50nm CONV) incorporating no fewer than 5 check points with significant vertical relief and threats. Prepare all applicable JMPS/DTM handouts and briefing products. Conduct a route brief in accordance with the NTTP and ASTACSOP.

1. Discuss:
  - a. Lookout doctrine during section LAT.
  - b. Formation considerations in restricted terrain.
  - c. Airspeed selection.
  - d. Energy Management, Ps-EM considerations.
  - e. Loss of visual contact.
  - f. Loss of communications.
  - g. Terminate and Knock-It-Off Criteria/Procedures.
2. Introduce:
  - a. Section LAT maneuvers.
    - (1) Max Performance Turns.
    - (2) Vertical Maneuvers.
    - (3) 5 degree rule.
    - (4) 50% rule dive entry.

- b. Navigation of a route in the wing position while in the contour profile in both combat cruise and combat spread.

- (1) Minimum of 100nm in airplane mode.

- (2) Minimum of 50nm in conversion mode.

#### Performance Standards

1. Complete all mission planning tasks related to JMPS and DTM loads, to include selecting tactically relevant checkpoints.
2. Brief the route IAW the NTTP.
3. Execute all LAT maneuvers IAW the NTTP.
4. Remain oriented within the planned lateral boundaries of the route. Employ proper tactical formation maneuvers to control the flight.
5. Properly insert and edit threat utilizing CMS.
6. Land at the planned LZ within +/-100 meters and +/- 30 seconds of L-hour.
7. Employ proper CRM in the LAT regime.
8. Comply with ROC IAW T&R Program Manual and other governing directives.

Instructor. LATI.

Prerequisites. SCAL-2134, SFORM-2180, SLAT-2230.

LAT-2233	2.0	365	B,T,R,M	A	2	MV-22
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Goal. Review section LAT maneuvers and navigation on a route in the contour profile.

Requirement. Plan a contour profile route of 150nm (100nm APLN, 50nm CONV) incorporating no fewer than 5 check points with significant vertical relief and threats. Prepare all applicable JMPS/DTM handouts and briefing products. Conduct a route brief in accordance with the NTTP and ASTACSOP.

1. Discuss:
  - a. Any previously discussed item.
  - b. Section communications in the LAT regime.
  - c. LAT related brevity codes/prowords.

- d. L-Hour management techniques.
  - e. Magellan and Columbus parameters.
2. Review:
- a. Section LAT maneuvers.
    - (1) Max Performance Turns.
    - (2) Vertical Maneuvers.
    - (3) 5 degree rule.
    - (4) 50% rule dive entry.
  - b. Navigation of a route in the wing position while in the contour profile in both combat cruise and combat spread.
    - (1) Minimum of 100nm in airplane mode.
    - (2) Minimum of 50nm in conversion mode.

Performance Standards

1. Complete all mission planning tasks related to JMPS and DTM loads, to include selecting tactically relevant checkpoints.
2. Prepare the route brief IAW the NTTP (LATI deliver brief).
3. Execute all LAT maneuvers IAW the NTTP.
4. Remain oriented within the planned lateral boundaries of the route. Employ proper tactical formation maneuvers to control the flight.
5. Properly insert and edit threat utilizing CMS.
6. Lead ship land within 0.1 nm of the waypoint. Wing land within 30 secs and 100m.
7. With discrete landing waypoints, lead and wing each land within 0.1nm of their assigned waypoint within 30secs.
8. Employ proper CRM in the LAT regime.
9. Comply with ROC IAW T&R Program Manual and other governing directives.

Instructor. LATI.

Prerequisites. SCAL-2135, FORM-2182, LAT-2231, SLAT-2232.

External Syllabus Support. Approved route/range space with vertical relief.

2.11.7 Night Systems (NS) High Light Level (HLL)

2.11.7.1 Purpose. To develop proficiency while using night vision goggles under light levels greater than 0.0022 lux as predicted by the SLAP module. Certify the PUI Night Systems Qualified (NSQ) HLL.

2.11.7.2 General

All maneuver descriptions are in the NTTP.

An NSI is required for all unqualified pilots, and when a qualified aircrew loses proficiency in a NS LAT syllabus flight IAW the T&R Program Manual.

The PUI is NS HLL qualified upon completion of this stage and written designation by the unit commanding officer.

Crew Requirements. P/P for simulators, P/P/CC/AO for aircraft events.

ACAD-2310	0.5	*	B,T	CLS
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Rotary Wing Mishap Lessons Learned Lecture

Goal. The PUI has a familiarity with recent night systems rotary wing mishaps.

Instructor. NSI.

Prerequisite. T2P.

ACAD-2311	0.5	*	B,T	CLS
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Fixed Wing Mishap Lessons Learned Lecture

Goal. The PUI has a familiarity with recent night systems fixed wing mishaps.

Instructor. NSI.

Prerequisite. T2P.

ACAD-2312	0.5	*	B,T,R	CLS
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Introduction to LASER Theory and Systems Lecture

Goal. The PUI will have an introductory knowledge of LASER theory and systems.

Instructor. NSI.

Prerequisite. T2P.

ACAD-2313    0.5    \*    B,T    CLS

Sensor Integration Lecture

Goal. The PUI has a familiarity with methods for integrating various night system sensor on the MV-22.

Instructor. NSI.

Prerequisite. CAL-2135. Required Reading - NATOPS Ch 2.3.9, 2.12, 16.9, MAWTS-1 NVD Manual Ch 5 (Part V).

ACAD-2314    0.5    \*    B,T    CLS

Tactics in the Night Environment Lecture

Goal. The PUI has a familiarity with tactics in the night environment.

Instructor. NSI.

Prerequisite. CAL-2135.

SNSHLL-2330   2.0    \*    B,T,R    NS    S    2    FFS/FTD   TEN+

Goal. Review single aircraft CALs and introduce single and section tactical approaches using NVDs in HLL.

Requirement. For planned landing zones, prepare LZ diagrams and brief landing plan in accordance with ASTACSOP and NTP. Evaluate useful load and determine eight digit landing points appropriate for each zone.

1. Discuss:

- a. NVDs set up and employment.
- b. Night approach considerations (medium vs. low, threat, weather, size of flight).
- c. Night landing zone selection and analysis.
- d. NVD scan techniques.
- e. Cockpit set-up and CRM during tactical approaches.
- f. SLAP and EOTDA.
- g. RVL procedures in the night environment.
- h. Night systems formation techniques.

2. Introduce:

- a. Tactical approaches, landings and departures to a confined area (minimum of 3 as lead and 3 as wing).
- b. Wingman responsibilities.
- c. Loss of visual contact/rejoining the flight.
- d. Crew comfort level during NVD CAL operations.
- e. Lead changes.

3. Review:

- a. Single aircraft CALs in HLL.
- b. RVL Procedures.

Performance Standards

- 1. Demonstrate proper procedural knowledge for NVD CALs IAW the NTTP and the MAWTS-1 NVD Manual.
- 2. Demonstrate proper NVD scanning techniques IAW the MAWTS-1 NVD Manual.
- 3. Maintain assigned landing heading within 10 degrees.
- 4. Lead ship land within 0.1 nm of the waypoint. Wing land within 30 secs and 100 m.
- 5. With discrete landing waypoints, lead and wing each land within 0.1 nm of their assigned waypoint within 30 secs.
- 6. Maintain the proper glideslope/departure profile for obstacle clearance.
- 7. Recognize proper formation positions for NVD section CALs.

Instructor. NSI.

Prerequisites. SCAL-2131, SCAL-2134, ACAD-2310,2311,2312,2314.  
Required Reading - T&R Program Manual paragraphs 306, 308, and 311, MAWTS-1 NVD Manual Ch 14.

NS HLL-2331 2.0 365 B,T NS A 1 MV-22

Goal. Introduce FAM maneuvers and single aircraft NVD CALs in HLL and tactical approaches using NVDs in HLL.

Requirement. For planned landing zones, prepare LZ diagrams and brief landing plan in accordance with ASTACSOP and NTTP. Evaluate useful load and determine eight digit landing points appropriate for each zone.

1. Discuss:



- a. Pilot and aircrew duties during NVD CAL operations.
  - b. Aircraft lighting controls, regulations (FAA exemption) and conditions.
  - c. Use of the FLIR for LZ identification.
  - d. Night environment scene interpretation (NVG vs. FLIR).
  - e. Initial Terminal Guidance.
  - f. NVG emergencies.
2. Introduce:
- a. FAM maneuvers utilizing NVDs.
  - b. NVD tactical approaches, landings, and departures to a confined area (minimum of 5 for initial events).
  - c. Use of aircraft lighting (visible and IR searchlight).
  - d. Initial Terminal Guidance.
3. Review. RVL Procedures.

Performance Standards

1. Demonstrate proper procedural knowledge for NVD CALs IAW the NTTP and the MAWTS-1 NVD Manual.
2. Demonstrate proper NVD scanning techniques IAW the MAWTS-1 NVD Manual.
3. Maintain assigned landing heading within 10 degrees.
4. Land within 100 m of the intended waypoint.
5. Maintain the proper for obstacle clearance.

Instructor. NSI.

Prerequisites. CAL-2132, SNS-2330, ACAD-2313.

External Syllabus Support. Suitable landing site with 7nm radius of protected airspace to 1000' AGL.

NS HLL-2332 2.0 365 B,T NS A 2 MV-22

Goal. Introduce formation flight, section CALs, and tactical approaches using NVDs in HLL.

Requirement. For planned landing zones, prepare LZ diagrams and brief landing plan in accordance with ASTACSOP and NTTP. Evaluate useful load and determine eight digit landing points appropriate for each zone.

1. Discuss:
  - a. Aircraft lighting during NVD formation.
  - b. Lead ship wake interaction and visual checkpoints on NVDs.
2. Introduce:
  - a. NVD formation.
  - b. NVD section tactical approaches, departures, takeoffs and landings (minimum of 3 as wing for initial events).

Performance Standards

1. Maintain flight integrity during NVD section CALs.
2. Maintain awareness of wingman's position and provide adequate landing area.
3. Maintain assigned landing heading within 10 degrees.
4. Lead ship land within 0.1 nm of the waypoint. Wing land within 30 secs and 100 m.
5. With discrete landing waypoints, lead and wing each land within 0.1 nm of their assigned waypoint within 30 secs.
6. Maintain the proper glideslope/departure profile for obstacle clearance.

Instructor. NSI.

Prerequisites. CAL-2135, FORM-2182, NS-2331.

External Syllabus Support. Suitable landing site with 7nm radius of protected airspace to 1000' AGL.

SNSHLL-2333	2.0	*	B,T	NS	S	2	FFS/FTD	TEN+
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Goal. Introduce single aircraft and section NVD LAT maneuvers and navigation in HLL.

Requirement. Plan a contour profile route of 150nm (100nm APLN, 50nm CONV) incorporating no fewer than 5 check points with significant vertical relief and threats. Prepare all applicable JMPS/DTM handouts and briefing products. Conduct a route brief in accordance with the NTTP and ASTACSOP.

1. Discuss:
  - a. NVD LAT techniques.
  - b. NVD Section/formation considerations.
  - c. NVD Optical flow and speed rush

- d. NVG HUD use in the LAT environment.
  - e. HLL route planning considerations and JMPS utilization.
  - f. Conversion mode NS LAT.
2. Introduce:
- a. NVD LAT navigation of 150 nm route in the contour profile.
  - b. Tactical formation flight in the NVD LAT environment.
  - c. NVD LAT maneuvers.

Performance Standards

1. Maintain proper flight integrity IAW the NTTP during NVD LAT flight.
2. Complete all mission planning tasks related to JMPS and DTM loads, to include selecting tactically relevant checkpoints.
3. Brief route IAW the NTTP with NSI assistance.
4. Execute all LAT maneuvers IAW the NTTP.
5. Remain oriented within the planned lateral boundaries of the route. Employ proper tactical formation maneuvers to control the flight.
6. Properly insert and edit threat utilizing CMS.
7. Employ proper CRM in the LAT regime.
8. Land at the planned LZ within +/- 100 meters and +/- 30 seconds of planned time.

Instructor. NSI.

Prerequisites. SLAT-2232, SNS-2330, ACAD-2314. Required Reading - MAWTS-1 NVD Manual Ch 15.

NS HLL-2334 2.0 240 B,T NS A 1 MV-22

Goal. Introduce LAT maneuvers and navigation using NVDs.

Requirement. Plan a contour profile route of 100 nm incorporating no fewer than 5 check points with significant vertical relief and threats. Prepare all applicable JMPS/DTM handouts and briefing products. Prepare a route brief in accordance with the NTTP and ASTACSOP.

1. Discuss:
  - a. Use of NVG HUD for LAT navigation.
  - b. FLIR utilization in checkpoint identification and terrain avoidance.

- c. Hazard detection.
  - d. Goggle/Degoggle procedures.
  - e. Vertical Maneuvers in the NVD environment.
  - f. Crew comfort level during NVD LAT.
  - g. Required equipment for NS LAT.
2. Introduce:
- a. NVD LAT navigation of 100nm route in the contour profile.
  - b. NVD LAT maneuvers.
3. Review. FLIR, DIGMAP and INAV operations.

Performance Standards

1. Maintain terrain awareness and avoidance during NVD LAT maneuvers.
2. Complete all mission planning tasks related to JMPS and DTM loads, to include selecting tactically relevant checkpoints.
3. Prepare the route brief IAW the NTTP (delivered by the NSI).
4. Execute all LAT maneuvers IAW the NTTP.
5. Remain oriented within the planned lateral boundaries of the route.
6. Properly insert and edit threat utilizing CMS.
7. Employ proper CRM in the LAT regime.
8. Land at the planned LZ within +/-100 meters and +/- 30 seconds of L-hour.

Instructor. NSI.

Prerequisites. LAT-2233, NS-2331, SNS-2333.

External Syllabus Support. Approved route/range space with vertical relief.

NS HLL-2335 2.5 240 B,T,R,M NS A 2 MV-22

Goal. Introduce section NVD LAT maneuvers and navigation using NVDs under HLL conditions.

Requirement. Plan a contour profile route of 100 nm incorporating no fewer than 5 check points with significant vertical relief and threats. Prepare all applicable JMPS/DTM handouts and briefing products. Prepare a route brief in accordance with the NTTP and ASTACSOP.

1. Discuss:
  - a. Pilot and crew chief/observer duties in the LAT environment.
  - b. Section communications in the LAT regime.
  - c. LAT related brevity codes/prowords.
  - d. L-Hour management techniques.
  - e. Magellan and Columbus parameters.
  - f. Section considerations and wingman awareness.
2. Review:
  - a. Tactical formation maneuvers during NVD LAT.
  - b. NVD LAT maneuvers.
  - c. NVD LAT navigation of 100nm route in the contour profile.
  - d. NS CALS.

Performance Standards

1. Complete all mission planning tasks related to JMPS and DTM loads, to include selecting tactically relevant checkpoints.
2. Prepare the route brief IAW the NTTP (NSI deliver brief).
3. Execute LAT maneuvers IAW the NTTP.
4. Remain oriented within the planned lateral boundaries of the route. Employ proper tactical formation maneuvers to control the flight.
5. Lead ship land within 0.1 nm of the waypoint. Wing land within 30 secs and 100m.
6. With discrete landing waypoints, lead and wing each land within 0.1nm of their assigned waypoint within 30secs.
7. Employ proper CRM in the LAT regime.
8. Comply with ROC IAW T&R Program Manual and other governing directives.

Instructor. NSI.

Prerequisites. NS-2332, NS-2334.

External Syllabus Support. Approved route/range space with vertical relief.

NS HLL-2336 1.5 \* B,T,R NS A 3 MV-22

Goal. Introduce division CALs using NVDs under HLL conditions.

Requirement. For planned landing zones, prepare LZ diagrams and brief landing plan in accordance with ASTACSOP and NTTP. Evaluate useful load and determine eight digit landing points appropriate for each zone.

1. Discuss:

- a. Division formation and landing considerations.
- b. LZ selection.
- c. Tactical approaches.

2. Introduce:

- a. NVD HLL division cruise principles, formation maneuvering.
- b. NVD division tactical approaches, departures, takeoffs and landings (minimum of 3 as dash 3 or 4 for initial events).
- c. NVD HLL division lead changes.

Performance Standards

- 1. Maintain proper position during NVD HLL division landings IAW the NTTP.
- 2. Maintain assigned landing heading within 10 degrees.
- 3. Lead ship land within 100 m of the waypoint. Wingmen land within 30 secs and 100 m.
- 4. With discrete landing waypoints, lead and wingmen each land within 100 m of their assigned waypoint within 30secs.
- 5. Maintain the proper formation position for division CALs.
- 6. Maintain the proper glideslope/departure profile for obstacle clearance.
- 7. Maintain awareness of all wingmen and provide adequate landing area during NVD HLL CALs.
- 8. Maintain flight integrity during NVD division CALs.

Instructor. NSI.

Prerequisites. CAL-2136, NS-2332.

External Syllabus Support. Suitable landing site with 7nm radius of protected airspace to 1000' AGL.

#### 2.11.8 Night Systems (NS) Low Light Level (LLL)

2.11.8.1 Purpose. To develop proficiency while using night vision goggles under light levels less than 0.0022 lux as predicted by the SLAP module. Certify the PUI Night Systems Qualified [NSQ LLL].

#### 2.11.8.2 General

All maneuver descriptions are in the NTTP.

An NSI is required for unqualified pilots, and when a qualified aircrew loses proficiency in a NS LAT syllabus flight IAW the T&R Program Manual.

The PUI is NSQ LLL upon completion of this stage and written designation by the unit commanding officer.

Crew Requirements. P/P for simulators, P/P/CC/AO for aircraft events.

SNSLLL-2380	2.0	*	B,T,R	NS	2	FFS/FTD	TEN+
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Goal. Introduce single aircraft and section CALs using NVDs in LLL.

Requirement. For planned landing zones, prepare LZ diagrams and brief landing plan in accordance with ASTACSOP and NTTP. Evaluate useful load and determine eight digit landing points appropriate for each zone.

1. Discuss:
  - a. Differences between HLL and LLL operations.
  - b. NVD LLL considerations for tactical approaches.
  - c. Aircraft lighting considerations during NVD LLL operations.
2. Introduce. Tactical approaches, landings and departures to a confined area in LLL (minimum of 3 as lead and 3 as wing).

#### Performance Standards

1. Demonstrate proper procedural knowledge for NVD CALs IAW the NTTP and the MAWTS-1 NVD Manual.
2. Demonstrate proper NVD LLL scanning techniques IAW MAWTS-1 NVD Manual.
3. Maintain assigned landing heading within 10 degrees.
4. Lead ship land within 0.1 nm of the waypoint. Wing land within 30 secs and 100 m.
5. With discrete landing waypoints, lead and wing each land within 0.1 nm of their assigned waypoint within 30 secs.

6. Maintain the proper glideslope/departure profile for obstacle clearance.
7. Recognize proper formation positions for NVD section CALs.

Instructor. NSI.

Prerequisites. SNS-2330. Required Reading - MAWTS-1 NVD Manual Ch 19.

External Syllabus Support. Suitable landing site with 7nm radius of protected airspace to 1000' AGL.

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NS LLL-2381 2.0 240 B NS A 1 MV-22

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Goal. Introduce FAM maneuvers, single aircraft CALs, and tactical approaches using NVDs in LLL.

Requirement. For planned landing zones, prepare LZ diagrams and brief landing plan in accordance with ASTACSOP and NTTP. Evaluate useful load and determine eight digit landing points appropriate for each zone.

1. Discuss:
  - a. LLL CAL considerations.
  - b. LLL planning considerations.
  - c. Environmental considerations.
  - d. LLL scene interpretation.
  - e. Sensor integration.
2. Introduce. NVD tactical approaches, landings, and departures to a confined area in LLL (minimum of 5 for initial events).
3. Review. RVL Procedures.

Performance Standards

1. Execute proper procedures for NVD LLL CALs IAW the NTTP and the MAWTS-1 NVD Manual.
2. Maintain assigned landing heading within 10 degrees.
3. Land within 100 m of the waypoint.
4. Maintain the proper glideslope/departure profile for obstacle clearance.
5. Demonstrate proper NVD scanning techniques IAW the MAWTS-1 NVD Manual.

Instructor. NSI.

Prerequisites. NS-2336, SNS-2380.



External Syllabus Support. Suitable landing site with 7nm radius of protected airspace to 1000' AGL.

NS LLL-2382 2.0 240 B,T,R NS A 2 MV-22

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Goal. Introduce night section CALs using NVDs in LLL.

Requirement. For planned landing zones, prepare LZ diagrams and brief landing plan in accordance with ASTACSOP and NTTP. Evaluate useful load and determine eight digit landing points appropriate for each zone.

1. Discuss:
  - a. Aircraft lighting during NVD formation in LLL.
  - b. Lead ship wake interaction and visual checkpoints on NVDs.
2. Introduce. NVD section tactical approaches, departures, takeoffs and landings (minimum of 5 as wing for initial events).

Performance Standards

1. Execute proper procedures for NVD LLL CALs IAW the NTTP and the MAWTS-1 NVD Manual.
2. Maintain assigned landing heading within 10 degrees.
3. Lead ship land within 100 m of the waypoint. Wing land within 30 secs and 100 m.
4. With discrete landing waypoints, lead and wing each land within 100 m of their assigned waypoint within 30 secs.
5. Maintain the proper glideslope/departure profile for obstacle clearance.
6. Recognize proper formation positions for NVD section CALs.
7. Demonstrate proper NVD scanning techniques IAW the MAWTS-1 NVD Manual.
8. Maintain flight integrity during NVD section CALs.
9. Maintain awareness of wingman's position and provide adequate landing area.

Instructor. NSI.

Prerequisites. NS-2381.

External Syllabus Support. Suitable landing site with 7nm radius of protected airspace to 1000' AGL.

SNSLLL-2383 2.0 \* B,T NS S 2 FFS/FTD TEN+

Goal. Introduce NVD section tactical formation maneuvers, LAT maneuvers and navigation under LLL conditions.

Requirement. Plan a contour profile route of 150 nm (100 nm APLN, 50 nm CONV) incorporating no fewer than 5 check points with significant vertical relief and threats. Prepare all applicable JMPS/DTM handouts and briefing products. Prepare a route brief in accordance with the NTTP and ASTACSOP.

1. Discuss:
  - a. LLL LAT techniques.
  - b. LLL section/formation considerations.
  - c. LLL optical flow and speed rush
  - d. LLL checkpoint selection considerations and JMPS utilization.
  - e. Conversion mode NS LAT.
  - f. Tactical formation maneuvering in LLL (combat spread).
  - g. Terrain awareness and visual acuity under LLL conditions.
  - h. Effects of shadowing under LLL conditions.
2. Introduce:
  - a. LLL LAT navigation of 150 nm route in the contour profile.
  - b. Tactical formation maneuvers (combat spread) in LLL.
  - c. LAT maneuvers in LLL.

Performance Standards

1. Complete all mission planning tasks related to JMPS and DTM loads, to include selecting tactically relevant checkpoints.
2. Brief the route IAW the NTTP.
3. Execute LAT maneuvers IAW the NTTP.
4. Remain oriented within the planned lateral boundaries of the route. Employ proper tactical formation maneuvers to control the flight.
5. Lead ship land within 0.1 nm of the waypoint. Wing land within 30 secs and 100 m.
6. With discrete landing waypoints, lead and wing each land within 0.1 nm of their assigned waypoint within 30 secs.
7. Employ proper CRM in the LAT regime.

8. Comply with ROC IAW T&R Program Manual and other governing directives.
9. Maintain proper flight integrity IAW the NTTP during NVD LAT flight.
10. Maintain terrain awareness and avoidance during NVD LAT maneuvers.

Instructor. NSI.

Prerequisites. SNS-2333, SNS-2380.

NS LLL-2384 2.5 180 B,T,R,M NS A 2 MV-22

Goal. Introduce NVD section tactical formation maneuvers, LAT maneuvers and navigation under LLL conditions.

Requirement. Plan a contour profile route of 100 nm incorporating no fewer than 5 check points with significant vertical relief and threats. Prepare all applicable JMPS/DTM handouts and briefing products. Prepare a route brief in accordance with the NTTP and ASTACSOP.

1. Discuss:
  - a. LLL LAT considerations.
  - b. L-Hour management techniques.
  - c. Magellan and Columbus parameters.
  - d. Section considerations and wingman awareness.
  - e. Tactical formation maneuvering in LLL.
  - f. LLL Rules of Conduct and Dive recovery rules.
2. Introduce:
  - a. NVD LAT navigation of 100nm route in the contour profile.
  - b. Tactical formation maneuvering in LLL.
  - c. LAT maneuvers in LLL.

Performance Standards

1. Complete all mission planning tasks related to JMPS and DTM loads, to include selecting tactically relevant checkpoints.
2. Prepare the route brief IAW the NTTP (NSI to deliver).
3. Execute LAT maneuvers IAW the NTTP.

4. Remain oriented within the planned lateral boundaries of the route. Employ proper tactical formation maneuvers to control the flight.
5. Lead ship land within 100 m of the waypoint. Wing land within 30 secs and 100 m.
6. With discrete landing waypoints, lead and wing each land within 100 m of their assigned waypoint within 30 secs.
7. Employ proper CRM in the LAT regime.
8. Comply with ROC IAW T&R Program Manual and other governing directives.
9. Maintain proper flight integrity IAW the NTTP during NVD LAT flight.
10. Maintain terrain awareness and avoidance during NVD LAT maneuvers.

Instructor. NSI.

Prerequisites. NS-2382, SNS-2383.

NS	LLL-2385	2.5	240	B,T,R,M	NS	A	3	MV-22
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Goal. Introduce division formations and division CALs using NVDs under LLL conditions.

Requirement. For planned landing zones, prepare LZ diagrams and brief landing plan in accordance with ASTACSOP and NTTP. Evaluate useful load and determine eight digit landing points appropriate for each zone.

1. Discuss:
  - a. Division formation and landing considerations.
  - b. LZ selection.
  - c. Tactical approaches.
2. Introduce:
  - a. NVD LLL division formation principles and tactical formation maneuvering.
  - b. NVD division tactical approaches, departures, takeoffs and landings (minimum of 3 as dash 3 or 4 for initial events).
  - c. NVD LLL division lead changes.
  - d. Division Box.
  - e. Division Fluid Four.

Performance Standards

1. Maintain proper position during NVD LLL division landings IAW the NTTP.
2. Maintain assigned landing heading within 10 degrees.
3. Lead ship land within 100 m of the waypoint. Wingmen land within 30 secs and 100 m.
4. With discrete landing waypoints, lead and wingmen each land within 100 m of their assigned waypoint within 30secs.
5. Maintain the proper formation position for division CALs.
6. Maintain the proper glideslope/departure profile for obstacle clearance.
7. Maintain awareness of all wingmen and provide adequate landing area during NVD LLL CALs.
8. Maintain flight integrity during NVD division CALs.

Instructor. NSI.

Prerequisites. NS-2336, NS-2382.

External Syllabus Support. Suitable landing site with 7nm radius of protected airspace to 1000' AGL.

2.11.9 Air to Air Refueling (AAR)

2.11.9.1 Purpose. To develop proficiency in day and NVD AAR.

2.11.9.2 General

All maneuver descriptions are in the NTTP and ATP-56B.

A minimum of 5 contacts and movement to the refueling position are required to successfully complete each initial flight.

An AARI is required for all initial sorties. Aircrew who have completed their initial AAR sortie (day or night) and have lost proficiency in that sortie may regain proficiency by flying with an aircraft commander who is proficient in that sortie.

Crew Requirements. P/P for simulators, P/P/CC for day aircraft events, P/P/CC/AO for night aircraft events.

ACAD-2410	0.5	*	B,T,R			CLS
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MV-22 Air to Air Refueling Lecture

Goal. The PUI will have a familiarity with MV-22 air to air refueling.

Instructor. AARI.

Prerequisite. ACAD-2160. Required Reading - NATOPS 9.2, NTTP Ch 6, ATP-56B Part 1 (Ch 1, Annex 1A, Ch 2, Ch 3 paragraph 3001, 3002, 3005, 3006, 3007), ATP-56B Part 2 (Ch 1 para 1001-1006, 1010-1012, Annex 1a-1g, Ch 2, Annex 2g, Ch 3-4, Ch 5 para 506, 510-514, Annex 5a-5c).

SAAR-2430	1.0	*	B,T	S	1	FFS/FTD
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Goal. Introduce day AAR.

Requirements

1. Discuss:

- a. AAR terminology.
- b. CRM during AAR and crew comfort level.
- c. Rendezvous procedures, both VMC and IMC.
- d. AAR performance envelope and limitations.
- e. Cross-overs.
- f. Inadvertent disconnects.
- g. Emergency disconnect.
- h. EMCON refueling.
- i. MOA and Warning area procedures.
- j. AAR aircraft configurations.

2. Introduce:

- a. Basic scan and flight techniques required for AAR.
- b. Medium and high altitude, high gross weight AAR profiles.
- c. Rendezvous (minimum of 2 for initial events).
- d. Join-up.
- e. Contact/fuel transfer.
- f. Post AAR procedures.
- g. Emergency breakaway.

Performance Standards

1. Demonstrate proper knowledge of AAR procedures IAW the NTTP and the ATP-56.
2. Recognize proper visual reference points IAW the NTTP.

Instructor. AARI.

Prerequisites. SFORM-2180, ACAD-2410. Required Reading - NTTP Ch 6.

AAR-2431	1.5	365	B,T,R	A	1	MV-22
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Goal. Introduce day AAR.

Requirements

1. Discuss:
  - a. AAR planning and coordination (AAR card).
  - b. CRM during AAR and crew comfort level.
  - c. Rendezvous procedures.
  - d. Enroute AAR considerations.
  - e. Fuel boost.
  - f. Cross-under.
  - g. Reel response.
  - h. Inadvertent disconnects.
  - i. Fuel siphoning.
  - j. Emergency disconnect.
2. Introduce:
  - a. Rendezvous (minimum of 2).
  - b. Tanker flow.
  - c. Contact/fuel transfer (minimum of 5 for initial events).
  - d. Post AAR procedures.
  - e. Emergency breakaway.

Performance Standards

1. Execute proper AAR procedures IAW the NTTP and the ATP-56.
2. Maintain proper visual reference points IAW the NTTP.

3. Execute 5 successful contacts with 5 minutes sustained contact (actual or simulated fuel transfer).

Instructor. AARI.

Prerequisites. FORM-2182, SAAR-2430.

External Syllabus Support. Approved tanker.

SAAR-2432	1.0	*	B,T	NS	S	1	FFS/FTD
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Goal. Introduce night aided AAR.

Requirements

1. Discuss:
  - a. CRM during NVD AAR.
  - b. Comfort level.
  - c. Closure rates.
  - d. Depth perception.
  - e. Receiver/tanker lighting.
  - f. Visual illusions.
  - g. Inadvertent IMC.
  - h. Emergency procedures.
  - i. Visual signals.
  - j. Tanker sequence.

2. Introduce. NVD AAR.

Performance Standards

1. Demonstrate proper knowledge of night/NVD AAR procedures IAW the NTTP and the ATP-56.
2. Recognize proper night/NVD visual reference points IAW the NTTP.

Instructor. AARI.

Prerequisites. SNS-2330, SAAR-2430. Required Reading - NTTP Ch 6, MAWTS-1 NVD Manual.

AAR-2433	1.5	365	B,T,R,M	NS	A	1	MV-22
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Goal. Review NVD AAR.



Requirements. Introduce night AAR while using NVDs.

1. Discuss:
  - a. CRM during NVD AAR.
  - b. Comfort level.
  - c. Closure rates.
  - d. Depth perception.
  - e. Receiver/tanker lighting.
  - f. Visual illusions.
  - g. Inadvertent IMC.
  - h. Emergency procedures.
  - i. Visual signals.
  - j. Tanker sequence.
  - k. NVD failures.
  - l. NVD rendezvous.
  - m. Simultaneous/alternate AAR operations.
  - n. Threat response during AAR operations.
2. Introduce:
  - a. Rendezvous (minimum of 2).
  - b. Tanker flow.
  - c. Contact/fuel transfer.
  - d. Post AAR procedures.
  - e. Emergency breakaway.
  - f. EMCON tanker procedures (EMCON condition 3 or 4).

Performance Standards

1. Execute proper AAR procedures IAW the NTTP and the ATP-56.
2. Maintain proper visual reference points IAW the NTTP.
3. Execute 5 successful contacts with 5 minutes sustained contact (actual or simulated fuel transfer).

Instructor. AARI.

Prerequisites. AAR-2431, SAAR-2432, 2336~NS, 2335~LLL (NSQ for the appropriate light level).

External Syllabus Support. Approved tanker.

#### 2.11.10 Tail Gunnery (TG)

2.11.10.1 Purpose. To develop the ability to control the employment of the MV-22 ramp mounted weapon system.

2.11.10.2 General. At the completion of this stage, the PUI will demonstrate the ability to control the employment of the MV-22 ramp mounted weapon system from a hover, approaching the landing zone, departing the landing zone and enroute to the landing zone. Either the M240D or the GAU-16/21, may be used to satisfy the flight events in this stage.

2.11.10.3 Crew Requirements. P/P/CC/AO for aircraft events.

ACAD-2510	0.5	*	B,T	CLS
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#### M240D Familiarization Lecture

Goal. The PUI will have a familiarity with the operation of the M240D ramp mounted weapon system.

Instructor. TGI.

Prerequisite. T2P. Required Reading - NTRP, NTTP Ch 7.

ACAD-2511	0.5	*	B,T	CLS
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#### GAU-16 Familiarization Lecture

Goal. The PUI will be familiar with operation of the GAU-16 ramp mounted weapon system.

Instructor. TGI.

Prerequisite. T2P. Required Reading - NTRP.

ACAD-2512	0.5	*	B,T	CLS
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#### GAU-21 Familiarization Lecture

Goal. The PUI will be familiar with operation of the GAU-21 ramp mounted weapon system.

Instructor. TGI.

Prerequisite. T2P. Required Reading - NTRP.

TG-2532	1.5	365	B, T	A	2	MV-22
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Goal. To introduce MV-22 ramp mounted weapon system employment during the day.

Requirement. Objective area diagram with assault sectors of fire annotated and surface danger zones identified.

1. Discuss:

- a. Objective area planning (fires integration, weapons conditions, target reference points, escort location).
- b. Fields of Fire and Sectors of Fire.
- c. Standard terminology for control of crew served weapons.
- d. ICS procedures.
- e. Weapons safety and things falling off aircraft (TFOA).
- f. Weapon malfunctions/stoppages for weapons.
- g. Emergencies (aircraft & weapons).
- h. Specifications of MV-22 crew served weapons (tracer burnout range, maximum range, time of flight).
- i. MV-22 crew served weapons ammunition and effects on various targets (buildings, unarmored vehicles, armored vehicles).
- j. Rules of engagement (ROE).
- k. Wingman awareness and formation considerations during aerial gunnery.

## 2. Introduce:

- a. Preparation of weapons and aircraft.
- b. Weapon conditions and standard weapon commands.
- c. PF and PNF duties during air-to-ground gunnery.

Performance Standards. Execute proper procedures for ordnance delivery IAW the NTTP.

Prerequisites. CAL-2135, ACAD-2510, ACAD-2511, ACAD-2512. Required Reading - NTTP Ch 7.

Ordnance. 600 rounds per gunner of appropriate ammunition.

Range. Appropriate gunnery range.

External Syllabus Support. Moving Land Target (MLT) if available.

TG-2535      1.5      365      B,T,R,M      NS      A      2      MV-22

Goal. To introduce defensive weapons employment utilizing the NVDs.

Requirement. Objective area diagram with assault sectors of fire annotated and surface danger zones identified.

1. Discuss:

- a. CRM during night AG.
- b. Effects of weapon employment on NVGs.
- c. Target identification at night and EOTDA.
- d. Use of IR LASER pointers (performance characteristics, operating procedures, ICS procedures, safety considerations, nominal ocular hazard distance (NOHD) and LASER eye protection (LEP)).
- e. Emergencies (aircraft & weapons).
- f. NVD procedures/failures.
- g. Wingman awareness during NVG AG.

2. Introduce:

- a. Preparation of weapons and aircraft for night gunnery operations.
- b. PF and PNF duties during night air-to-ground gunnery.
- c. Multiple aircraft Tail Gunnery at night.
- d. Utilization of IR pointer.

3. Review:

- a. Fields of Fire and Sectors of Fire.
- b. Weapon conditions and standard weapon commands.

Performance Standards. Execute proper procedures for NVD ordnance delivery IAW the NTTP.

Prerequisites. NS-2332, NS-2382 (if LLL), TG-2532. Required Reading - NTRP Ch 2, NTTP Ch 7, MAWTS-1 NVD Manual Ch 16 (I-IV, VI).

Ordnance. 600 rounds per gunner of appropriate ammunition.

Range. Appropriate gunnery range.

External Syllabus Support. Moving Land Target (MLT) if available.

2.11.11 Air Delivery (AD)

2.11.11.1 Purpose. To develop proficiency in tiltrotor air delivery techniques and procedures.

2.11.11.2 General. Initial AD-26xx should be conducted during the day. Pilots shall be NSQ for the appropriate light level if conducting AD-26xx using NVDs.

2.11.11.3 Crew Requirement. P/P/CC/AO.

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ACAD-2610    0.5    \*    B,T    CLS

MV-22 Air Delivery - PARAOPS

Goal. The PUI will have an introductory knowledge of procedures to execute air delivery of cargo from the MV-22.

Prerequisites. T2P. Required Reading. Cargo Handling Manual (CLG), NTRP Ch 7, NTTP Ch 10.

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SAD-2630    2.0    365    B,T,R    S/A    1    FFS/FTD

Goal. Introduce air delivery of cargo procedures.

Requirement. Using mission planning software prepare multiple computed air release points (CARPs) for Container Delivery System (CDS) and door bundle delivery profiles.

1. Discuss:

- a. Mission planning software and applicable AD CMS capabilities.
- b. CRM during air deliveries to include TPG AD checklist.
- c. Standard terminology during air delivery.
- d. Tactical considerations for air delivery.
- e. Proper rigging and preflight of equipment to be inserted by air delivery.
- f. Drop Zone survey.
- g. Mission planning coordination.

2. Introduce:

- a. Use of TPG AD checklist.
- b. Air delivery of door bundles.
- c. Air delivery of CDS.
- d. AD flight profiles.

- e. AD Emergency procedures.

Performance Standards

1. Execute air delivery procedures IAW the references.
2. Demonstrate proper CRM during air delivery operations.
3. Airspeed within 5 kts.
4. Altitude within 50 ft.
5. Aircraft at release point within 30 sec of TOT.
6. Release command given within 2 sec of arriving at release point.

Prerequisites. SLAT-2230, ACAD-2610.

AD-2631	1.5	365	B,T,R,M	(NS)	A	1	MV-22
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Goal. Introduce air delivery of cargo procedures.

Requirement. Using mission planning software prepare computed air release point(s) (CARPs) for planned load and drop zone.

1. Discuss:
  - a. Mission planning software and applicable AD CMS capabilities.
  - b. CRM during air deliveries to include TPG AD checklist.
  - c. Standard terminology during air delivery.
  - d. Tactical considerations for air delivery.
  - e. Proper rigging and preflight of equipment to be inserted by air delivery.
  - f. Drop Zone survey.
  - g. Mission planning coordination.
2. Introduce:
  - a. Use of TPG AD checklist.
  - b. Air delivery of cargo.
  - c. AD flight profiles.

Performance Standards

1. Execute air delivery procedures IAW the references.
2. Demonstrate proper CRM during air delivery operations.
3. Airspeed within 5 kts.

4. Altitude within 50 ft.
5. Aircraft at release point within 30 sec of TOT.
6. Release command given within 2 sec of arriving at release point.
7. Cargo impact within DZ boundaries.

Prerequisites. LAT-2233, SAD-2630.

Range. Approved drop zone.

External Syllabus Support. Air Delivery Platoon, appropriate cargo load.

#### 2.11.12 Mountain Area Training (MAT)

2.11.12.1 Purpose. To develop proficiency in day and NVD mountainous terrain operations. Aircraft landings shall be conducted at zones above 3000' MSL and where mountainous terrain is a significant factor.

2.11.12.2 General. All maneuver descriptions are in the NTTP.

Crew Requirements. P/P/CC/AO.

ACAD-2710	0.5	*	B,T	CLS
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#### MV-22 High Altitude Operations Lecture

Goal. The PUI has a familiarity with MV-22 high altitude operations.

Prerequisites. CAL-2135. Required Reading - NATOPS Ch 22, 23, 30, 31, NTTP Ch 3.

SMAT-2730	1.0	365	B,T,R	S	1	FFS/FTD
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Goal. Introduce CALs in mountainous terrain in day conditions.

Requirements. Conduct performance calculations to include a TOLD card for simulated high density altitude landing environment (6000-12000' DA).

1. Discuss:
  - a. High altitude physiology emergencies.
  - b. Wind and weather effects.
  - c. High altitude operations.
  - d. Power available vs power required.
  - e. High DA/Gross Weight APLN departures, arrivals and landings.

- f. TOLD Card.
  - g. Aircraft handling qualities (turn radius, CONV corridor, FFR, rate of climb, stall margin).
  - h. Calibrated airspeed versus ground speed (acceleration, deceleration).
2. Introduce:
- a. Mountainous area operations.
  - b. Pinnacle landings.
  - c. Slope landings.
  - d. Confined area landings.
  - e. Landings and operations in valleys and canyons.
  - f. Crosswind landings.
  - g. Various short/rolling takeoff techniques at high elevation.

Performance Standards

1. Demonstrate knowledge of proper MAT procedures IAW the NTTP and NATOPS.
2. Execute up-slope/down-slope and cross-slope landings.
3. Properly calculate power available and power required for high altitude LZs.
4. Land within 0.1 nm of intended landing point.

Prerequisites. CAL-2130, ACAD-2710.

SMAT-2731	1.0	365	B,T,R	NS	S	1	FFS/FTD
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Goal. Introduce CALs in mountainous terrain in night conditions using NVDs.

Requirement. Conduct performance calculations to include a TOLD card for simulated high density altitude night landing environment (6000-12000' DA).

1. Discuss:
  - a. Waveoffs during mountainous terrain NVD operations.
  - b. Visual illusions on NVDs in mountainous terrain.
  - c. Sensor utilization in mountainous terrain.
2. Introduce:



- a. NVD mountainous terrain operations.
- b. NVD landings in mountainous areas.

Performance Standards

- 1. Demonstrate knowledge of proper MAT procedures IAW the NTTP and NATOPS.
- 2. Execute up-slope/down-slope and cross-slope landings.
- 3. Properly calculate power available and power required for high altitude LZs.
- 4. Land within 0.1 nm of intended landing point.

Prerequisites. SNS-2330, SMAT-2730.

MAT-2732	1.5	365	B,T,R	A	1	MV-22
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Goal. Introduce operations and landings in mountainous terrain.

Requirement. Conduct performance calculations to include a TOLD card for planned landing site.

- 1. Discuss. Any previously discussed MAT item.
- 2. Introduce:
  - a. Mountainous area operations.
  - b. Pinnacle landings.
  - c. Slope landings.
  - d. Landings and operations in valleys and canyons.
  - e. Crosswind landings.

Performance Standards

- 1. Execute proper MAT procedures IAW the NTTP.
- 2. Execute up-slope/down-slope and cross-slope landings.
- 3. Properly calculate power available and power required for high altitude LZs.
- 4. Land within 100 m of intended landing point.

Prerequisites. CAL-2132, SMAT-2730.

MAT-2733	1.5	365	B,T,R,M	NS	A	1	MV-22
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Goal. Introduce NS operations and landings in mountainous terrain.

Requirement. Conduct performance calculations to include a TOLD card for planned landing site.

1. Discuss. Any previously discussed MAT item.
2. Introduce:
  - a. NVD mountainous terrain operations.
  - b. NVD CALs in mountainous areas.

Performance Standards

1. Execute proper NVD MAT procedures IAW the NTTP.
2. Execute up-slope/down-slope and cross-slope NVD landings.
3. Properly calculate power available and power required for high altitude LZs.
4. Land within 100 m of intended landing point.

Prerequisites. SMAT-2731, MAT-2732, 2336 if NS, 2385 if LLL (NSQ for the appropriate light level).

2.11.13 Ground Threat Reaction (GTR)

2.11.13.1 Purpose. To develop proficiency in countertactics versus enemy surface-to-air threats.

2.11.13.2 General

All maneuver descriptions are in the Classified NTTP. RADAR principles are listed in the NTRP Appendix G.

A GTR-2832 proficient WTI (7577 MOS) shall brief and lead all sorties in which any pilot within the flight is not proficient.

Aircrew who have completed their initial GTR sorties and have lost proficiency in that sortie may regain proficiency by flying with a LATI who is proficient in that sortie.

The flight lead shall brief all applicable GTR training rules IAW the NTTP.

GTR-2832 shall be conducted against a threat emitter; e.g. SA-6, ZSU-23-4, etc. and requires an electronic warfare range.

All initial sorties shall be conducted during the day. Proficient aircrew may conduct subsequent sorties at night.

The above rules apply to all POIs.

Crew Requirements. P/P for simulators, P/P/CC/AO for aircraft events.

ACAD-2810 1.0 \* B,T CLS

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MV-22 ALE-47 Lecture

Goal. The PUI will be familiar with the operation of the MV-22 ALE-47.

Instructor. WTI.

Prerequisites. T2P. Required Reading - NATOPS 18.1.3, NTRP ASE Ch, Classified NTTP Ch 2.

ACAD-2811 1.0 \* B,T CLS

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MV-22 APR-39 Lecture

Goal. The PUI will be familiar with the operation of the MV-22 APR-39.

Instructor. WTI.

Prerequisite. T2P. Required Reading - NATOPS 18.1.1, NTRP ASE Ch, Classified NTTP Ch 2.

ACAD-2812 1.0 \* B,T CLS

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MV-22 AAR-47 Lecture

Goal. The PUI will be familiar with the operation of the MV-22 AAR-47.

Instructor. WTI.

Prerequisites. T2P. Required Reading - NATOPS 18.1.2, NTRP ASE Ch, Classified NTTP Ch 2.

ACAD-2813 1.0 \* B,T CLS

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ADA Threat to Assault Support Lecture

Goal. The PUI will be familiar with the threat of ADA to assault support.

Instructor. WTI.

Prerequisites. T2P. Required Reading - AFTTP 3-1 ADA Ch.

ACAD-2814 1.0 \* B,T CLS

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IR SAM Threat to Assault Support Lecture

Goal. The PUI will be familiar with the threat of IR SAMS to assault support.

Instructor. WTI.

Prerequisites. T2P. Required Reading - AFTTP 3-1 IR SAM Ch.

ACAD-2815    1.0    \*    B,T    CLS

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RADAR SAM Threat to Assault Support Lecture

Goal. The PUI will be familiar with the threat of RADAR SAMS to assault support.

Instructor. WTI.

Prerequisites. T2P. Required Reading - AFTTP 3-1 RADAR SAM Ch.

ACAD-2816    0.5    \*    B,T    CLS

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Specific Excess Power and Energy/Maneuverability

Goal. The PUI has an introductory knowledge of specific excess power and energy/maneuverability charts and characteristics of the MV-22.

Instructor. WTI.

Prerequisites. LAT-2233. Required Reading - NTRP performance charts Ch.

ACAD-2817    1.0    \*    B,T,R    CLS

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MV-22 Ground Threat Reaction Lecture

Goal. The PUI will be familiar with the reaction maneuvers executed by the MV-22 as a result of a ground threats.

Instructor. WTI.

Prerequisites. LAT-2233. Required Reading - Classified NTTP Ch 2, Basic Radar Principles (MAWTS-1 Read Ahead), Basics of Electronic Warfare (MAWTS-1 Read Ahead).

LAB-2820    0.5    \*    B,T,R    CLS

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MV-22 Ground Threat Reaction Walk through

Goal. The PUI will have a solid understanding of all GTR maneuvers prior to inflight execution.

Instructor. WTI.

Prerequisites. ACAD-2817. Required Reading - NTTP Appendix A.

SGTR-2830 2.0 \* B,T (NS) S 1 FFS/FTD TEN

Goal. Introduce operation of onboard ASE to include strengths and weaknesses of ASE vs. Introduce counter-tactics vs ADA, RF and IR threats.

Requirement. Given an ADA, RF and IR threat, the PUI will prepare a threat brief utilizing the AFTTP 3-1 and a threat matrix utilizing the ASTACSOP.

1. Discuss:

- a. Operation of the ALE-47, APR-39, AAR-47.
- b. Strengths and weaknesses of each ASE system vs ADA, RF and IR threat.
- c. CRM as it applies to the use of onboard ASE and threat detection.
- d. Counter-tactics against ADA, RF and IR threats.
- e. All available flare expendables.
- f. ROC per T&R Program Manual.
- g. Non-RADAR GTR line numbers.

2. Introduce:

- a. Use of all onboard ASE.
- b. Counter-tactics against ADA, RF and IR threats.

Performance Standards

1. Properly operate all ASE IAW the the NTTP.
2. Employ proper counter-tactics vs ADA, RF and IR threats.

Instructor. WTI.

Prerequisites. LAT-2233, LAB-2820.

SGTR-2831 2.0 365 B,T,R,M (NS) S 2 FFS/FTD TEN+

Goal. Review operation of onboard ASE to include strengths and weaknesses of ASE vs RADAR SAMs. Introduce defensive tactics vs RADAR SAMs and review defensive tactics vs. non-RADAR ADA and IR SAMs.

Requirement. Given an ADA, RF and IR threat, the PUI will prepare a threat brief utilizing the AFTTP 3-1 and a threat matrix utilizing the ASTACSOP.

1. Discuss:

- a. ALE-47 programs.

- b. CRM as it applies to the defensive maneuvers and threat detection.
  - c. Counter-tactics against RADAR SAMs.
  - d. All available chaff expendables.
  - e. ROC per T&R Program Manual.
  - f. RADAR GTR line numbers.
  - g. Threat countertactic matrix.
2. Introduce:
- a. Single and section maneuvering against RADAR SAMs.
  - b. Counter-tactics against RADAR SAMs.
3. Review. Non-RADAR and IR SAM threat reactions.

Performance Standards

- 1. Properly operate all ASE IAW the the NTTP.
- 2. Employ proper counter-tactics vs ADA, RF and IR threats.
- 3. Demonstrate knowledge of basic RADAR principles.

Instructor. WTI.

Prerequisite. SGTR-2830.

GTR-2832	1.5	365	B,T,R	(NS)	A	2	MV-22
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Goal. Review procedures to counter a RADAR SAMs with a multi-aircraft flight.

Requirement. Given an ADA, RF and IR threat, the PUI will prepare a threat brief utilizing the AFTTP 3-1 and a threat matrix utilizing the ASTACSOP.

1. Discuss:
- a. Selection of countermeasure programs.
  - b. Set-up of ASE to defend against a ground threat.
  - c. Threat reaction and post engagement reaction.
  - d. SPOT reporting.
  - e. GTR line numbers.
  - f. GTR training rules.
2. Introduce:

- a. Section maneuvering against surface-to-air missile and RADAR threat systems.
- b. Section maneuvering against non-RADAR threats.
- c. Threat avoidance maneuvers and/or tactics to defeat threat systems.
- d. Use of expendables as a section to defeat threat systems.

Performance Standards

1. Execute threat reaction maneuvers IAW the NTTP.
2. Properly maneuver the section in response to a threat IAW the NTTP.
3. Properly employ all ASE IAW the NTTP and NTRP.
4. Demonstrate knowledge of IR SAMs and countermeasures.

Instructor. WTI.

Prerequisite. SGTR-2831.

Ordnance. 60 chaff and 30 flares.

Range. Chaff and flare capable range.

External Syllabus Support. EW emitter, ground fire indication.

2.11.14 Carrier Qualification (CQ)

2.11.14.1 Purpose. To qualify the PUI in flight operations from a carrier deck or ship platform under day and NVD conditions.

2.11.14.2 General

Refer to LHA/LHD/MCS NATOPS Manuals for carrier operations.  
Refer to NWP-42 for air capable ship operations.

CQ-2935 shall be flown under HLL conditions for initial qualifications. An NSI is required for unqualified pilots on NVD CQ flights.

IAW NATOPS and NAVMC 3500.14, a pilot is CQ upon completion of CQ-2935.

The IP will emphasize proper communication procedures, patterns, and aviation operations in the shipboard environment per aircraft and ship NATOPS and NAVMC 3500.14.

Crew Requirements. P/P/CC (AO required for NVD CQ).

ACAD-2910 1.0 \* B,T CLS

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MV-22 Shipboard Operations Lecture

Goal. The PUI will be familiar with MV-22 Shipboard Operations.

Prerequisite. T2P. Required Reading - NATOPS 8, LHA/LHD NATOPS Ch 2-6, 7.2, 7.3, App A & D, Ships Facilities Resume.

SCQ-2930 1.0 365 B,T,R S 1 FFS/FTD

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Goal. Introduce day CQ pattern and procedures to various L-Class ships.

Requirements

1. Discuss:
  - a. Emergency procedures in the shipboard environment (engine failures, nacelle blower failures, fires).
  - b. Various patterns around the ship.
  - c. Different Case departures and arrivals.
  - d. Nacelle control techniques.
2. Demonstrate/Introduce:
  - a. Carrier operation.
    - (1) Airplane and conversion mode arrivals.
    - (2) Charlie pattern for LHA/LHD and LPD/LSD (minimum of 5 for initial events).
    - (3) Communication procedures.
    - (4) Lights and light signals.
    - (5) LSE signals and procedures.
    - (6) Waveoff.
    - (7) Departure procedures.
  - b. Self-taxi procedures.
  - c. STOs.
  - d. Pitch-up with side-slip characteristics.
  - e. Steady heading approach.
  - f. 45° slide approach.
  - g. Balanced flight approach.



h. Shipboard INS alignment procedures.

Performance Standards

1. Demonstrate proper knowledge of day shipboard procedures IAW the LHA/LHD/MCS NATOPS, and NWP-42.
2. Maintain pattern parameters within 50 feet, 10 KCAS, and 10 degrees alignment with the BRC.
3. Maintain proper glideslope/departure profile for steady heading, balanced flight, and 45° slide approaches.
4. Maintain proper closure rate during approaches.
5. Land without unsafe delay within 3 feet of the intended point of landing and within 5 degrees of heading (BRC).

Prerequisite. SCAL-2130.

CQ-2931	1.5	365	B,T,R	A	1	MV-22
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Goal. Introduce day CQ patterns and procedures in a Field Carrier Landing Practice (FCLP) scenario.

Requirements

1. Discuss:
  - a. Crewmember duties during CQs.
  - b. Any item discussed or introduced on SFCLP-2830.
2. Introduce:
  - a. Carrier operation.
    - (1) Charlie pattern (minimum of 5 for initials).
    - (2) Communication procedures.
    - (3) Lights and light signals.
    - (4) LSE signals and procedures.
    - (5) Departure procedures.
  - b. Self-taxi procedures.
  - c. STOs.
  - d. Pitch-up with side-slip characteristics.
  - e. Steady heading approach.
  - f. 45° slide approach.

g. Balanced flight approach.

Performance Standards

1. Demonstrate proper knowledge of day shipboard procedures IAW the LHA/LHD/MCS NATOPS, and NWP-42.
2. Maintain pattern parameters within 50 feet, 10 KCAS, and 10 degrees alignment with the BRC.
3. Maintain proper glideslope/departure profile for steady heading, balanced flight, and 45° slide approaches.
4. Maintain proper closure rate during approaches.
5. Land without unsafe delay within 3 feet of the intended point of landing and within 5 degrees of heading (BRC).

Prerequisites. CAL-2132, SCQ-2930.

External Syllabus Support. FCLP site.

CQ-2932	1.5	365	B,T,R	A	1	MV-22
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Goal. Day qualification flight.

Requirements

1. Discuss:
  - a. Any FCLP discussed/introduced item.
  - b. Shipboard instrument procedures.
2. Introduce:
  - a. Air capable amphibious ship operations.
    - (1) Airplane and conversion mode arrivals.
    - (2) Charlie pattern (minimum of 5 for initial events).
    - (3) Instrument marshalling and recovery.
    - (4) Communication procedures.
    - (5) Lights and light signals.
    - (6) LSE signals and procedures.
    - (7) Departure procedures.
  - b. Self-taxi procedures.
  - c. STOs.
  - d. Pitch-up with side-slip characteristics.

- e. Steady heading approach.
- f. 45° slide approach.
- g. Balanced flight approach.
- h. Wake interaction with other aircraft.

Performance Standards

1. Demonstrate proper knowledge of day shipboard procedures IAW the LHA/LHD/MCS NATOPS, and NWP-42.
2. Maintain pattern parameters within 50 feet, 10 KCAS, and 10 degrees alignment with the BRC.
3. Maintain proper glideslope/departure profile for steady heading, balanced flight, and 45° slide approaches.
4. Maintain proper closure rate during approaches.
5. Land without unsafe delay within 3 feet of the intended point of landing and within 5 degrees of heading (BRC).

Prerequisite. CQ-2931.

External Syllabus Support. Landing platform afloat.

SCQ-2933	1.0	365	B,T,R	NS	S	1	FFS/FTD
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Goal. Introduce NVD CQ pattern and procedures.

Requirements

1. Discuss. Emergency procedures in the shipboard environment (engine failures, nacelle blower failures, fires).
2. Demonstrate/Introduce:
  - a. Carrier operations using NVDs.
    - (1) Arrival.
    - (2) Night landing patterns (minimum of 5 for initials).
    - (3) Communication procedures.
    - (4) Night shipboard lighting and light signals.
    - (5) LSE signals and procedures.
    - (6) Waveoff.
    - (7) Departure.
  - b. Self-taxi procedures.

- c. STOs.
- d. Steady heading approach.
- e. 45° slide approach.
- f. Balanced flight approach.

Performance Standards

1. Demonstrate proper knowledge of day shipboard procedures IAW the LHA/LHD/MCS NATOPS, and NWP-42.
2. Maintain pattern parameters within 50 feet, 10 KCAS, and 10 degrees alignment with the BRC.
3. Maintain proper glideslope/departure profile for steady heading, balanced flight, and 45° slide approaches.
4. Maintain proper closure rate during approaches.
5. Land without unsafe delay within 3 feet of the intended point of landing and within 5 degrees of heading (BRC).

Instructor. NSI.

Prerequisites. SNS-2330, SCQ-2930. Required Reading - MAWTS-1 NVD Manual Ch 17.

CQ-2934	1.0	365	B,T,R	NS	A	1	MV-22
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Goal. Introduce night aided CQ patterns and procedures in a FCLP scenario.

Requirements

1. Discuss:
  - a. Differences and similarities of day and night takeoff and landing techniques.
  - b. Crewmember duties during NVD CQs.
  - c. Any item discussed or introduced on SCQ-301.
2. Introduce:
  - a. Carrier operations using NVDs.
    - (1) Airplane and conversion mode arrivals.
    - (2) Night takeoff/landing patterns (minimum of 5 for initial events).
    - (3) Communication procedures.

- (4) Night shipboard lighting and light signals peculiar to night operations.
- (5) LSE signals and procedures.
- (6) Departure procedures.
- b. Self-taxi procedures.
- c. STOs.
- d. Pitch-up with side-slip characteristics.
- e. Steady heading approach.
- f. 45° slide approach.
- g. Balanced flight approach.

Performance Standards

1. Demonstrate proper knowledge of day shipboard procedures IAW the LHA/LHD/MCS NATOPS, and NWP-42.
2. Maintain pattern parameters within 50 feet, 10 KCAS, and 10 degrees alignment with the BRC.
3. Maintain proper glideslope/departure profile for steady heading, balanced flight, and 45° slide approaches.
4. Maintain proper closure rate during approaches.
5. Land without unsafe delay within 3 feet of the intended point of landing and within 5 degrees of heading (BRC).

Instructor. NSI.

Prerequisites. NS-2331, CQ-2931, SCQ-2933.

External Syllabus Support. FCLP site.

CQ-2935	1.5	365	B,T,R,M	NS	A	1	MV-22
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Goal. NVD qualification flight.

Requirements

1. Discuss:
  - a. Aircraft lighting configurations.
  - b. Deck lighting configurations.
  - c. LSE signals and NVD requirements.
  - d. Voice procedures at night.

- e. Closure rates and depth perception over water at night.
  - f. Night waveoff signals and procedures.
  - g. Egress peculiar to shipboard operations at night utilizing NVDs.
  - h. Any previously discussed/introduced FCLP/CQ item.
2. Introduce:
- a. Air capable amphibious ship operations.
    - (1) Airplane and conversion mode arrivals.
    - (2) Night landing patterns (minimum of 5 for initial events).
    - (3) Communication procedures.
    - (4) Lights and light signals.
    - (5) LSE signals and procedures.
    - (6) Departure procedures.
  - b. Self-taxi procedures.
  - c. STOs.
  - d. Pitch-up with side-slip characteristics.
  - e. Steady heading approach.
  - f. 45° slide approach.
  - g. Balanced flight approach.

Performance Standards

1. Demonstrate proper knowledge of day shipboard procedures IAW the LHA/LHD/MCS NATOPS, and NWP-42.
2. Maintain pattern parameters within 50 feet, 10 KCAS, and 10 degrees alignment with the BRC.
3. Maintain proper glideslope/departure profile for steady heading, balanced flight, and 45° slide approaches.
4. Maintain proper closure rate during approaches.
5. Land without unsafe delay within 3 feet of the intended point of landing and within 5 degrees of heading (BRC).

Instructor. NSI.

Prerequisites. NS-2336~HLL, NS-2385~LLL, CQ-2932, CQ-2934

External Syllabus Support. Landing platform afloat.

## 2.12 MISSION SKILL PHASE

2.12.1 Purpose. To establish training designed to enable pilots to achieve proficiency in mission skills. Mission Skills Phase events are designed to fulfill the requirements of the VMM Mission Essential Task List as defined by the associated Marine Corps Task (MCT).

### 2.12.2 General

#### 2.12.2.1 Admin Notes

Proficiency in SHORE-3030 and SEA-3130 events is attained once all listed ACAD and Requirements events are complete. A manual entry is required in M-SHARP for SHORE-3030 and SEA-3130.

Events in this phase of training should be based on tactical scenarios designed to focus on the specific items delineated in the different training codes and will be developed by the squadron WTI or TSI. To the greatest extent possible the scenarios should incorporate the employment of escort aircraft (fixed or rotary wing), ASE (ALE-47, APR-39, etc.) and use of defensive weapon systems. On certain events, integration with other ACE assets is required. Whenever practical, the use of GCE planners for integrated events will provide added training value.

Discuss items for each event in this stage are designed to be the focus of scenario-based training for planning and execution, not necessarily for discussion during individual cockpit briefs. However, this does not preclude these items from being discussed during cockpit briefs and emphasized during flight.

Specific planning responsibilities should be delegated to PUIs in order to obtain a broad exposure to mission planning. Instructors shall ensure sufficient time is provided to complete all planning tasks.

Initial flights will be instructed by a designated section leader.

ROC will be per the T&R Program Manual or MV-22 NTPP.

Refer to paragraph 2.16 for the ACPM lectures required for this phase of training.

Lectures listed in each stage must be completed in order to successfully complete the stage. However, they can be taught at any time and are not necessarily prerequisites for the simulator or flight events in the stage.

Aircrew shall complete all initial simulator and flight events in this phase of training in accordance with the requirements in the individual event header. Aircrew who have completed a CAT or TRAP simulator or flight event in this phase of training may maintain or regain proficiency in that same event by flying that event with a minimum of a section under (NS) conditions. AD and AE may maintain or regain proficiency in that same event by flying that event with a minimum of a single aircraft under (NS) conditions.

Certain initial events are designated to be conducted in the simulator using the Tactical Environment Network. This is to capitalize on

the additive weather and threat conditions that the simulator enables; however, this does not preclude those events from being conducted in the aircraft if the proper conditions are achieved.

2.12.2.2 Stages. The following stages are included in the Mission Skill Phase of training.

Par No.	Stage Name
2.12.3	Expeditionary Shore-Based Aviation Operations (SHORE)
2.12.4	Expeditionary Sea-Based Aviation Operations (SEA)
2.12.5	Combat Assault Transport (CAT)
2.12.6	Air Evacuation (AE)
2.12.7	Tactical Recovery of Personnel and Aircraft (TRAP)
2.12.8	Air Delivery (AD)

2.12.3 Expeditionary Shore-Based Aviation Operations (SHORE)

2.12.3.1 Purpose. This stage of training is designed to fulfill the requirement set in MCT 1.3.3.3.2, Conduct Aviation Operations From Expeditionary Shore-Based Sites.

Crew Requirement. P/P/CC/AO.

ACPM-8630 1.0 \* B,T,R CLS

Tactical Airspace Command and Control

Goal. The PUI will be familiar with tactical airspace command and control agencies.

Prerequisite. T2P. Required Reading - NTTP.

ACPM-8660 1.0 \* B,T,R CLS

Joint Air Operations

Goal. The PUI will be familiar with air operations in a joint environment.

Prerequisite. T2P. Required Reading - NTTP.

ACAD-3012 0.5 \* B,T CLS  
MV-22 ACEOI and TRIAD Authenticator

Goal. The PUI will be familiar with effectively using an ACEOI.

Prerequisite. T2P. Required Reading - ASTACSOP.



SHORE-3030 0.0 365 B,T,R,M

Goal. Conduct assault support in a low threat environment from an expeditionary shore-based site.

Requirements. Proficiency in SHORE-3030 is attained once NSQ, AARQ and achieving simultaneous proficiency in TG-2532, MAT-2733. A manual entry is required in M-SHARP for SHORE-3030.

Prerequisites. 2385, 2433, 2535, 2733. Required Reading - NTTP Chapters 8 & 13.

#### 2.12.4 Expeditionary Sea-Based Aviation Operations (SEA)

2.12.4.1 Purpose. This stage of training is designed to fulfill the requirement set in MCT 1.3.3.3.1, Conduct Aviation Operations From Expeditionary Sea-Based Sites.

Crew Requirement. P/P/CC/AO.

SEA-3130 0.0 365 B,T,R,M

Goal. Conduct assault support in a low threat environment from an expeditionary sea-based site.

Requirements. Proficiency in SEA-3130 is attained once NSQ, AARQ and CQ, and achieving simultaneous proficiency in TG-2532, MAT-2733. A manual entry is required in M-SHARP for SEA-3130.

Prerequisites. 2385, 2433, 2535, 2733, 2935. Required Reading. NTTP Chapters 8 & 13.

#### 2.12.5 Combat Assault Transport (CAT)

2.12.5.1 Purpose. To introduce day and night combat assault transport tactical mission planning, briefing, and execution. This stage of training is designed to fulfill the requirement set in MCT 1.3.4.1, Conduct Combat Assault Transport.

2.12.5.2 Admin Note. For SCAT-3231, role players in the TEN may be utilized to represent the second and fourth aircraft if training resources are not available.

Crew Requirement. P/P/CC/AO

ACAD-3210	1.0	*	B,T,R	CLS
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Air Assault Planning Products

Goal. The PUI will have a familiarity with the Assault Support mission planning process and associated products planning and execution.

Prerequisite. T2P. Required Reading - NTTP.

ACAD-3211	1.0	*	B,T,R	CLS
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Air Assault Operations

Goal. The PUI will have a familiarity with Air Assault Operations.

Prerequisite. ACAD-3210. Required Reading - NTTP.

ACAD-3212	1.0	*	B,T,R	CLS
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Air Assault Key Players

Goal. The PUI will have a familiarity with Air Assault Key Players.

Prerequisite. ACAD-3211. Required Reading - NTTP.

ACAD-3213	1.0	*	B,T,R	CLS
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Objective Area Planning

Goal. The PUI will have a familiarity with Objective Area planning.

Prerequisite. ACAD-3212. Required Reading - NTTP.

ACAD-3214	1.0	*	B,T,R	CLS
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MV-22 Tiltrotor Escort Tactics

Goal. The PUI will have a familiarity with Tiltrotor Escort Tactics.

Prerequisite. ACAD-3213. Required Reading - NTTP.

ACAD-3215	1.0	*	B,T,R	CLS
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Rapid Response Planning Process

Goal. The PUI will have a familiarity with the Rapid Response Planning Process.

Prerequisite. ACAD-3214. Required Reading - NTTP.

ACAD-3216    1.0    \*    B,T,R    CLS

Military Operations on Urbanized Terrain (MOUT) (S-REL TO USA, ACGU)

Goal. The PUI will have a familiarity with aviation operations in urban terrain.

Prerequisite. ACAD-3215. Required Reading - NTTP.

LAB-3220    6.0    \*    B,T,R    CLS

Assault Support Planning Problem

Goal. Given an Assault Support mission problem, the PUI will conduct Mission Analysis and Assault Support Mission Planning, with particular emphasis on integrating the Landing Plan with the Ground Tactical Plan and developing an Air Movement Plan appropriate to the threat, while developing the appropriate briefing and execution support documents.

Prerequisite. ACAD-3215. Required Reading - NTTP.

CAT-3230    2.0    365    B,T,R    (NS)    A    2    MV-22

Goal. Introduce an Air Assault mission in a low threat environment utilizing a section.

Requirements. Given an assault support mission, the PUI will conduct mission analysis and planning, assisting in the development of the Landing Plan, Air Movement Plan, Loading and Staging Plan, while developing appropriate briefing and execution documents.

1. Discuss:

- a. Integration of Landing Plan with Ground Tactical Plan.
- b. Development of Objective Area Diagram through integration of Fire Support Plan with Landing Plan.
- c. Development of Air Movement Plan relative to threat, to include attached and detached escort utilization.
- d. Development of efficient Loading Plan.
- e. Air Assault Task Force.
- f. Command and Control of Air Assault operations.
- g. Utilization of JMPS to create .DRW files relative to FSCMs and ACAs.
- h. Utilization of JMPS to create appropriate threat files.
- i. Mission GO/NO-GO criteria.
- j. LZ Criteria and considerations.

- k. Extract considerations.
  - l. Immediate re-embarkation.
  - m. Emergency Extract.
  - n. Assault Support Landing Table.
  - o. Assault Support Serial Assignment Table.
  - p. Communications Plan.
  - q. Execution Checklist.
2. Introduce
- a. Air Assault mission planning.
  - b. Mission Analysis.
  - c. Developing a Landing Plan.
  - d. Developing an Objective Area Diagram to include Fire Support Plan, Escorts, and Sectors of fire.
  - e. Developing a medium threat Air Movement Plan.
  - f. Developing a Loading Plan.
  - g. Developing appropriate contingency plans.
  - h. Developing ASLT.
  - i. Developing ASSAT.
  - j. Developing Communications Plan.
  - k. Developing Execution Checklist.
  - l. Creating briefing and execution documents
  - m. Air Assault Mission Briefing.
  - n. Threat analysis and ASE optimization.

Performance Standards

1. Develop briefing and execution documents IAW NTTP, ASTACSOP, and squadron SOP.
2. Maintain situational awareness relative to friendly and enemy situation and mission progress.
3. Develop an integrated Landing Plan that supports the Ground Tactical Plan.
4. Develop an Objective Area Diagram that integrates a Fire Support and Escort Plan that support the Landing Plan and Ground Tactical

Plan.

5. Develop an Air Movement Plan relative to the briefed threat.
6. Maximize useful load / allowable combat load in order to maximize the Ground Tactical Plan.
7. Maintain appropriate formation and tactics during the Air Movement Plan.
8. Land in accordance with the Landing Plan within 100 meters of intended point of landing and 30 seconds of L-Hour.
9. Execute assigned contingencies IAW Air Mission Brief and Flight Leader direction.

Instructor. Section Leader.

Prerequisites. NSQ, TG-2532, MAT-2731, GTR-2831, LAB-3220.

SCAT-3231	4.0	365	B,T,R	NS	S/A	4	FFS/FTD Ten+
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Goal. Introduce an Air Assault mission in a medium threat environment utilizing a division.

Requirements. Given a Battalion Air Assault Task Force and associated mission, the PUI will conduct mission analysis and planning, assisting in the development of the Landing Plan, Air Movement Plan, Loading and Staging Plan, while developing appropriate briefing and execution documents.

1. Discuss:
  - a. Definition of low and medium threat.
  - b. Integration of Landing Plan with Ground Tactical Plan.
  - c. Development of Objective Area Diagram through integration of Fire Support Plan with Landing Plan.
  - d. Development of Air Movement Plan relative to threat, to include attached and detached escort utilization.
  - e. FARP Planning.
  - f. Utilization of JMPS to create appropriate threat files.
  - g. Sectors of fire.
  - h. Rules of engagement.
  - i. Casualty Evacuation.
  - j. Downed Aircraft/Asset Attrition.
  - k. Resupply via Air Delivery.
  - l. ASE planning and utilization.

- m. Comm Degradtion v Chattermark.
  - n. Emissions Control Conditions.
2. Introduce:
- a. Air Assault mission planning.
  - b. Mission Analysis.
  - c. Developing a Landing Plan.
  - d. Developing an Objective Area Diagram to include Fire Support Plan, Escorts, and Sectors of fire.
  - e. Developing a medium threat Air Movement Plan.
  - f. Developing a Loading Plan.
  - g. Developing appropriate contingency plans.
  - h. Developing ASLT.
  - i. Developing ASSAT.
  - j. Developing Communications Plan.
  - k. Developing Execution Checklist.
  - l. Creating briefing and execution documents.
  - m. Air Assault Mission Briefing.
  - n. Threat analysis and ASE optimization.

Performance Standards

1. Develop briefing and execution documents IAW NTTP, ASTACSOP, and squadron SOP.
2. Maintain situational awareness relative to friendly and enemy situation and mission progress.
3. Select an appropriate ASE configuration relative to the briefed threat.
4. Develop an integrated Landing Plan that supports the Ground Tactical Plan.
5. Develop an Objective Area Diagram that integrates a Fire Support and Escort Plan that support the Landing Plan and Ground Tactical Plan.
6. Develop an Air Movement Plan relative to the briefed threat and maintain appropriate formation and tactics.

7. Maximize useful load / allowable combat load in order to maximize the Ground Tactical Plan.
8. Land in accordance with the Landing Plan within 100 meters of intended point of landing and 30 seconds of L-Hour.
9. Execute assigned contingencies IAW Air Mission Brief and Flight Leader direction.

Instructor. Division Leader.

Prerequisites. CAT-3230.

SCAT-3232	4.0	365	B,T,R	NS	S/A	2	FFS/FTD Ten+
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Goal. Introduce an urban long range Air Assault Raid mission in a medium threat environment utilizing a section.

Requirements. Given a Platoon (REIN) Air Assault Task Force and associated mission, the PUI will conduct mission analysis and planning, assisting in the development of the Landing Plan, Air Movement Plan, Loading and Staging Plan, while developing appropriate briefing and execution documents.

1. Discuss:
  - a. Air Assault Raid considerations.
  - b. Landing to X, Y, Offset.
  - c. En route Air to Air refueling.
  - d. Aviation operations in an urban environment.
  - e. Integration of Landing Plan with Ground Tactical Plan.
  - f. Development of Objective Area Diagram through integration of Fire Support Plan with Landing Plan.
  - g. Development of Air Movement Plan relative to threat, to include attached and detached escort utilization.
  - h. Extract considerations.
2. Introduce:
  - a. En route Air to Air Refueling.
  - b. Aviation operations in an urban area.
3. Review:
  - a. Air Assault mission planning.
  - b. Mission Analysis.
  - c. Developing a Landing Plan.

- d. Developing an Objective Area Diagram to include Fire Support Plan, Escorts, and Sectors of fire.
- e. Developing a medium threat Air Movement Plan.
- f. Developing a Loading Plan.
- g. Developing appropriate contingency plans.
- h. Developing ASLT.
- i. Developing ASSAT.
- j. Developing Communications Plan.
- k. Developing Execution Checklist.
- l. Creating briefing and execution documents.
- m. Air Assault Mission Briefing.
- n. Threat analysis and ASE optimization.

Performance Standards

- 1. Develop briefing and execution documents IAW NTTP, ASTACSOP, and squadron SOP.
- 2. Maintain situational awareness relative to friendly and enemy situation and mission progress.
- 3. Select an appropriate ASE configuration relative to the briefed threat.
- 4. Develop an integrated Landing Plan that supports the Ground Tactical Plan.
- 5. Develop an Objective Area Diagram that integrates a Fire Support and Escort Plan that support the Landing Plan and Ground Tactical Plan.
- 6. Develop an Air Movement Plan relative to the briefed threat and maintain appropriate formation and tactics.
- 7. Maximize useful load / allowable combat load in order to maximize the Ground Tactical Plan.
- 8. Land in accordance with the Landing Plan within 10 meters of intended point of landing and 30 seconds of L-Hour.
- 9. Execute assigned contingencies IAW Air Mission Brief and Flight Leader direction.

Instructor. Section Leader.

Prerequisites. CAT-3230.



CAT-3233      4.0      180      B,T,R,M      (NS)      A      2      MV-22

Goal. Introduce an Air Assault mission incorporating escorts, troops, and fire support agencies.

Requirements. Given an Air Assault mission, the PUI will conduct mission analysis and planning, assisting in the development of the Landing Plan, Air Movement Plan, Loading and Staging Plan, while developing appropriate briefing and execution documents.

1. Discuss:

- a. Utilization of JMPS to create .DRW files relative to FSCMs and ACAs.
- b. Sectors of fire.
- c. LZ Criteria and considerations.
- d. Downed Aircraft / Asset Attrition.
- e. Communications Plan.
- f. Execution Checklist.
- g. Comm Degradation v Chattermark.

2. Introduce:

- a. Air Assault mission planning.
- b. Mission Analysis.
- c. Developing a Landing Plan.
- d. Developing an Objective Area Diagram to include Fire Support Plan, Escorts, and Sectors of fire.
- e. Developing a medium threat Air Movement Plan.
- f. Developing a Loading Plan.
- g. Developing appropriate contingency plans.
- h. Developing ASLT.
- i. Developing ASSAT.
- j. Developing Communications Plan.
- k. Developing Execution Checklist.
- l. Creating briefing and execution documents.
- m. Air Assault Mission Briefing.
- n. Threat analysis and ASE optimization.

Performance Standards

1. Develop briefing and execution documents IAW NTTP, ASTACSOP, and squadron SOP.
2. Maintain situational awareness relative to friendly and enemy situation and mission progress.
3. Select an appropriate ASE configuration relative to the briefed threat.
4. Develop an integrated Landing Plan that supports the Ground Tactical Plan.
5. Develop an Objective Area Diagram that integrates a Fire Support and Escort Plan that support the Landing Plan and Ground Tactical Plan.
6. Develop an Air Movement Plan relative to the briefed threat and maintain appropriate formation and tactics.
7. Maximize useful load / allowable combat load in order to maximize the Ground Tactical Plan.
8. Land in accordance with the Landing Plan within 100 meters of intended point of landing and 30 seconds of L-Hour.
9. Execute assigned contingencies IAW Air Mission Brief and Flight Leader direction.

Instructor. Section Leader.

Prerequisites. SCAT-3231, SCAT-3232, AE-3330.

Ordnance. 600 7.62, 40 chaff, 50 flares.

Range. Aerial gunnery and expendable capable range.

External Syllabus Support. Approved LZ.

2.12.6 Air Evacuation (AE)

2.12.6.1 Purpose. To introduce tactical mission planning, briefing and execution specific to Air Evacuation. This stage of training is designed to fulfill the requirement set in MCT 6.2.2 Conduct Air Evacuation.

Crew Requirement. P/P/CC/AO.

ACAD-3310	1.0	*	B,T	CLS
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CASEVAC

Goal. The PUI will have a familiarity with CASEVAC.

Prerequisite. T2P. Required Reading - NTTP 8.5.

ACAD-3311 1.0 \* B,T CLS

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NEO Execution

Goal. The PUI will have a familiarity with NEO Execution.

Prerequisite. T2P. Required Reading - NTTP 8.5.

AE-3330 2.0 365 B,T,R,M (NS) A 2 MV-22

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Goal. Introduce an air evacuation mission.

Requirements. Given a CASEVAC scenario, conduct appropriate mission planning. Assume the appropriate alert posture, and execute a CASEVAC mission.

1. Discuss:
  - a. Alert postures/stand-by timelines.
  - b. Objective area analysis/planning.
  - c. Fire support coordination measures.
  - d. Tactical airspace considerations.
  - e. Escort considerations.
  - f. FARP planning.
  - g. Contingency planning.
2. Introduce: Tactical planning, briefing, and execution of an air evacuation mission. The PUI will assist in the planning and the conduct of the tactical brief.

Performance Standards

1. Develop briefing and execution documents IAW NTTP, ASTACSOP, and squadron SOP.
2. Maintain situational awareness relative to friendly and enemy situation and mission progress.
3. Select an appropriate ASE configuration relative to the briefed threat.
4. Develop an integrated Landing Plan that supports the Ground Tactical Plan.
5. Develop an Objective Area Diagram that integrates a Fire Support and Escort Plan that support the Landing Plan and Ground Tactical Plan.
6. Develop an Air Movement Plan relative to the briefed threat and maintain appropriate formation and tactics.

7. Maximize useful load / allowable combat load in order to maximize the Ground Tactical Plan.
8. Land in accordance with the Landing Plan within 100 meters of intended point of landing and 30 seconds of L-Hour.
9. Execute assigned contingencies IAW Air Mission Brief and Flight Leader direction.

Instructor. Section Leader.

Prerequisites. CAT-3230.

Ordinance. 600 7.62, 40 chaff, 50 flares.

Range. Aerial gunnery and expendable capable range.

External Syllabus Support. Approved LZ.

#### 2.12.7 Tactical Recovery of Aircraft and Personnel (TRAP)

2.12.8 Purpose. To introduce tactical mission planning, briefing, and execution specific to TRAP. This stage of training is designed to fulfill the requirement set in MCT 6.2.1.1 Conduct Aviation Support of Tactical Recovery of Aircraft and Personnel (TRAP).

Crew Requirement. P/P/CC/AO.

ACAD-3410	1.0	*	B,T	CLS
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#### Personnel Recovery

Goal. The PUI will be familiar with Personnel Recovery.

Prerequisite. T2P. Required Reading - NTTP 8.7.

TRAP-3430	2.0	365	B,T,R,M	(NS)	A	2	MV-22
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Goal. Introduce a tactical recovery of aircraft or personnel mission.

Requirements. Given a TRAP scenario, conduct appropriate mission planning. Assume the appropriate alert posture, and execute a TRAP mission.

#### 1. Discuss:

- a. TRAP mission analysis.
- b. Threat analysis.
- c. ASTACSOP TRAP Template.
- d. Alert postures.
- e. Tactical route planning considerations.
- f. Use of onboard navigation systems.

- g. Use of ASE in a medium threat environment.
  - h. CRM during ingress, objective area actions, and egress.
2. Introduce: Tactical planning, briefing, and execution of a TRAP mission. The PUI will assist in the planning and conduct of the tactical brief.

Performance Standards

1. Develop briefing and execution documents IAW NTTP, ASTACSOP, and squadron SOP.
2. Maintain situational awareness relative to friendly and enemy situation and mission progress.
3. Select an appropriate ASE configuration relative to the briefed threat.
4. Develop an integrated Landing Plan that supports the Ground Tactical Plan.
5. Develop an Objective Area Diagram that integrates a Fire Support and Escort Plan that support the Landing Plan and Ground Tactical Plan.
6. Develop an Air Movement Plan relative to the briefed threat and maintain appropriate formation and tactics.
7. Maximize useful load / allowable combat load in order to maximize the Ground Tactical Plan.
8. Land in accordance with the Landing Plan within 100 meters of intended point of landing and 30 seconds of L-Hour.
9. Execute assigned contingencies IAW Air Mission Brief and Flight Leader direction.

Instructor. Section Leader.

Prerequisites. CAT-3230.

Ordinance. 600 7.62, 40 chaff, 50 flares.

Range. Aerial gunnery and expendable capable range.

External Syllabus Support. Aircraft to perform RMC, RESCORT/RESCAP, approved LZ.

2.12.8 Air Delivery (AD)

2.12.8.1 Purpose. This stage of training is designed to fulfill the requirement set in MCT 4.3.4 Conduct Air Delivery.

2.12.8.2 General. All air delivery operations shall utilize AD support.

Crew Requirement. P/P/CC/AO.

SAD-3530	2.0	365	T,R	(NS)	S	FFS/FTD	TEN+
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Goal. Introduce an air delivery mission using a minimum of a section.

Requirement. Given an Air Delivery scenario, conduct appropriate mission planning to include calculation of release point and tactical ingress profile.

1. Discuss:
  - a. Mission planning considerations for air delivery missions.
  - b. Drop zone analysis.
  - c. Hasty Computed Air Release Point calculations.
  - d. Tactical delivery profiles.
  - e. Door bundle considerations.
2. Introduce: Tactical planning, briefing, and execution of air delivery. The PUI will assist in the planning and the conduct of the tactical brief.

Performance Standards

1. Develop briefing and execution documents IAW NTTP, ASTACSOP, and squadron SOP.
2. Maintain situational awareness relative to friendly and enemy situation and mission progress.
3. Select an appropriate ASE configuration relative to the briefed threat.
4. Develop an Objective Area Diagram that integrates a Fire Support and Escort Plan appropriate for the mission.
5. Maintain appropriate formation and tactics during the Air Movement Plan.
6. Fly appropriate delivery profile, maintain situational awareness and release cargo within 5 seconds of updated CARP and within 30 seconds of TOT.
7. Execute assigned contingencies IAW Air Mission Brief and Flight Leader direction.

Instructor. Section Leader.

Prerequisites. CAT-3230, AD-2631. Required Reading - NTTP 8.4.

## 2.13 CORE PLUS SKILL PHASE

2.13.1 Purpose. To establish training for Core Plus Skill (theater specific, low-probability of occurrence) events.

### 2.13.2 General

#### 2.13.2.1 Admin Notes

ROC will be per the T&R Program Manual.

Pilots may fly night flights using NVDs in this level under HLL or LLL conditions provided they are NSQ for that light level.

Refer to paragraph 2.16 for ACPM lectures required for this phase of training.

Prior to training in this phase a pilot should be complete with core skills training.

2.13.2.2 Stages. The following stages are included in the Core Plus Skill Phase of training.

Par No.	Stage Name
2.13.3	Air Delivery (AD)
2.13.4	Alternate Insertion/Extraction Techniques (AI/E)
2.13.5	Rapid Insertion/Extraction Mission (RI/E) (Mission Plus)
2.13.6	Aviation Delivered Ground Refueling (ADGR) (Mission Plus)
2.13.7	Aviation-Delivered Battlefield Illumination (BI) (Mission Plus)
2.13.8	Airborne Command and Control (AC2) (Mission Plus)
2.13.9	Defensive Weapon System (DWS)
2.13.10	Chemical, Biological, Radiological and Nuclear (CBRN)
2.13.11	Reduced Visibility Landings (RVL)
2.13.12	Carrier Qualification (CQ)
2.13.13	Defensive Combat Manuevers (DCM)
2.13.14	Combat Assault Transport (HTT)

### 2.13.3 Air Delivery (AD)

2.13.3.1 Purpose. To develop proficiency in personnel parachute operations (PARAOPS) and day/NVD external load operations from confined areas.

#### 2.13.3.2 General

All maneuver descriptions are in the NTPP.

An NSI is required for initial NVD external events.

Crew Requirements. P/P/CC/AO for aircraft events and P/P for simulators.

AD-4030      1.5      365      B,T,R,M      (NS)      A      1      MV-22

Goal.    Introduce PARAOPS procedures.

Requirement

1. Discuss:
  - a. CRM during PARAOPS (aircrew / jumpmaster responsibilities).
  - b. Voice communication/standard terminology during PARAOPS.
  - c. Tactical considerations for air delivery of troops.
  - d. MV-22 TPG air delivery briefing guide.
  - e. AD mission planning software.
  - f. Procedures for achieving TOT.
2. Introduce:
  - a. PARAOPS.
  - b. Inspection of static line.
  - c. AD formations.

Performance Standards

1. Execute PARAOPS procedures IAW the MV-22 NTTP.
2. Demonstrate proper crew coordination during PARAOPS operations.

Prerequisites.    CAL-2132, ACAD-2610.

Range.    Certified Drop Zone.

External Syllabus Support.    Jumpmaster, qualified troops.

SAD-4031      2.0      \*      B,T      (NS)      S      1      FFS/FTD

Goal.    Introduce day and NVD external load hook-ups and drops to a confined area (conversion and airplane modes).

Requirements

1. Discuss:
  - a. NVD considerations during external lift operations.
  - b. Use of the FLIR to monitor the load.
  - c. NVD emergencies with external load.
  - d. Performance considerations to include the effect of wind on hover mast torque required.



- e. Load stability.
  - f. CMS monitoring during flight.
  - g. Hook release system.
  - h. Simulator limitations.
  - i. External pattern.
  - j. External load rigging.
  - k. Landing zone marking.
  - l. Emergencies: Cargo jettison criteria and procedures, emergency procedures with external loads, loss of ICS.
2. Demonstrate/Introduce:
- a. Power Checks.
  - b. Approach to pickup zone.
  - c. Single or dual point cargo hookup.
  - d. Approach and cargo release procedures.
  - e. Wave-off with external load.
  - f. Departure from pickup zone.
  - g. Transition to APLN mode at least once with external.
  - h. Use of FLIR.

Performance Standards

- 1. Conduct all maneuvers IAW MV-22 NTTP.
- 2. Successfully conduct 5 single point hookups and releases.
- 3. Recognize indications, execute memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.

Prerequisites. SNS-2330. Required Reading - NATOPS 9.4, NTTP Ch 9, MAWTS-1 NVD Manual Ch 14.

AD-4032	1.5	365	B,T,R	A	1	MV-22
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Goal. Review single point and/or dual point external load hook-ups and drops to a confined area.

### Requirements

1. Discuss:
  - a. Crew responsibilities and communications during external operations.
  - b. Aircraft hook release systems. Hook preflight and checks.
  - c. Approach to LZ. Downwash, static electricity, FOD, and precision hover.
  - d. Cargo hook-up procedures and heading control.
  - e. Power checks, switchology, and HST brief.
  - f. HST composition, functions, and signals.
  - g. HST safety brief.
  - h. Power settling.
  - i. Pilot induced oscillations.
  - j. Reduced visibility conditions.
  - k. Terrain/obstacle clearance.
  - l. Inadvertent IMC procedures.
  - m. Aircraft emergencies with external load (flight control system failures).
  - n. Tactical considerations during external lift operations.
  - o. Aerodynamic characteristics of external loads.
  - p. Light and heavy external load considerations.
2. Demonstrate/Introduce:
  - a. External load hook-ups and drops to a confined area (minimum of 5 for initial events).
  - b. Waveoff with external load.

### Performance Standards

1. Execute proper external procedures IAW the NTP.
2. Demonstrate proper ICS terminology during external operations.
3. Place the load within 10 meters of desired location.

Prerequisites. CAL-2132, AD-4031.

External Syllabus Support. External load, HST, approved LZ with 7nm of protected airspace to 1000' AGL.

AD-4034 1.5 365 B,T,R,M NS A 1 MV-22

Goal. Introduce single point external cargo operations at night using NVDs.

Requirements

1. Discuss:
  - a. Any previously introduced EXT stage item.
  - b. Performance charts and JMPS considerations.
  - c. MAWTS-1 NVD Manual Ch 15.
  - d. Aircraft and landing zone lighting.
  - e. Aircraft emergencies with external load (Cargo hook fault caution, auto jettison not active caution, any previously discussed EP).
2. Demonstrate/Introduce:
  - a. Identifying the zone and load using NVDs.
  - b. External load hook-ups and drops to a confined area (minimum of 5 for initial events).
3. Review. Power checks.

Performance Standards

1. Execute proper NVD external procedures IAW the NTP.
2. Demonstrate proper ICS terminology during external operations.
3. Place load within 10 meters of desired location.

Instructor. NSI.

Prerequisites. NS-2331, NS-2381(if LLL), AD-4031, AD-4032.

External Syllabus Support. External load, HST, approved LZ with 7nm of protected airspace to 1000' AGL.

2.13.4 Alternate Insertion/Extraction Techniques (AI/E)

2.13.4.1 Purpose. To develop proficiency in tiltrotor alternate insertion and extraction techniques and procedures.

2.13.4.2 General. Initial AIE-4130 through AIE-4133 shall be conducted during the day. Subsequent execution of AIE-4130 through AIE-4133 may be conducted at night. Pilots shall be NSQ for the appropriate light level if conducting AIE-4130 through AIE-4133 using NVDs. AIE-4133 shall not be conducted at night.

Crew Requirement. P/P/CC/AO.

ACAD-4111	0.5	*	B,T				CLS
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Fastrope, Rappel, SPIE, Hoisting Operations

Goal. The PUI will have an introductory knowledge of procedures to execute Fastrope, Rappel, SPIE, and hoisting operations from the MV-22.

Prerequisite. T2P. Required Reading - NATOPS 9.7 - 9.8, NTTP Ch 11.1 - 11.5, 11.7.

ACAD-4112	0.5	*	B,T				CLS
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Helocast Operations

Goal. The PUI will have an introductory knowledge of procedures to execute Helocast from the MV-22.

Prerequisite. T2P. Required Reading - NTTP 11.6.

AIE-4130	1.5	365	B,T,R,M	(NS)	A	1	MV-22
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Goal. Introduce insertion procedures via fast rope and rappel.

Requirements

1. Discuss:
  - a. HIGE/HOGE requirements.
  - b. Pilot flying, pilot monitoring, and crew chief duties.
  - c. RST brief.
  - d. Voice communication/standard terminology.
  - e. ICS failure/hand and arm signals.
  - f. Current Force Order/Wing SOP.
  - g. Obstacle clearance/wave-off.
  - h. Hoist system operation.
  - i. Emergency procedures: Engine failure, uncommanded nacelle movement, nacelle blower failure.
  - j. Coupled mode operation.
2. Introduce:
  - a. Preflight of fast rope/rappel rigging and hoist system.
  - b. Skills involved for holding an extended hover.
  - c. Troop insertion via fast rope/rappelling/hoisting.

Performance Standards

1. Maintain stable hover when deploying troops.
2. Execute proper AIE procedures IAW the MV-22 NTP.
3. Maintain obstacle clearance.

Prerequisites. AD-4032, AD-4034 (if done at night), ACAD 4111.

External Syllabus Support. Ropemaster, qualified troops.

AIE-4131	1.5	365	B,T,R,M	(NS)	A	1	MV-22
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Goal. Introduce insertion procedures via hoisting.

Requirements

1. Discuss:
  - a. HIGE/HOGE requirements.
  - b. Pilot flying, pilot monitoring, and crew chief duties.
  - c. RST brief.
  - d. Voice communication/standard terminology.
  - e. ICS failure/hand and arm signals.
  - f. Obstacle clearance/wave-off.
  - g. Hoist system operation.
  - h. Emergency procedures: Engine failure, uncommanded nacelle movement, nacelle blower failure.
  - i. Coupled mode operation.
2. Introduce:
  - a. Preflight of fast rope/rappel rigging and hoist system.
  - b. Skills involved for holding an extended hover.
  - c. Troop insertion via fast rope/rappelling/hoisting.

Performance Standards

1. Maintain stable hover when deploying troops.
2. Execute proper AIE procedures IAW the MV-22 NTP.
3. Maintain obstacle clearance.

Prerequisites. EXT-4032, EXT-4034 (if done at night), ACAD 4111.

External Syllabus Support. Ropemaster, qualified troops.

AIE-4132      1.5      365      B,T,R,M      (NS)      A      1      MV-22

Goal.    Introduce conduct of SPIE.

Requirements

1. Discuss:
  - a. HIGE/HOGE requirements.
  - b. CRM.    Pilots, crew chief, RST Master and RST 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.
2. Introduce:
  - a. Inspection of SPIE Rig.
  - b. Skills involved for holding extended hover.
  - c. Troop insertion/extraction via SPIE Rig.

Performance Standards

1. Maintain stable hover when extracting/inserting troops.
2. Execute proper SPIE procedures IAW the MV-22 NTTP.

Prerequisites.    EXT-4032, EXT-4034 (if done at night), ACAD 4111.

External Syllabus Support.    Ropemaster, qualified troops.

AIE-4133      1.5      365      B,T,R,M      (NS)      A      1      MV-22

Goal.    Introduce aerial insertion of troops and equipment via helo cast and/or soft duck (deflated rubber boat) and introduce SAR operations.

Requirements

1. Discuss:
  - a. CRM while performing helo cast or soft duck.
  - b. Proper rigging and preflight of equipment to be inserted via helo cast and soft duck.
  - c. Low altitude aircraft emergencies over water.

- d. Ditching/water landing.
  - e. Salt encrustation/compressor stall
  - f. Helo cast/soft duck air delivery altitudes and airspeeds.
  - g. Voice communications/standard terminology.
  - h. Flight Director search patterns.
2. Introduce:
- a. Insertion of troops and equipment by helo cast or soft duck.
  - b. Preflight of aircraft, troops and equipment for helo cast or soft duck.
  - c. SAR patterns and over-water hoisting operations.

Performance Standards

- 1. Execute helo cast or soft duck procedures IAW the MV-22 NTP.
- 2. Demonstrate proper crew coordination during helo cast or soft duck operations.

Prerequisite. CAL-2133, EXT-4032, ACAD-4112.

External Syllabus Support. Castmaster, qualified troops.

2.13.5 Rapid Insertion/Extraction Mission (RI/E)

2.13.5.1 Purpose. To demonstrate proficiency in Tiltrotor rapid insertion and extraction techniques and procedures. This stage of training is designed to fulfill the requirement set in MCT 1.3.4.1.1 Conduct Airborne Rapid Insertions / Extraction.

2.13.5.2 General. Initial RIE-4180 may be conducted day or night. Pilots shall be complete in the appropriate AIE skill prior to conducting RIE-4180 and NSQ for the appropriate light level if conducting RIE-4180 using NVDs.

Crew Requirement. P/P/CC/AO.

RI/E-4180	2.5	365	B,T,R,M	(NS)	A	1	MV-22
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Goal. Demonstrate the ability to execute rapid insertion / extraction operations in a tactical environment.

Requirements

- 1. Discuss:
  - a. CRM during AIE.
  - b. Tactical considerations for applicable AIE mission.
- 2. Review. Appropriate AIE skill.

Performance Standards

1. Execute AIE procedures IAW the MV-22 NTTP.
2. Demonstrate proper crew coordination during AIE operations.
3. Complete the assigned mission.

Instructor. Section Leader.

Prerequisite. Appropriate AIE skill proficient.

External Syllabus Support. Jumpmaster/Castmaster/HRST Master, qualified troops.

2.13.6 Aviation Delivered Ground Refueling (ADGR)

2.13.6.1 Purpose. To introduce day/night aviation-delivered ground refueling and FARP procedures.

Crew Requirement. P/P/CC/AO.

ACAD-4210	1.0	*	B, T, R			CLS
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MV-22 Aviation-Delivered Ground Refueling and FARP Lecture

Goal. The PUI will have an introductory knowledge of the MV-22 Rapid Ground Refueling equipment and FARP setup.

Prerequisite. T2P. Required Reading - NATOPS 9.11, NTTP Ch 12.

LAB-4220	2.0	*	B, T	A	1	MV-22
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Aviation-Delivered Ground Refueling Lab

Goal. The PUI will have an introductory knowledge of the set-up of an MV-22 ADGR site.

Prerequisite. ACAD-4210.

ADGR-4230	0.5	365	B, T, R, M	(NS)	A	1	MV-22
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Goal. Introduce an ADGR mission.

Requirements

1. Discuss:
  - a. ADGR site evaluation and selection.
  - b. Fuel planning.
  - c. ADGR site security considerations.



- d. Ordnance and arming considerations.
  - e. FARP site aircraft control considerations.
  - f. Command and control considerations.
  - g. High gross weight take off and landing data.
  - h. JMPS ADGR considerations.
2. Introduce: Tactical planning, briefing, and execution of an ADGR mission during day or night. The PUI will assist in the planning and conduct of the ADGR brief.

Performance Standards

- 1. Maintain situational awareness with respect to the friendly and enemy situation and mission progress.
- 2. Safely control all aircraft through the ADGR site.
- 3. Provide fuel and/or ordnance as required to receivers.

Prerequisites. CAL-2132, NS-2331, NS-2381 (if LLL), ADGR-4220.

External Syllabus Support. Approved site for refueling operations, receiver.

2.13.7 Aviation-Delivered Battlefield Illumination (BI)

2.13.7.1 Purpose. To develop the ability to safely and accurately plan, brief and deploy Aircraft Parachute Flares (APF) from the MV-22, in support of air or ground forces.

2.13.7.2 General

Initial BI codes will be instructed by a BI proficient and qualified WTI (7577 MOS).

IPs will observe and oversee BI planning and ensure proper ordnance and range coordination.

IPs will focus the brief and cockpit discussion on the dangers of carrying and employing APFs as well as the required emergency procedures.

A Crew Chief Quality Assurance Safety Officer (QASO) is required for all battlefield illumination flights.

Crew Requirements P/P/QASO/CC/AO.

ACAD-4310    2.0    \*    B,T,R    CLS

MV-22 Battlefield Illumination

Goal. The PUI will have a familiarity with the components, characteristics, and operation of APFs and be capable of planning the employment of APFs in all light levels and threat environments.

Instructor. WTI.

Prerequisites. T2P. Required reading - NTTP APP C, TPG BI Section, NTRP.

BI-4330	1.5	365	B,T,R,M	NS	A	1	MV-22
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Goal. Introduce BI planning and employment in a night environment.

Requirements

1. Discuss:
  - a. APF components.
  - b. Artificial Light Level and number of APFs.
  - c. Forecast wind and APF drift calculations.
  - d. Required Airspace Coordination Measures (ACM).
  - e. ICS Procedures and deployment commands.
  - f. APF Time On Target (TOT).
  - g. Threat considerations.
2. Introduce. APF deployment.

Performance Standards

1. Demonstrate knowledge of the APF.
2. Demonstrate the ability to plan the number of APFs, fall rate, drift and burn-out based on ambient conditions.
3. Demonstrate the ability to plan and implement ACMs to safely and effectively deploy APFs.
4. Demonstrate knowledge of appropriate emergency procedures.
5. Demonstrate the ability to meet a TOT.
6. Demonstrate the ability to deploy APFs.

Instructor. WTI.

Prerequisites. ACAD-4310, NSQ appropriate light level.

Ordinance. 6 LUU-2 and/or LUU-19 Series APFs.

Range. SUAS authorized for use of APFs.

External Syllabus Support. Supported aviation or ground unit.

2.13.8 Airborne Command and Control (AC2)

2.13.8.1 Purpose. To develop the ability to provide an Airborne Command and Control vehicle, communications and situational awareness to command elements.

2.13.8.2 General. Event to be flown in conjunction with a Mission Skills event. Upon the completion of the AC2 event the pilot will be considered capable of performing that particular mission profile.

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

ACAD-4410	0.5	*	B,T,R				CLS
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MV-22 Airborne Command and Control

Goal. The PUI will have a familiarity with the aircraft capabilities, communications and situational awareness components/access points and their operation in support of AC2 missions.

Prerequisite. T2P.

LAB-4420	1.0	*	B,T	A	1	MV-22
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Airborne Command and Control Lab

Goal. The PUI will have an introductory knowledge of the cabin set-up of an MV-22 for AC2 missions.

Prerequisite. ACAD-4410.

AC2-4430	0.0	730	B,T,R,M	(NS)	A	1	MV-22
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Goal. Tactically employ the MV-22 in a command and control mission.

Requirements

1. Discuss:
  - a. Aircrew coordination.
  - b. Cabin setup.
  - c. Radio setup (organic and carry-on).
  - d. Other situational awareness/communications capabilities (chat, full motion video, DWS targeting FLIR).
  - e. Radio responsibilities during a command and control mission.
  - f. MCA planning, selection, and routing.
  - g. Aircraft maximum endurance profiles/configurations.

2. Introduce:

- a. Aircraft systems setup.
- b. Aircraft employment.

Performance Standards. Effectively utilize all aircraft systems ISO the mission requirements.

Prerequisites. LAB-4420, NSQ appropriate light level.

External Syllabus Support. Supported aviation or ground unit.

2.13.9 Defensive Weapon System (DWS)

2.13.9.1 Purpose. To develop the ability to control the employment of the MV-22 Defensive Weapon System (DWS) to deliver accurate air-to-ground fire and provide defensive fire on targets of opportunity.

2.13.9.2 General. At the completion of this stage, the PUI will have demonstrated the ability to control the employment of the MV-22 Defensive Weapon System from a hover, approaching the landing zone, departing the landing zone and enroute to the landing zone.

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

ACAD-4510	1.0	*	B,T,R	CLS
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DWS Familiarization Lecture

Goal. The PUI will have a familiarity with the components, characteristics, and operation of the Defensive Weapon System (DWS).

Prerequisites. ACAD-2511. Required reading - NTTP CH 7, BAE Systems DWS Technical and Flight Manual.

LAB-4520	1.0	*	B,T,R	Desktop Sim
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DWS CRM and Procedures Familiarization

Goal. To introduce pilot and gunner CRM and procedures associated with the DWS using the desktop simulator.

Requirements

- 1. Discuss:
  - a. CRM.
  - b. DWS positions.
  - c. Target talk-on techniques.
  - d. Weapons conditions.

- e. Weapons commands.
  - f. Weapon system malfunctions/stoppages/emergencies.
2. Introduce:
- a. Target talk on techniques using TSAR format.
  - b. DWS deployment, T-Stow, and maintenance positions
  - c. Employing the weapon on targets of opportunity.
  - d. DWS fields of fire.

Performance Standards. Demonstrate knowledge of the defensive weapon system operating procedures.

Instructor. DWSI.

Prerequisites. ACAD 4510. Required reading - NTTP CH 7, BAE Systems DWS Technical and Flight Manual.

LAB-4521	1.0	*	B,T,R	A	1	MV-22
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DWS Lab

Goal. To introduce pilot to the DWS installation and functionality using an aircraft on jacks.

Requirements

1. Discuss:
- a. DWS installation.
  - b. Cabin configuration with DWS installed.
  - c. DWS position.
  - d. DWS reloading procedures.
  - e. Weapon system malfunctions/stoppages/emergencies.
2. Introduce:
- a. Cabin configuration constraints.
  - b. DWS deployment, T-Stow, and maintenance positions
  - c. DWS reloading procedures
  - d. DWS manual retraction procedures

Performance Standards. Demonstrate knowledge of the defensive weapon system operating procedures.

Instructor. DWSI.

Prerequisites. ACAD-4510, LAB-4520. Required reading - NTTP CH 7, BAE Systems DWS Technical and Flight Manual.

DWS-4531	1.5	365	B, T, R	A	2	MV-22
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Goal. To introduce defensive weapons system employment in a day section aircraft environment in training mode with no rounds. Only one aircraft is required to have the DWS installed. A DWS shall be installed and operable for a PUI to complete the event.

## Requirements

1. Discuss:
  - a. CRM.
  - b. ICS procedures.
  - c. Safety.
  - d. Weapons conditions.
  - e. Weapons commands.
  - f. Weapon system malfunctions/stoppages/emergencies.
  - g. Target talk-on techniques.
  - h. DWS preflight.
  - i. Target identification.
  - j. Sensor utilization.
2. Introduce:
  - a. Range estimation at medium and low altitude.
  - b. Target talk on techniques using TSAR format.
  - c. Target acquisition from a reference point.
  - d. En route lookout doctrine and target acquisition.
  - e. Target acquisition during tactical approaches.
  - f. Overwatch techniques.
  - g. Weapons parameters.

## Performance Standards

1. Demonstrate knowledge of the defensive weapon system operating procedures.
2. Demonstrate the ability to employ the interim defensive weapon system in all flight phases.

3. Demonstrate all fire control voice and hand signals.
4. Demonstrate appropriate emergency weapons procedures.
5. Verbally demonstrate knowledge of weapons parameters.
6. Demonstrate the ability to talk-on gunners so they may acquire, sight-on, and simulate firing on multiple targets in a day single aircraft environment.

Prerequisites. LAT-2233, TG-2535, ACAD-4510, LAB-4520, 4521. Required reading - NTTP CH 7, BAE Systems DWS Technical and Flight Manual.

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DWS-4533	1.5	365	B,T,R	A	1+	MV-22
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Goal. To introduce defensive weapon system employment in a day environment. This event may be completed with a single ship or section of aircraft

Requirements

1. Discuss:
  - a. CRM.
  - b. ICS procedures.
  - c. Safety.
  - d. Weapons malfunctions/stoppages/emergencies.
  - e. Turret awareness.
  - f. Keep out zones (KOZ).
  - g. Sensor utilization.
  - h. Fields of fire/Sectors of fire.
  - i. Auto retract.
2. Introduce:
  - a. Defensive weapon system operations.
  - b. Fields of fire.
  - c. Sectors of fire.
  - d. Simulated approach to landings while engaging targets.
  - e. Overwatch procedures

3. Review. DWS-4531.

Performance Standards

1. Demonstrate knowledge of the three weapons control procedures.

2. Demonstrate verbally and practically all fire control voice and hand signals.
3. Demonstrate the ability to talk-on gunners so they may acquire, sight-on, and simulate firing on multiple targets in a day single aircraft environment using the TSAR format.
4. Verbally demonstrate knowledge of weapons parameters.

Prerequisites. DWS-4531. Required reading - NTTP CH 7, BAE Systems IDWS Technical and Flight Manual.

Ordnance. 2000 rounds per gunner of appropriate ammunition.

Range. Appropriate aerial gunnery range and moving land target (MLT) if available.

DWS-4534	1.5	365	B,T,R	NS	A	2	MV-22
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Goal. To introduce defensive weapons system employment in a night NVD section aircraft environment in training mode with no rounds. Only one aircraft is required to have the DWS installed. A DWS shall be installed and operable for a PUI to complete the event.

Requirements

1. Discuss:
  - a. CRM.
  - b. ICS procedures.
  - c. Safety.
  - d. Weapons conditions.
  - e. Weapons commands.
  - f. Weapon system malfunctions/stoppages/emergencies.
  - g. Target talk-on techniques.
  - h. IDWS preflight.
  - i. Target identification.
  - j. Sensor utilization.
2. Introduce:
  - a. Range estimation at medium and low altitude.
  - b. Target talk on techniques using TSAR format.
  - c. Target acquisition from a reference point.
  - d. En route lookout doctrine and target acquisition.



- e. Target acquisition during tactical approaches.
- f. Overwatch techniques.
- g. Weapons parameters.

Performance Standards

1. Demonstrate knowledge of the interim defensive weapon system operating procedures.
2. Demonstrate the ability to employ the interim defensive weapon system in all flight phases.
3. Demonstrate all fire control voice and hand signals.
4. Demonstrate appropriate emergency weapons procedures.
5. Verbally demonstrate knowledge of weapons parameters.
6. Demonstrate the ability to talk-on gunners so they may acquire, sight-on, and simulate firing on multiple targets in the night environment with wingman awareness.

Prerequisites. DWS 4533. Required reading - NTTP CH 7, BAE Systems DWS Technical and Flight Manual.

DWS-4536	1.5	365	B,T,R,M	NS	A	2	MV-22
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Goal. To introduce multi-aircraft Defensive Weapons System employment at night under HLL or LLL conditions.

Requirements

1. Discuss:
  - a. CRM.
  - b. ICS procedures.
  - c. Safety.
  - d. Weapons malfunctions/stoppages/emergencies.
  - e. Muzzle/Turret awareness in a multi-aircraft environment.
  - f. Weapons preparation/nomenclature.
  - g. Weapons effects on NVDs.
2. Introduce:
  - a. Firing techniques in a multi-aircraft environment at night.
  - b. Target acquisition at night in a multi-aircraft environment.
  - c. Multi-aircraft interim defensive weapon system operations at night.

3. Review. DWS-4533.

Performance Standards

1. Demonstrate the ability to talk-on gunners so they may acquire, sight-on, and simulate firing on multiple targets in a night section environment utilizing NVDs.
2. Demonstrate use of fire control procedures to suppress targets at night.
3. Demonstrate overwatch procedures.

Prerequisites. DWS-4534, NSQ for appropriate light level. Required reading - NTTP CH 7, BAE Systems DWS Technical and Flight Manual.

Ordinance. 2000 rounds per gunner of appropriate ammunition.

Range. Appropriate aerial gunnery range and moving land target (MLT) if available.

2.13.10 Chemical, Biological, Radiological and Nuclear (CBRN)

2.13.10.1 Purpose. To introduce the AR-5 CBRN protective mask and associated CBRN equipment.

2.13.10.2 General. For safe execution of all flights, 1 pilot shall remain unmasked during flights in the aircraft.

Crew Requirement. P/P.

LAB-4620	0.5	*	B,T,R	CLS
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CBRN Equipment Fitting and Familiarization

Goal. The PUI is introduced to CBRN protective equipment and is fitted with the required gear for flight operations.

Prerequisites. T2P. Required Reading - NTRP CBRN Ch.

SCBRN-4630	1.0	*	B,T	S	1	FFS/FTD
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Goal. Demonstrate the ability to conduct flight in an CBRN environment with mask and gear donned during day conditions.

Requirements

1. Discuss:
  - a. CRM while masked, to include emergency procedures and ground handling signals.
  - b. Mask limitations pertaining to vision and scan.

- c. Physiological limitations and fatigue factors imposed by CBRN protective equipment.
- d. Mask maintenance and factors that render the mask unserviceable.
- 2. Demonstrate: Proper mask use (donning and doffing).
- 3. Introduce:
  - a. CBRN defensive suit.
  - b. Start while masked.
  - c. Taxi while masked.
  - d. Takeoff and landings while masked.
  - e. Normal flight operations while masked.

Performance Standards

- 1. Properly don CBRN protective equipment and conduct flight maneuvers.
- 2. Demonstrate knowledge of CBRN operations IAW the MV-22 NTTP.

Prerequisites. SCAL-2130, LAB-4620. Required Reading - NATOPS 2.11, NAVAIR 00-80T-121.

SCBRN-4631	1.0	*	B,T,R,M	NS	S	1	FFS/FTD
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Goal. Demonstrate the ability to conduct flight in a CBRN environment with mask and gear donned during NVD conditions.

Requirements

- 1. Discuss:
  - a. NVD limitations pertaining to vision and scan.
  - b. CRM while wearing the mask and NVDs.
- 2. Demonstrate: Proper mask use (donning and doffing).
- 3. Introduce:
  - a. CBRN defensive suit.
  - b. Start while masked.
  - c. Taxi while masked.
  - d. Takeoff and landings while masked.
  - e. Normal flight operations while masked.

Performance Standards

1. Properly don CBRN protective equipment and conduct flight maneuvers with NVDs.
2. Demonstrate knowledge of CBRN operations IAW the MV-22 NTP.

Prerequisites. SNS-2330, SCBRN-4630.

#### 2.13.11 Reduced Visibility Landings (RVL)

2.13.11.1 Purpose. To develop proficiency in tiltrotor reduced visibility landing techniques and procedures under RVL scale level 4-5 conditions.

2.13.11.2 General. Initial RVL-4730 shall be conducted during the day. Subsequent execution of RVL-4730 may be conducted at night. Pilots shall be NSQ for the appropriate light level if conducting RVL-4730 using NVDs.

Crew Requirement. P/P/CC/AO.

RVL-4730	1.5	180	B,T,R,M	(NS)	A	1	MV-22
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Goal. Introduce RVLs in RVL scale level 4-5.

#### Requirements

1. Discuss:
  - a. Reduced visibility landing environment.
  - b. MV-22 high disc loading.
  - c. Loss of visual reference to the horizon and/or the LZ.
  - d. Micro terrain, obstacles, and aircraft clearances.
  - e. Wind effects
  - f. RVL scale.
  - g. Standard approach procedures to RVLs.
  - h. RVL procedures (No Hover, HIGE Hover Coupled, HOGE Hover Coupled, Approach to Hover).
  - i. Landing cadence.
  - j. Wave-off criteria for RVL.
  - k. After landing procedures.
  - l. Takeoff procedures.
  - m. Advantages and disadvantages of each type of RVL approach.
  - n. Reverse echelon landing formation.
  - o. Effects of obscurants on aircraft system performance (Gearbox temperatures, Engine performance percentage, FOD).

2. Introduce:

- a. RVLs with Reduced Visibility Landing Scale 4-5.
- b. Takeoffs and departures with reduced visibility scale 4-5.
- c. Set up for Approach to Hover.

Performance Standards

- 1. Demonstrate the proper procedures for RVLs IAW the NTTP.
- 2. Maintain assigned landing heading within 10 degrees.
- 3. Land within 0.1 nm of intended point of landing.
- 4. As PF and PNF, recognize and respond correctly to deviations from RVL profile conditions.

Prerequisites. CAL-2133. Required Reading - NTTP Ch 3, NATOPS Ch 14.2 and 14.5.

External Syllabus Support. Suitable landing site with 7nm radius of protected airspace to 5000' AGL.

2.13.12 Carrier Qualification (CQ)

2.13.12.1 Purpose. Qualify the PUI in flight operations from a carrier deck or ship platform under night unaided conditions.

2.13.12.2 General

Refer to the LHA/LHD/MCS NATOPS Manuals for carrier operations. Refer to NWP-42 for air capable ship operations.

IPs will emphasize proper communication procedures, patterns, and aviation operations in the shipboard environment per aircraft and ship NATOPS, and T&R Program Manual.

Crew Requirement. P/P/CC.

SCQ-4780	1.0	365	B,T,R	N*	S	1	FFS/FTD
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Goal. Introduce night unaided CQ pattern and procedures.

Requirements

- 1. Discuss. Any previously discussed/introduced CQ item.
- 2. Introduce:
  - a. Carrier operation.
    - (1) Night takeoff/landing patterns (min of 5 for initials).
    - (2) Communication procedures.

- (3) Lights and light signals peculiar to night operations.
- (4) LSE signals and procedures.
- b. Self-taxi procedures.
- c. STOs.
- d. Pitch-up side slip characteristics.
- e. Steady heading approach (port winds).
- f. Balanced flight approach.
- g. 45° slide approach (starboard winds).

Performance Standards

1. Demonstrate proper knowledge of night unaided shipboard procedures IAW the LHA/LHD/MCS NATOPS, and NWP-42.
2. Maintain proper glideslope for steady heading, balanced flight, and 45° slide night unaided approaches.
3. Maintain proper closure rate during approaches.

Prerequisites. SCQ-2930.

CQ-4781	1.0	365	B,T,R	N*	A	1	MV-22
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Goal. Introduce night unaided CQ patterns and procedures in an FCLP scenario.

Requirements

1. Discuss:
  - a. Differences and similarities of day and night landing and takeoff techniques.
  - b. Review CQ-2931 discussion items.
2. Introduce:
  - a. Carrier operation.
    - (1) Night takeoff/landing patterns (min of 5 for initials).
    - (2) Communication procedures.
    - (3) Lights and light signals peculiar to night operations.
    - (4) LSE signals and procedures.
    - (5) Carrier aided and unaided lighting configurations.
  - b. Self-taxi procedures.

- c. STOs.
- d. Pitch-up side slip characteristics.
- e. Steady heading approach (port winds).
- f. Balanced flight approach.
- g. 45° slide approach (starboard winds).
- h. Shipboard INS alignment procedures.

Performance Standards

1. Properly execute the night unaided CQ pattern IAW LHA/LHD/MCS NATOPS.
2. Maintain proper glideslope for steady heading, balanced flight, and 45° slide night unaided approaches.
3. Maintain proper closure rate during night unaided approaches.

Prerequisites. CQ-2931, SCQ-4780.

External Syllabus Support. FCLP area.

CQ-4782	1.5	365	B,T,R,M	N*	A	1	MV-22
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Goal. Night unaided qualification flight.

Requirements

1. Discuss:
  - a. Aircraft ditching.
  - b. Emergency egress procedures.
2. Introduce:
  - a. Procedures for unaided landings and takeoffs.
  - b. Night unaided patterns (minimum of 5 for initials).
  - c. Unaided approaches and landings.
  - d. Aircraft lighting configuration.
  - e. Deck lighting configuration.
  - f. Unaided closure rates.
3. Review:
  - a. CRM.
  - b. Emergency Egress Lighting System (EELS).

- c. LSE signals.
- d. Voice procedures.

Performance Standards

1. Properly execute the night unaided CQ pattern IAW LHA/LHD/MCS NATOPS.
2. Maintain proper glideslope for steady heading, balanced flight, and 45° slide night unaided approaches.
3. Maintain proper closure rate during night unaided approaches.

Prerequisites. CQ-2932, CQ-4781.

External Syllabus Support. Landing platform afloat.

2.13.13 Defensive Combat Manuevers (DCM)

2.13.13.1 Purpose. To introduce and develop proficiency in tactics and aerial defensive measures used to evade enemy air-to-air threats.

2.13.13.2 General

PUIs in this stage shall be LAT qualified and proficient in LAT-2233 and GTR-2832.

A DCMI is required for all non-proficient PUIs.

The flight lead shall be a DCMI and specifically brief all applicable DCM training rules per the NTTP, the Aviation T&R Program Manual, and this Manual.

After completion of DCM-4031 the PUI is DCM Qualified (DCMQ).

The flight lead shall brief aggressor aircrew per Aviation T&R Program Manual and brief training rules prior to each flight.

Sequences for all DCM flights shall be flown as outlined in the MV-22 NTTP DCM Program Guide.

Crew Requirements. P/P for simulators, P/P/CC/AO for aircraft events.

ACAD-4810    1.0    \*    B,T    CLS

Attack Helicopter Threat to Assault Support

Goal. The PUI will have an introductory knowledge specific attack helicopter threats to assault support aircraft.

Instructor. WTI.

Prerequisite. LATQ. Required Reading - AFTTP 3-1 Threat Helicopter Ch.



ACAD-4811 1.0 \* B,T CLS

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Fixed Wing Threat to Assault Support

Goal. The PUI will have an introductory knowledge of the fixed wing threat to assault support.

Instructor. WTI.

Prerequisites. LATQ. Required Reading - AFTTP 3-1 Fixed Wing Threat Ch.

ACAD-4812 1.0 \* B,T CLS

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MV-22 Defensive Combat Maneuvers

Goal. The PUI will have an introductory knowledge of MV-22 Defensive Combat Maneuvers.

Instructor. DCMI.

Prerequisite. GTR-2832. Required Reading - NTTP Ch 15, T&R Program Manual paragraph 312.1 and 312.4.

LAB-4820 0.5 \* B,T,R CLS

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Defensive Combat Maneuver Walk-through

Goal. The PUI will have an satisfactory knowledge of MV-22 defensive combat maneuvers prior to inflight execution.

Instructor. DCMI.

Prerequisites. ACAD-4812. Required Reading - NTTP Appendix B.

SDCM-4830 2.0 365 B,T,R S 2 FFS/FTD TEN+

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Goal. Introduce DCM against a FW aggressor.

Requirements

1. Discuss:
  - a. Crew comfort level.
  - b. Lookout doctrine.
  - c. Common terminology.
  - d. Situational awareness.
  - e. Closure rate, radius of turn and energy state.
  - f. FW weapons parameters and considerations.

- g. DCM training rules.
  - h. DCM line numbers.
  - i. Tactical formation maneuvering versus a FW aggressor.
2. Introduce: Tiltrotor DCM versus a single FW aggressor per the MV-22 NTTP.
  3. Review: Intraplane and interplane communication.

Performance Standards

1. Execute proper DCM vs a FW threat IAW the MV-22 NTTP.
2. Maintain DCM ROC IAW the Aviation T&R Program Manual.

Instructor. DCMI.

Prerequisites. LATQ, GTR-2832, LAB-4820.

DCM-4831	1.0	365	B,T,R,M	A	2	MV-22
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Goal. Introduce section DCM against a FW aggressor.

Requirements

1. Discuss:
  - a. Lookout doctrine.
  - b. Situational awareness.
  - c. Adversary aircraft parameters.
  - d. Adversary weapons parameters, envelopes, and considerations.
  - e. Mutual support.
2. Demonstrate/Introduce:
  - a. Tiltrotor DCM versus a single FW aggressor per the MV-22 NTTP.
  - b. DCM line numbers in accordance with the MV-22 NTTP.
  - c. Aggressor attacks at various altitudes.

Performance Standards

1. Execute proper DCM vs a FW threat IAW the MV-22 NTTP.
2. Maintain DCM ROC IAW the Aviation T&R Program Manual.

Instructor. DCMI.

Prerequisites. SDCM-4830.

Ordinance. 60 flares.

Range. ACM range space.

External Syllabus Support. FW adversary.

2.13.14 Combat Assault Transport (HTT)

2.13.14.1 Purpose. To introduce day and/or NVD high threat tactical mission planning, briefing and execution.

2.13.14.2 General

Initial tactics flight events should be based on tactical scenarios designed to focus on the specific items delineated in the different training codes and will be developed by the squadron WTI. A Tactical Simulation Instructor (TSI) is required to build and run the scenario in the Tactical Environment Network. To the greatest extent possible the scenarios should incorporate the employment of escort aircraft (fixed or rotary wing), ASE (ALE-47, APR-39, etc.) and use of the defensive gun.

Discuss items for each event in this stage are designed to be the focus of scenario-based training for planning and execution, not necessarily for discussion during individual cockpit briefs. However, this does not preclude these items from being discussed during cockpit briefs.

Specific planning responsibilities should be delegated to PUIs in order to obtain a broad exposure to mission planning.

Initial flights will be instructed by a designated section leader.

Crew Requirement. P/P.

SHTT-4930	3.0	365	B,T,R,M	NS	S	2	FFS/FTD
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Goal. Introduce an assault support mission in a high threat environment using a minimum of a section.

Requirements

1. Discuss:
  - a. High threat escort considerations.
  - b. Immediate re-embarkation/emergency extract.
  - c. NVD mission planning.
  - d. Onboard navigation systems.
  - e. ASE use at night.
  - f. NS CBRN considerations as required for the tactical scenario.
2. Introduce: Tactical planning, briefing, and execution of a high threat mission during the night. The PUI will assist in the planning and conduct of the tactical brief.

Performance Standards

1. Maintain situational awareness with respect to the friendly and enemy situation and mission progress.
2. Properly employ all ASE IAW the MV-22 NTTP.
3. Execute proper weapons employment procedures IAW the MV-22 NTTP.
4. Properly plan the use of available escorts versus the threat.
5. Demonstrate proper knowledge of NVD tactical considerations IAW the MV-22 NTTP and MAWTS-1 NVD Manual as applicable for the mission.

Prerequisites. CAT-3233.

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2.14 INSTRUCTOR TRAINING PHASE (5000)

2.14.1 Purpose. To establish training for instructor designations.

2.14.2 General

2.14.2.1 Admin Notes

ROC will be per the T&R Program manual.

Pilots may fly night flights using NVDs in this phase under HLL or LLL conditions provided they are NSQ for that light level.

Refer to paragraph 209 for ACPM lectures required for this phase of training.

2.14.2.2 Stages. The following stages are included in the Instructor Training Phase.

Par No.	Stage Name
2.13.3	Basic Instructor Pilot (BIP)
2.13.4	FRS Instructor/Contract Instructor Training (FIT)
2.13.5	Flight Leadership Standardization Evaluator (FLSE)
2.13.6	Air to Air Refueling Instructor (AARI)
2.13.7	Tactical Simulation Instructor (TSI)
2.13.8	Low Altitude Tactics Instructor (LATI)
2.13.9	Night Systems Familiarization Instructor (NSFI)
2.13.10	Defensive Combat Maneuvers Instructor (DCMI)
2.13.11	Night Systems Instructor (NSI)
2.13.12	Weapons and Tactics Instructor (WTI)
2.13.13	Defensive Combat Maneuvers (DCM)
2.13.14	Combat Assault Transport (HTT)

2.14.3 Basic Instructor Pilot Training

2.14.3.1 Purpose. To develop qualified Basic Instructor Pilots (BIPs) using a standardized instructor training program. This syllabus is designed to prepare future aircraft commanders to instruct specific Core Skill events in the simulator and aircraft. This portion of the syllabus shall be used by VMM squadrons to assist in instructor standardization.

2.14.3.2 General

All maneuver descriptions are in the MV-22 NATOPS and NTTP.

Conduct Instructor Under Training (IUT) events with a designated Section Leader proficient in the event.

IUT flights will emphasize instructional techniques, briefing, and debriefing. The IUT will be capable of demonstrating all training objectives listed for the referenced syllabus flight. Emphasis on all flights is on training objectives, method of instruction, and student problem areas.

Crew Requirements. P/P for simulators.

ACAD-5010	4.0	*	B,T,R				CLS
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Basic Flight Instructor Course

Goal. The PUI will have an introductory knowledge of instructional techniques, briefing and debriefing styles, and tactical risk mitigation for instructional sorties.

Prerequisite. Recommended by the Squadron Standardization Board.

SBIP-5030	2.0	*	B,T,R	E	S	1	FFS/FTD
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Goal. Introduce Familiarization, Confined Area Landing, and Formation instruction techniques.

Requirements

1. Discuss.
  - a. All "discuss" items in the FAM, CAL, and FORM stage events with emphasis on IUT instructional technique.
  - b. Comfort level.
  - c. Simulator preparation for a networked event
2. Review. All FAM, CAL, and FORM stage maneuvers with emphasis on instructional technique.

Performance Standards

1. Execute proper CAL approaches IAW MV-22 NTTP and provide accompanying inflight description.
2. Provide accurate instruction on glideslope correction to achieve proper normal and steep approach glideslope.
3. Maintain proper formation positioning while flying in combat cruise and combat spread

Instructor. Section Leader.

Prerequisites. ACAD-5010, FAM, CAL, FORM stage complete, and recommended by the Squadron Standardization Board.

SBIP-5031	2.0	*	B,T,R	E	S	1	FFS/FTD
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Goal. Introduce instructional techniques regarding air delivery operations, mountain area training, and carrier qualification.

Requirements

1. Discuss.
  - a. Simulator set-up for externals.
  - b. All AD, MAT, or CQ stage discuss items.
2. Review. All AD, MAT, and CQ stage maneuvers with emphasis on instructional technique.

Performance Standards

1. Execute proper MAT approaches IAW MV-22 NTTP and provide accompanying inflight description.
2. Provide accurate instruction CMS and mission planning skills during air delivery operations.
3. Maintain proper glideslope and closure rate during CQs.

Instructor. Section Leader.

Prerequisites. ACAD-5010, AD, MAT, and CQ stage complete, and recommended by the Squadron Standardization Board.

2.14.4 FRS Instructor/Contract Instructor Training

2.14.4.1 Purpose. To develop qualified FRS Instructor Pilots (IPs) and Contract Instructors (CIs) using a standardized instructor training program. This syllabus is designed to prepare FRS IPs to instruct Core Skill Introduction phase events in the simulator and aircraft and CIs to instruct Core Skill Introduction phase events in the simulator.

2.14.4.1 General

The PUI must be a Section Leader prior to beginning this stage of training.

Conduct Instructor Under Training (IUT) events with a designated Standardization Pilot.

IUTs should fly in the right seat.

CIs will complete all events in the simulator.

For CV-22 to MV-22 conversion pilots, the syllabus events will emphasize the CV/MV differences, focus on the NAVMC training policies, and emphasize common student problem areas. Upon completion of the CV-22 to MV-22 differences portion of the FRS IP Syllabus, Instrument evaluation, and NATOPS evaluation, the FRS Commanding Officer may designate the PUI as an MV-22 Aircraft Commander.

Completion of an IUT event will qualify an instructor to instruct that phase of training.

Completion of SFIT-5146 qualifies CIs to instruct the Core Skill Introduction phase simulator LAT event.

Completion of the simulator portion of the MV-22 NSFI syllabus in accordance with the MAWTS-1 Course Catalog qualifies CIs to instruct Core Skill Introduction simulator NS events. IPs shall be designated an NSI or NSFI prior to instructing Core Skill Introduction NS events.

Prerequisites listed with each event apply to the IP syllabus.

All FRS instructor pilots and Contract Instructors will complete the FIT syllabus beginning with ACAD-5111. ACAD-5110 through FIT-5136 is designed for CV-22 conversion pilots.

#### 2.14.4.1 Admin Notes

All IUT flights emphasize instructional techniques, briefing, and debriefing. The IUT will be capable of demonstrating all training objectives listed for the referenced syllabus flight.

Emphasis on all flights is on training objectives, method of instruction, and student problem areas.

At the completion of this stage of training, the FRS IP will be qualified to instruct Core Skill Introduction events in the aircraft and simulator and CIs will be qualified to instruct corresponding Core Skill Introduction events in the simulator.

Crew Requirements. P/P for simulators, P/P/CC if flown in aircraft.

ACAD-5110	1.0	*	CV				CLS
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#### CV-MV Pilot Stage Inbrief

Goal. The PUI will have an introductory knowledge of the CV-22 to MV-22 syllabus and expectations.

Instructor. Operations.

SFIT-5130	2.0	*	CV	N*	S	1	FFS/FTD
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Goal. Review FAM maneuvers (day and night) and Course Rules.

#### Requirements

1. Discuss.
  - a. Local course rules.
  - b. Single engine failure.
  - c. Dual engine failure.



2. Review:

- a. Hover Nacelle Drills.
- b. Air Taxi Nacelle Drills.
- c. CONV pattern.
- d. Normal Approach to a Hover Landing.
- e. Normal Approach to a No-Hover Landing.
- f. Steep Approach to a Hover Landing.
- g. Steep Approach to a No-Hover Landing.
- h. Nose Low Steep Approach.
- i. APLN pattern.
- j. Emergency Landing Pattern (ELP).

Performance Standards

- 1. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
- 2. Be able to state indications, execute/recite memorized items, exercise proper crew coordination, and maintain control of the aircraft during simulated emergency procedures.

Instructor. FRSI.

Prerequisites. ADL-0001, LAB-0200, ADL-0012, ADL-0014, ACAD-0109, LAB-1020, ACAD-5110.

SFIT-5131	2.0	*	CV	S	1	FFS/FTD
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Goal. Practice day VFR navigation (no lower than 500 feet AGL) utilizing the aircraft navigation system, the flight director system, and the aircraft mission management system, to arrive at the objective(s). Review the use of Flight Director commands, coupled modes, and AUTO NAC during enroute and APPR flight.

Requirements

- 1. Discuss. Conduct route preflight brief (conduct of flight portion of PCL).
- 2. Introduce. Preflight preparation.
  - a. Operate the mission planning station and the JMPS program.
  - b. Plan the route as assigned.

- c. Add, edit, and delete the Aircraft Load as necessary.
  - d. Calculate and print a Load Comp Form.
  - e. Calculate aircraft CG.
  - f. Add an appropriate waypoint set to the mission binder.
  - g. Add an appropriate Comm Plan to the mission binder.
  - h. Write the mission to the DTM.
  - i. Develop appropriate graphics for route brief.
  - j. Print kneeboard cards.
3. Review:
- a. Flight director commands and coupled modes (core modes, INAV, APPR).
  - b. Activate and display a coupled approach (APPR) leg.
  - c. Utilize the aircraft navigation/CMS to execute assigned mission.
  - d. Preflight NAV/CMS/MMS.
  - e. Flight Plan (FPLN) Management.
  - f. Dual Digital Map Operation.
  - g. Utilize CRM during VFR navigation.

Performance Standards

- 1. Accurately conduct mission preflight planning utilizing the mission planning station and JMPS.
- 2. Accurately operate MSN Data Load, WYPT, FPLN, INAV, and MSN key functionality.
- 3. Execute a navigation route maintaining orientation +/- 1 nautical mile enroute; +/- 500 meters in the objective area; and landing in the objective within +/- 1 minute.
- 4. Properly activate and operate the DDMS and the Flight Director during VFR navigation.
- 5. Utilize CRM principles.

Instructor. FRSI.

Prerequisites. SFIT-5130.

SFIT-5132 2.0 \* CV S 1 FFS/FTD

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Goal. Review the fundamental elements of tactical inserts and extracts, the RVL profile, and use of FLIR.

Requirements

1. Discuss:
  - a. Pitch up with side slip.
  - b. Hover Coupled.
  - c. Augmented Hover Coupled Landing.
  - d. RVL Profile.
  - e. Dual Digital Map Operation.
  - f. Scan, cockpit setup, aids and automation.
  - g. CAL application of FLIR.
  - h. Single Engine failure.
  - i. Single Engine Waveoffs.
2. Review:
  - a. CONV CAL Patterns.
  - b. Straight-in Tactical Approach.
  - c. Waveoff.
  - d. RVL Profile.
  - e. Jump Takeoff.

Performance Standards

1. Conduct all maneuvers IAW MV-22 FTM.
2. Recognize proper glideslope for CAL approaches.
3. Recognize criteria and execute wave off.
4. Recognize indications and execute required memory items, know associated warnings, and exercise proper crew coordination during simulated emergency procedures and system failures.

Instructor. FRSI.

Prerequisites. SFIT-5131.

SFIT-5133 2.0 \* CV (N) S 1 FFS/FTD

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Goal. Conduct IFR Flight operations. Introduce operation of Flight Director Commands and the Mission Management systems. A complete flight shall be conducted including: flight planning, filing, clearance, departure, enroute/cruise, descent, and instrument approaches.

Requirements. Coordination - IP shall designate a departure and destination location where training is to be conducted. The IP shall issue to the PUI appropriate information for preflight planning; including a DD-175-1, appropriate NOTAMS, and an aircraft load. Preflight Planning - PUI will conduct all appropriate preflight planning to include: completed DD-175, loading flight plan, waypoint set, and comm plan on a DTM.

1. Discuss:

- a. JMPS flight planning. Flight plan files loaded to the DTM.
- b. Flight Plan/DD-175.
  - (1) Aircraft Designation/TD Code.
  - (2) Route, altitude, CAS vs TAS.
  - (3) MV-22 Minimum fuel requirements.
  - (4) Alternate airfield selection.
- c. Flight Director operation and limitations.
  - (1) Pre-takeoff preparation.
  - (2) During takeoff and departure.
  - (3) During the enroute and descent.
  - (4) During the instrument approach.
- d. CRM during IFR navigation.
- e. Standard Terminal Arrivals (STAR).
- f. Approach criteria for Multi-piloted aircraft.
- g. Closing of the Flight Plan.

2. Review:

- a. Instrument Takeoff.
- b. Departure.

- c. Enroute procedures.
- d. Communication, Navigation, and IFF equipment operation.
- e. Descent procedures.
- f. Non precision approaches.
- g. Precision approaches.
- h. Transition to visual landing.
- i. Missed approach procedures.

Performance Standards

1. Accurately conduct preflight planning and complete required documents to conduct an IFR flight.
2. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG).
3. Execute Pilot Not Flying duties IAW with the MV-22 Maneuver Description Guide (MDG).
4. Accurate and timely use of the Flight Director Cues, Commands, and Coupled modes for IMC flight.

Instructor. FRSI.

Prerequisites. SFIT-5131.

FIT-5134	3.0	*	CV	A	1	MV-22
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Goal. Review FAM maneuvers and CAL procedures/patterns to include tactical approaches.

Requirements

1. Discuss:
  - a. Major aircraft systems/differences.
  - b. Effects of Saturating Control Power.
  - c. Trim System.
  - d. Failures Leading to the Loss of Flapping Control, Limiting, Cueing Functions.
  - e. TAC aircraft signing procedures.

- f. MAF procedures.
  - g. HOTSEAT procedures.
  - h. Any major system EP.
2. Review:
- a. STO and RTO.
  - b. CONV pattern.
  - c. APLN pattern.
  - d. Normal Approach to a Hover Landing.
  - e. Normal Approach to a No-Hover Landing.
  - f. Run-on Landing.
  - g. Steep Approach to a Hover Landing.
  - h. Steep Approach to a No-Hover Landing.
  - i. TOLD (Takeoff and Landing Data calculations).
  - j. MGW Transition from Hover.
  - k. MGW Landing.
  - l. Slow flight (APLN Mode).
  - m. High AOB (APLN Mode).
  - n. Practice power on/off stalls.
  - o. Overhead Break Entry.
  - p. CONV CAL Pattern.
  - q. Straight-in Tactical Approach.
  - r. RVL profile.
  - s. Augmented Hover Coupled Landing.
  - t. 90 degree Tactical entry.
  - u. 180 degree Tactical entry.
  - v. PF and PNF duties and callouts.

Performance Standards

1. Conduct all maneuvers IAW MV-22 FTM and NTPP.
2. Recognize indications and execute required memory items, know associated warnings, and exercise proper crew coordination during simulated emergency procedures and system failures.

Instructor. FRSI.

Prerequisites. SFIT-5130, SFIT-5132.

SFIT-5135	2.0	*	CV	S	2	FFS/FTD TEN+
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Goal. Review formation flight, introduce sections landings to an LZ and IIMC procedures.

Requirements

1. Discuss:
  - a. Cruise position and visual reference points.
  - b. Considerations of close formation, closure rates and situational awareness.
  - c. Lost Communication Procedures.
2. Review:
  - a. Section takeoff.
  - b. Section RTO.
  - c. Running/Carrier rendezvous.
  - d. Cruise position.
  - e. Cross-over/cross-under.
  - f. Turn pattern (CONV).
  - g. Turn pattern (APLN).
  - h. Over-run or under-run.
  - i. IIMC breakup and rejoin.
  - j. Formation Transition and Conversion.
  - k. Lead changes.
  - l. Section landings to an improved surface or large CAL site.

Performance Standard. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG) and NATOPS.

Instructor. FRSI.

Prerequisites. SFIT-5132.

FIT-5136	2.0	*	CV	A	2	MV-22
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Goal. Review formation flight and procedures in the aircraft.

Requirements

1. Discuss:
  - a. Cruise position and visual reference points.
  - b. Formation aborts and waveoffs.
2. Review:
  - a. Section RTO.
  - b. Section takeoff.
  - c. Running/Carrier rendezvous.
  - d. Cruise position.
  - e. Cross-over/cross-under.
  - f. Turn pattern (CONV).
  - g. Turn pattern (APLN).
  - h. Over-run/under-run.
  - i. IIMC breakup and rejoin.
  - j. Formation Transition and Conversion.
  - k. Lead changes.
  - l. Section landings to an improved surface or large CAL site.
  - m. TAC signing procedures.

Performance Standards. Conduct all maneuvers IAW MV-22 Maneuver Description Guide (MDG) and NATOPS.

Instructor. FRSI.

Prerequisites. FIT-5134, SFIT-5135.



ACAD-5111 8.0 \* T,R,CI,CV CLS

Basic Flight Instructor Course

Goal. The PUI has an introductory knowledge of instructional techniques, briefing and debriefing styles, and defensive positioning for instructional sorties.

Prerequisite. Recommended by the Squadron Standardization Board.

FIT-5140 2.0 \* B,T,R,CI,CV E A/S 1 MV-22

Goal. Introduce the IP brief and demonstrate standardized procedures for flight planning, preflight, and all day FAM stage maneuvers.

Requirement. IP and IUT will discuss preflight and post-flight pilot briefings. IUT will observe preflight, cockpit procedures, techniques of instruction, and local course rules. Instructors shall emphasize the ability to teach, evaluate problems, and apply corrective instruction.

1. Review (at a minimum):
  - a. Ground Taxi.
  - b. Hover and Air Taxi.
  - c. Normal Approach to a Hover Landing.
  - d. Normal Approach to a No-Hover Landing.
  - e. Steep Approach to a Hover Landing.
  - f. Steep Approach to a No-Hover Landing.
  - g. APLN Pattern.
  - h. Run-on Landing.
  - i. Transition to APLN.
  - j. Conversion to CONV.
  - k. High AOB (APLN Mode).
  - l. Flight Director Operation.
  - m. Practice power on/off stalls.

Performance Standards

1. Successfully describe all FAM maneuvers IAW MV-22 Maneuver Description Guide (MDG).
2. Successfully execute all FAM maneuvers IAW MV-22 Maneuver Description Guide (MDG) with accompanying in-flight description.

Instructor. STANI.

Prerequisites. SL-6234.

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FIT-5141	1.0	*	B,T,R,CI, CV N*	E	A/S	1	MV-22
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Goal. Review familiarization stage maneuvers at night.

Requirement. IUT will discuss all items and perform all maneuvers in the night familiarization stage events with emphasis on IUT instructional technique.

Performance Standards

1. Successfully describe all FAM maneuvers and night considerations IAW MV-22 Maneuver Description Guide (MDG).
2. Successfully execute all night FAM maneuvers IAW MV-22 Maneuver Description Guide (MDG) with accompanying inflight description.

Instructor. STANI.

Prerequisites. FAM-5140.

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SFIT-5142	2.0	*	B,T,R,CI, CV (N)	E	S/A	1	FFS/FTD
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Goal. Review basic instrument, IFR planning, filing, airway navigation, and instrument approach procedures.

Requirements

1. Discuss:
  - a. IFR planning.
  - b. Filing a DD-175.
  - c. Airway procedures.
  - d. Precision/non-precision approaches.
2. Review:
  - a. CLIMB Checklist.
  - b. APPROACH Checklist.
  - c. Attitude instrument flight.
  - d. Standard rate climbing and descending turns.
  - e. Recovery from unusual attitudes.
  - f. Vertical S-1.
  - g. Oscar pattern.

- h. Fly a minimum of 1 precision and 1 non-precision approach.

Performance Standards

1. Successfully describe BI maneuvers, IFR Planning, filing, airways navigation, and instrument approach procedures IAW MV-22 Maneuver Description Guide (MDG) and NATOPS Instrument Flight Manual.
2. Execute BI maneuvers, airways navigation, and instrument approaches IAW MV-22 Maneuver Description Guide (MDG) and NATOPS Instrument Flight Manual with accompanying in-flight description.

Instructor. STANI.

Prerequisites. SL-6234.

FIT-5143	1.5	*	B,T,R,CI,CV	E	A/S	1	MV-22
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Goal. Review CAL instruction techniques.

Requirements

1. Discuss:
  - a. All "discuss" items in the CAL stage events with emphasis on IUT instructional technique.
  - b. Comfort level.
2. Review. All CAL stage maneuvers with emphasis on instructional technique.

Performance Standards

1. Execute proper CAL approaches IAW MV-22 Maneuver Description Guide (MDG) and provide accompanying inflight description.
2. Provide accurate instruction on glideslope correction to achieve proper normal and steep approach glideslope.

Instructor. STANI.

Prerequisites. SL-6234.

SFIT-5144	1.5	*	B,T,R,CI,CV	E	S/A	1	FFS/FTD
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Goal. Review navigational instructional techniques.

Requirement. Brief and fly a navigational flight introducing all onboard navigational equipment. Discuss all items and perform all maneuvers in the navigation stage events with emphasis on IUT instructional technique.

Performance Standards. Provide accurate flight instruction on navigation procedures and systems.

Instructor. STANI.

Prerequisites. SL-6234.

FIT-5145    1.5    \*    B,T,R,CI,CV    E    A/S    2    MV-22

Goal. Review formation instructional techniques, formation stage maneuvers and emphasize closure rates and radius of turn.

Requirement. Brief and fly a formation flight introducing all formation maneuvers. Discuss all items and perform all maneuvers in the formation stage events with emphasis on IUT instructional technique. Emphasize cruise turns and section CALs.

Performance Standards

1. Successfully brief a formation flight to accomplish all formation maneuvers.
2. Conduct formation maneuvers and section CALs IAW MV-22 Maneuver Description Guide (MDG) and MV-22 NTTP.

Instructor. STANI.

Prerequisites. SL-6234.

SFIT-5146    2.0    \*    B,T,R,CI,CV    E    S    1    FFS/FTD

Goal. Demonstrate the ability to instruct LAT maneuvers in conversion and airplane modes and LAT navigation.

Requirements

1. Discuss:
  - a. LAT "stair step" to lower altitudes (currency/comfort level).
  - b. Power settling.
  - c. Altitude effects with nacelle rotation.
  - d. LAT turns vs stall speeds.
  - e. Control laws.
  - f. Use of FLIR/digital map (by PNAC).
  - g. Crew comfort levels/climb to cope.
  - h. Flight safety/emergencies/pilot's reduced reaction times at low altitudes.
  - i. Standard terminology.
  - j. Instructor Pilot, IUT and crew chief duties during LAT maneuvers and navigation.

2. Review

- a. All LAT maneuvers in conversion and airplane mode.
- b. LAT navigation.

Performance Standards

1. Successfully describe LAT maneuvers IAW MV-22 Maneuver Description Guide (MDG) and MV-22 NTTP.
2. Conduct LAT Maneuvers IAW MV-22 Maneuver Description Guide (MDG) and MV-22 NTTP with accompanying inflight description.
3. Navigate a LAT route of a minimum of 5 checkpoints instructing proper terminology, crew coordination, use of the digital map, use of the Flight Director, tactical flight considerations, and timing. Maintain planned course +/- 1,000 meters and arrive at the final checkpoint within 30 seconds of the planned time.

Instructor. LATI.

Prerequisites. FIT-5144, SL-6234.

FIT-5147	2.0	*	B,T,R,CI,CV (N)	E	S/A	1	MV-22
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Goal. Stan Pilot check flight.

Requirement. Instructors shall evaluate the prospective Stan Pilot in all previously introduced stages of instruction for standardized flight procedures and instrument flight techniques.

Performance Standards

1. The prospective Stan Pilot shall demonstrate knowledge of all chapters of the MV-22 Maneuver Description Guide (MDG).
2. Demonstrate a high level of instructional capability to certify IPs capable of instructing all stages of the Core Skill Introduction phase of training IAW MV-22 Maneuver Description Guide (MDG) and NATOPS.

Instructor. STANI.

Prerequisites. CIs must complete all FRS IUT flights in the simulator. FRS IPs must be a Section Leader SL-6234 and must have completed FIT 5140-5145.

2.14.5 Flight Leadership Standardization Evaluator (FLSE)

2.14.5.1 Purpose. To certify pilots for designation as Flight Leadership Standardization Evaluators (FLSE) in accordance with the T&R Program Manual.

#### 2.14.5.2 General

2D MAW is the FLSE model manager for standardization across the MV-22 community. Wing designated FLSE Program Coordinators will coordinate with the FLSE Model Manager for MV-22 standardization across the Wing.

Where staffing positions allow, the MAG Commanding Officer will designate a senior FLSE to ensure standardization within the MAG and to coordinate with the Wing FLSE Program Coordinator.

Each MV-22 squadron Commanding Officer will nominate a minimum of two FLSEs to their corresponding MAG Commanding Officer.

Each FLSE will be designated in writing by the MAG Commanding Officer.

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

FLSEs will evaluate at least one in-aircraft event in each flight leadership POI.

MV-22 FLSE designated personnel shall attend MAG-sponsored semi-annual FLSE standardization training.

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

FLSE redesignation criteria for aircrew that do not require Core Skill Introduction Refresher training is at the discretion of the MAG CO. For aircrew that require Core Skill Introduction Refresher training, the minimum redesignation requirement is successful completion of the FLSE POI.

Prerequisites. FLSEs shall be designated MV-22 Division Leaders.

ACAD-5210	1.0	*	B,T,R	E	CLS
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#### FLSE Lecture

Goal. The PUI will be familiar with 2d MAW and local Wing and MAG FLSE SOPs, FLSE scheduling, and FLSE standardization.

Required Reading. The PUI will be well versed in the academic readings, classes, and chalk talks required for the prospective stage.

Instructor. FLSE.

Prerequisite. Recommended by the Squadron Standardization Board.

2.14.6 Air to Air Refueling Instructor (AARI)

2.14.6.1 Purpose. To certify the MV-22 pilot as an instructor capable of safely conducting ground and airborne instruction of the MV-22 AAR syllabus.

2.14.6.2 General

The PUI must be NSQ LLL and AAR-2433 complete prior to beginning this stage of training.

The AAR IUT syllabus shall be flown with a proficient AARI.

Successful completion of the AAR-5331 flight will certify the pilot as an AARI. The designation will then be made at the discretion of the commanding officer.

Prior to the certification flight, the PUI shall present the MV-22 Air to Air Refueling class.

Previously designated MV-22 AARIs returning to the MV-22 requiring Refresher or Modified Refresher training as defined in T&R Program Manual must be recertified by a proficient AARI. Recertification shall consist of the class presentation and AAR-5331.

Crew Requirements. P/P for simulator events, P/P/CC for aircraft events.

ACAD-5310	1.0	*	B,T				CLS
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AARI Lecture

Goal. The PUI will instruct the MV-22 Air to Air Refueling class to a designated AARI.

Instructor. AARI.

Prerequisite. Recommended by the Squadron Standardization Board.

SAARI-5330	2.0	*	B,T	(NS)	S	1	FFS/FTD
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Goal. Demonstrate day, night, and NVD AAR proficiency and instructional technique.

Requirements

1. Discuss:
  - a. Aircraft set-up/checklist for AAR.
  - b. Comfort level.
  - c. Rendezvous procedures, both VMC and IMC.
  - d. Airspeeds/altitudes.

- e. Cross-overs.
  - f. Closure rates.
  - g. Depth perception.
  - h. Receiver/tanker lighting.
  - i. Inadvertent IMC.
  - j. Reel response.
  - k. Inadvertent disconnects.
  - l. Fuel siphoning.
  - m. Emergency disconnect.
2. Review:
- a. Basic scan and flight techniques required to refuel from the tanker.
  - b. Rendezvous.
  - c. Join-up.
  - d. Contact/fuel transfer (minimum of 3 day, 3 night unaided, and 3 NVD plugs).
  - e. Post AAR procedures.
  - f. Emergency breakaway.

Performance Standards. Provide academic instruction on day, night, and NVD AAR procedures including voice procedures, rendezvous procedures, visual checkpoints, lighting, and EPs IAW the MV-22 NTTP, the Air-to-Air Refueling Manual, and the MAWTS-1 NVD Manual.

Instructor. AARI.

Prerequisites. AAR-2433, ACAD-5310.

AARI-5331	2.0	*	B,T,R	NS	E	A	1	MV-22
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Goal. Demonstrate the ability to plan, brief, and instruct NVD AAR.

Requirements

1. Discuss:
- a. Aircraft set-up/checklist for AAR.
  - b. Comfort level.
  - c. Rendezvous procedures, both VMC and IMC.



- d. Airspeeds/altitudes.
- e. Cross-overs.
- f. Reel response.
- g. Refueling emergencies.
- h. Closure rates.
- i. Depth perception.
- j. Receiver/tanker Lighting.
- k. Inadvertent IMC.

2. Review:

- a. Scan and flight techniques required to refuel from the tanker using NVDs.
- b. Rendezvous.
- c. Join-up.
- d. Contact/fuel transfer (minimum of 5 contacts).
- e. Post AAR procedures.
- f. EMCON refueling.

Performance Standards

- 1. Provide cockpit briefing on NVD AAR procedures and EMCON refueling procedures.
- 2. Conduct successful NVD contacts with accompanying inflight description.

Instructor. AARI.

Prerequisite. SAAR-5330.

External Syllabus Support. Approved tanker.

2.14.7 Tactical Simulation Instructor (TSI)

2.14.7.1 Purpose. To certify the MV-22 pilot as a TSI capable of providing tactical simulation training in the MV-22.

2.14.7.2 General. Reference the MAWTS-1 Course Catalog for the detailed TSI POI.

Crew Requirements. Reference the MAWTS-1 Course Catalog for individual event requirements.

ACAD-5510	1.0	*	B,T,R				CLS
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TEN Functions and Operation

Goal. The PUI will have an introductory knowledge of the functions and operation of the TEN.

Instructor. TSI.

Prerequisite. Recommended by the Squadron Standardization Board.

ACAD-5511	1.0	*	B,T				CLS
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Trainer IOS Functions and Operations

Goal. The PUI has an introductory knowledge of the functions and operation of the trainer's IOS.

Instructor. TSI.

Prerequisite. Recommended by the Squadron Standardization Board.

ACAD-5512	1.0	*	B,T				CLS
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Tactical Scenario Development

Goal. The PUI has an introductory knowledge of how to develop a valid tactical scenario that meets the pilots' learning objectives and is supportable within the TEN.

Instructor. TSI.

Prerequisite. Recommended by the Squadron Standardization Board.

LAB-5520	2.0	*	B,T	S	1		CMD Post
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Reference the MAWTS-1 Course Catalog for the TSI POI.

LAB-5521	2.0	*	B,T,R	E	S	1	CMD Post
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Reference the MAWTS-1 Course Catalog for the TSI POI.

2.14.8 Low Altitude Tactics Instructor (LATI)

2.14.8.1 Purpose. To certify the MV-22 pilot as a LATI capable of safely conducting instruction in the MV-22 Low Altitude Tactics syllabus.

2.14.8.2 General. Reference the MAWTS-1 Course Catalog for the detailed LATI POI.

Crew Requirements. Reference the MAWTS-1 Course Catalog for individual event requirements.

ACAD-5610 1.0 \* B,T CLS

LATI Lecture

Goal. The PUI will instruct the MV-22 LAT IV class to a designated LATI.

Instructor. LATI.

Prerequisite. Recommended by the Squadron Standardization Board.

SLATI-5630 2.0 \* B,T E S 1 FFS/FTD

Reference the MAWTS-1 Course Catalog for the LATI POI.

LATI-5631 2.0 \* B,T E A 2 MV-22

Reference the MAWTS-1 Course Catalog for the LATI POI.

LATI-5632 2.0 \* B,T,R E A 2 MV-22

Reference the MAWTS-1 Course Catalog for the LATI POI.

SLAT-5633 2.0 \* B,T,R E S 1 FFS/FTD

Reference the MAWTS-1 Course Catalog for the LATI POI.

2.14.9 Night Systems Familiarization Instructor (NSFI)

2.14.9.1 Purpose. To certify the MV-22 pilot as a Night Systems Familiarization Instructor (NSFI) capable of conducting ground and airborne instruction of the MV-22 Night Vision Device (NVD) Core Skill Introduction Phase flight syllabus.

2.14.9.2 General. Reference the MAWTS-1 Course Catalog for the detailed NSFI POI.

Crew Requirements. Reference the MAWTS-1 Course Catalog for individual event requirements.

ACAD-5710 1.0 \* B,T CLS

NSFI Lecture

Goal. The PUI will instruct one of the MV-22 NS classes to a designated NSI.

Instructor. NSI.

Prerequisite. Recommended by the Squadron Standardization Board.

<u>NSFI-5730</u>	<u>2.0</u>	<u>*</u>	<u>B,T</u>	<u>NS</u>	<u>E</u>	<u>S/A</u>	<u>1</u>	<u>FFS/FTD</u>
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Reference the MAWTS-1 Course Catalog for the NSFI POI.

<u>NSFI-5731</u>	<u>2.0</u>	<u>*</u>	<u>B,T</u>	<u>NS</u>	<u>E</u>	<u>A</u>	<u>1</u>	<u>MV-22</u>
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Reference the MAWTS-1 Course Catalog for the NSFI POI.

<u>NSFI-5732</u>	<u>2.0</u>	<u>*</u>	<u>B,T,R</u>	<u>NS</u>	<u>E</u>	<u>A</u>	<u>2</u>	<u>MV-22</u>
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Reference the MAWTS-1 Course Catalog for the NSFI POI.

#### 2.14.10 Defensive Combat Maneuvers Instructor (DCMI)

2.14.10.1 Purpose. To certify the MV-22 pilot as an instructor capable of safely conducting instruction of the MV-22 defensive combat maneuvering (DCM) syllabus.

2.14.10.2 General. Reference the MAWTS-1 Course Catalog for the detailed DCMI POI.

Crew Requirements. Reference the MAWTS-1 Course Catalog for individual event requirements.

<u>ACAD-5810</u>	<u>1.0</u>	<u>*</u>	<u>B,T</u>					<u>CLS</u>
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#### DCMI Lecture

Goal. The PUI will instruct the Defensive Combat Maneuvers class to a designated DCMI.

Instructor. DCMI.

Prerequisite. Recommended by the Squadron Standardization Board.

<u>SDCMI-5830</u>	<u>2.0</u>	<u>*</u>	<u>B,T</u>		<u>E</u>	<u>S</u>	<u>2</u>	<u>FFS/FTD</u>
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Reference the MAWTS-1 Course Catalog for the DCMI POI.

<u>DCMI-5831</u>	<u>2.0</u>	<u>*</u>	<u>B,T</u>		<u>E</u>	<u>A</u>	<u>2</u>	<u>MV-22</u>
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Reference the MAWTS-1 Course Catalog for the DCMI POI.

<u>DCMI-5832</u>	<u>2.0</u>	<u>*</u>	<u>B,T,R</u>		<u>E</u>	<u>A</u>	<u>2</u>	<u>MV-22</u>
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Reference the MAWTS-1 Course Catalog for the DCMI POI.

#### 2.14.11 Night Systems Instructor (NSI)

2.14.11.1 Purpose. To certify the MV-22 pilot as a Night Systems Instructor (NSI) capable of safely conducting ground and airborne instruction of the MV-22 Night Vision Device (NVD) flight syllabus.

2.14.11.2 General. Reference the MAWTS-1 Course Catalog for the NSI POI.

Crew Requirements. Reference the MAWTS-1 Course Catalog for individual event requirements.

ACAD-5910	1.0	*	B,T					CLS
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#### NSI Lecture

Goal. The PUI will instruct one of the MV-22 NS classes to a designated NSI.

Instructor. NSI.

Prerequisite. Recommended by the Squadron Standardization Board.

SNSI-5930	2.0	*	B,T	NS	E	S	1	FFS/FTD
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Reference the MAWTS-1 Course Catalog for the NSI POI.

NSI-5931	2.0	*	B,T	NS	E	A	1	MV-22
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Reference the MAWTS-1 Course Catalog for the NSI POI.

SNSI-5932	2.0	*	B,T	NS	E	S	2	FFS/FTD
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Reference the MAWTS-1 Course Catalog for the NSI POI.

NSI-5933	2.0	*	B,T	NS	E	A	2	MV-22
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Reference the MAWTS-1 Course Catalog for the NSI POI.

NSI-5934	2.0	*	B,T,R	NS	E	A	1	MV-22
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Reference the MAWTS-1 Course Catalog for the NSI POI.

NSI-5935	2.0	*	B,T,R	NS	E	A	2	MV-22
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Reference the MAWTS-1 Course Catalog for the NSI POI.

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2.14.12 Weapons and Tactics Instructor (WTI)

2.14.12.1 Purpose. To certify the MV-22 pilot as a Weapons and Tactics Instructor (WTI) capable of safely conducting ground and airborne instruction of the MV-22 tactical flight syllabus.

2.14.12.2 General. Reference the MAWTS-1 WTI Course Catalog for the detailed WTI POI.

Crew Requirements. Reference the MAWTS-1 Course Catalog for individual event requirements.

WTI-5950                      \*                      B, T                      E

Goal. The PUI will receive all academic and flight instruction in accordance with the MAWTS-1 WTI Course Catalog.

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2.15 REQUIREMENTS, QUALIFICATIONS AND DESIGNATIONS (RQD) PHASE (6000)

2.15.1 Purpose. To establish training for specific requirements and flight leadership designations.

2.15.2 General

2.15.2.1 Admin Notes

Squadrons will use this phase of training for check flights and designations. The PUI will demonstrate sound levels of aircraft/flight leadership and judgment required in a combat environment.

Requirement and flight leadership codes in the 6000 Phase should be logged in conjunction with other 2000-4000 codes completed during the event. For example, SL-6234 may be flown in conjunction with TRAP-3430. When the flight to attain the requirement / designation is complete, a letter from the squadron Commanding Officer awarding the designation shall be placed in the NATOPS and APR before that designation may be utilized.

After the Commanding Officer has designated the PUI in writing as gaining a designation, the required qualification or designation entry shall be made in M-SHARP.

2.15.2.2 Stages. The following stages are included in the Requirements, Qualifications and Designations Phase of training.

Par No.	Stage Name
2.15.3	Requirements
2.15.4	Tiltrotor Aircraft Commander (TAC)
2.15.5	Section Leader (SL)
2.15.6	Division Leader (DL)
2.15.7	Flight Leader (FL)
2.15.8	Air Mission Commander (AMC)
2.15.9	Functional Check Pilot (FCP)

2.15.3 Requirements

2.15.3.1 Purpose. To track requirements as outlined in the MV-22 NATOPS, OPNAVINST 3710.7 and OPNAVINST 1542.7.

2.15.3.2 General. This section allows squadrons to document and track annual NATOPS and Instrument check flights as well as CRM training.

Crew Requirements. All checks will be per all applicable directives. NATOPS and Instrument checks may be accomplished in the trainer or the aircraft.

ACAD-6010    3.0    365    B,T,R,CI, CV,M    E    CLS

Open Book NATOPS Examination

Goal. The Open Book Examination shall consist of, but not be limited to the NATOPS question bank. The purpose of the open book examination is to evaluate the airman's knowledge of the appropriate publications and the aircraft.

Instructor. NI/ANI.

Performance Standard. Achieve a minimum grade of qualified on the Open Book examination.

ACAD-6011 1.0 365 B,T,R,CI,CV,M E CLS

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Closed Book NATOPS Examination

Goal. The Closed Book Examination shall be limited to the NATOPS question bank. The purpose of the closed book examination portion is to evaluate the airman's knowledge of emergency procedures and aircraft limitations.

Performance Standard. Achieve a minimum grade of qualified on the Closed Book examination.

Instructor. NI/ANI.

Prerequisite. ACAD-6010

ACAD-6012 1.0 365 B,T,R,CI,CV,M E CLS

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Oral NATOPS Examination

Goal. The Oral Examination shall consist of, but not be limited to, the NATOPS question bank. The evaluator may draw upon their experience to propose questions of a direct and positive manner and in no way be opinionated to evaluate the airman's knowledge of normal/emergency procedures, aircraft limitations, and performance.

Performance Standard. Achieve a minimum grade of qualified on the Oral examination.

Instructor. NI/ANI.

Prerequisite. ACAD-6011

ACAD-6013 6.0 365 B,T,R,CI,CV,M E CLS

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Instrument Ground School

Goal. The Instrument Ground School shall be a Commander Naval Air Forces (CNAF) approved syllabus and at a minimum cover the following topics:

1. Spatial disorientation.
2. CNO GPS Policy Statement and GPS fundamentals to include RNAV (GPS) and Required Navigation Performance (RNP).
3. Reduced Vertical Separation Minimums (RVSM) procedures.



4. Requirements and denial reports.
5. Use of non-DoD instrument approach/departure reports.
6. Use of non-DoD GPS NOTAMS systems (Jeppeson GPS NOTAMS and Databases).

Performance Standards. Successful completion of Instrument Ground School.

Instructor. INSTEVAL.

ACAD-6014    2.0    365    B,T,R,CI,CV,M    E    CLS

Open Book NATOPS Instrument Examination

Goal. The Open Book Instrument Examination shall consist of, but is not limited to knowledge of the NATOPS, NATOPS Instrument Flight Manual, FAR/AIM and/or aeronautical publications which are applicable, normal/emergency instrument ground and flight procedures, weather, aircraft limitations, and performance, and any subject listed in OPNAVINST 3710.7 Series. The examination shall include questions on the following subjects:

1. Pertinent Navy or Marine Corps regulations, orders, and instructions.
2. Pertinent parts of the Federal Aviation Regulations (FAR), other regulations, and/or aeronautical publications which are applicable.
3. Interpretation of weather information normally used in flight planning.

Performance Standard. Achieve a minimum grade of qualified on the Open Book examination.

Instructor. INSTEVAL.

Prerequisite. ACAD-6013.

ACAD-6015    1.0    365    B,T,R,CI,CV,M    E    CLS

Oral NATOPS Instrument Examination

Goal. The Oral Examination shall consist of, but is not be limited to, knowledge of the NATOPS, NATOPS Instrument Flight Manual, FAR/AIM and/or aeronautical publications which are applicable, normal/emergency instrument ground and flight procedures, weather, aircraft limitations, and performance. Additionally, the instructor/evaluator may draw upon their individual experience to propose questions of a direct and positive manner to evaluate the airman's knowledge and understanding.

Performance Standards. Achieve a minimum grade of qualified on the Oral examination.

Instructor. INSTEVAL.

Prerequisite. ACAD-6014.

ACAD-6016 1.0 365 B,T,R,CI,CV,M E CLS  
Crew Resource Management Refresher Lecture

Goal. Review the 7 critical CRM skills during a mission scenario as well as during emergencies and system failures.

Performance Standards. Successful completion of the CRM lecture.

Instructor. CRMF/I.

RQD-6030 2.0 365 B,T,R,CI,CV,M (N) E A/S 1 FFS/FTD

Goal. Conduct an objective evaluation of the airman's knowledge of mission planning, briefing, normal operating procedures (flight and ground), crew resource management, aircraft systems, performance criteria, emergency procedures, and debriefing. The focus is on normal and emergency procedures, not tactical execution. Emphasis shall be placed on the aforementioned items with the addition of USMC Admin SOP, local course rules, local SOP addendum, and admin flight procedures. The NATOPS evaluation is intended to evaluate compliance with NATOPS procedures. The NATOPS evaluation is the means to measure the airman's efficiency in the execution of normal operating procedures and reaction to emergencies and malfunctions. The NATOPS evaluation process should be as much a learning tool and/or experience as it is an evaluation.

Requirement. The pilot under evaluation shall bring a completed NATOPS evaluation card, pre-coordinated DTM and load comp. The proficiency expected by the evaluator in this flight shall be commensurate with the experience level and highest flight leadership designation of the pilot under evaluation.

Performance Standards. The pilot under evaluation must be prepared to safely demonstrate flight proficiency and knowledge of all maneuvers and procedures described within the NATOPS, OPNAV 3710.7 and in accordance with all SOPs. Upon successful completion of this event, the evaluator shall log the appropriate training code for tracking purposes.

Instructor. NI/ANI.

Prerequisite. ACAD-6012

RQD-6031 1.5 365 B,T,R,CI,CI,M (N) E S/A 1 FFS/FTD

Goal. Review CRM principles while executing a simulated mission scenario.

Requirement. Review the 7 critical CRM skills during a mission scenario as well as during emergencies and system failures.

Performance Standards. Pilots shall demonstrate effective use of the 7 critical CRM skills in accordance with OPNAVINST 1542.7, MV-22 NATOPS, and applicable directives.

Instructor. CRMF.

Prerequisites. ACAD-6016

RQD-6032      2.0      365      B,T,R,CI,CV,M      (N)E      S/A      1      FFS/FTD

Goal. Following completion of the ground evaluation events, an instrument flight/simulator evaluation event shall be flown and completed with a grade of "Qualified." The evaluator shall conduct an objective evaluation of the airman's knowledge of flight planning, filing, briefing, conduct of flight under normal operating conditions, emergency procedures, closing out flight plans, and debriefing.

Performance Standards. Execute flight and/or ground operations safely IAW OPNAV 3710.7 Series, Platform NATOPS, NATOPS Instrument Flight Manual, and local training SOPs. All areas on the instrument flight evaluation are critical. An "Unsatisfactory" grade in any area shall result in an "Unsatisfactory" grade for the flight.

Instructor. INSTEVAL.

Prerequisite. ACAD-6015.

RQD-6033      1.0      90      B,T,R,CI,CV,M      (N)E      S/A      1      FFS/FTD

Goal. Emergency Procedures review.

Requirement. This flight will review MV-22 emergency procedures and fulfills the requirement of the 90 day EP review requirement.

Performance Standards. Comply with MV-22 NATOPS procedures while dealing with non-normal conditions.

Prerequisites. T2P.

#### 2.15.4 Tiltrotor Aircraft Commander (TAC)

2.15.4.1 Purpose. To prepare and evaluate PUI's ability to plan, brief, and command an MV-22 in a tactical environment.

#### 2.15.4.2 General

All Basic and Transition pilots are required to complete the entire syllabus.

Aircraft Commander re-designation is at the discretion of the Commanding Officer for previously designated MV-22/CV-22 aircraft commanders that do not require Core Skill Introduction Refresher training. The minimum re-designation requirement for aircrew that require Core Skill Introduction Refresher training will be determined by the Commanding Officer.

The TAC-6130 should be flown in a simulator and will serve as a NATOPS evaluation for the Aircraft Commander position.

All events should be evaluated by an (Assistant) NATOPS Instructor or other senior pilot designated by the Commanding Officer.

#### Prerequisites

Core Skill complete. Any event deferred or waived for syllabus progression is required to be completed under instruction before the PUI may serve as an Aircraft Commander for that event.

Minimum of 500 hours total flight time.

Minimum of 100 hours V-22 flight time.

Recommended by the Squadron Standardization Board.

Crew Requirements. ANI/T2P. ANI/T2P/CC/AO for aircraft events.

ACAD-6110	3.0	*	B,T	E	CLS
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#### Tiltrotor Aircraft Commander Oral Examination

Goal. Conduct a Tiltrotor Aircraft Commander Oral Examination.

Requirement. Squadrons shall evaluate pilots for the TAC designation per the criteria in the MV-22 NATOPS Flight Manual, OPNAVINST 3710.7, and local SOPs. The composition and conduct of the board is to be determined by the squadron standardization board and Commanding Officer. It is recommended to provide the PUI a single ship mission representative of the current or anticipated deployment. Additive conditions and mission changes will be discussed during the oral board. The PUI will be evaluated on his knowledge, planning, and decision making logic.

1. Discuss:

a. Mission Planning

- (1) Joint Mission Planning Software.
- (2) Load Computation & Take-off and Landing Data.
- (3) Flight Plan.

b. NATOPS

- (1) OPNAVINST 3710.7.
- (2) Systems & limitations.
- (3) Emergency Procedures.
- (4) Local Standard Operating Procedures.

c. Maintenance

- (1) COMNAVAIRFOR 4790.
- (2) Aircraft Discrepancy Book (ADB).
- (3) Maintenance Action Forms (MAF).
- (4) Troubleshooting Procedures.
- (5) Quality Assurance (QA).
- (6) Safe for Flight (SFF).
- (7) Mission Essential Subsystems Matrix (MESM).

d. Tactics

- (1) AFTTP 3-1.
- (2) Low Altitude Tactics.
- (3) Ground Threat Reaction.
- (4) Aircraft Survivability Equipment.
- (5) Objective Area Mechanics.
- (6) Fire Support.
- (7) Escort considerations.

(8) Communications.

e. Operational Risk Management

(1) Deliberate Risk Management.

(2) Time Critical Risk Management.

(3) Decision Making.

(4) Headwork.

(5) Maturity.

Instructor. NI/ANI, WTI.

Prerequisites. Recommendation by Squadron Standardization Board.

TAC-6130	2.0	*	B,T	E	S/A	1	FFS/FTD
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Goal. Conduct a Tiltrotor Aircraft Commander (TAC) review.

Requirement. This flight will review day operations and procedures contained in the T&R syllabus in preparation for the TAC check.

Performance Standards

1. Conduct day Core Skill and Mission Skill events IAW applicable manuals.
2. Demonstrate sound knowledge of NATOPS limits, EPs, and aircraft systems.

Instructor. NI/ANI.

Prerequisites. ACAD-6110.

TAC-6131	2.0	*	B,T	NS	E	S/A	1	FFS/FTD
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Goal. Conduct a night TAC review.

Requirement. Continuation of review flight to include night operations and procedures.

Performance Standards

1. Conduct night/NVD Core Skill and Mission Skill events IAW applicable manuals.
2. Demonstrate sound knowledge of SOPs, T&R Program Manual regulations, and OPNAV regulations.

Instructor. NI/ANI.

Prerequisites. TAC-6130.

TAC-6132	2.0	*	B,T,R	(N)	E	A	1	MV-22
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Goal. Conduct a TAC check.

Requirement. Squadrons shall evaluate pilots for the TAC designation per the criteria in the MV-22 NATOPS Flight Manual, OPNAVINST 3710.7, and local SOPs. This flight will cover all practicable operations and procedures contained in the T&R syllabus.

Performance Standards

1. Conduct day, night, and/or NVD Core Skill and Mission Skill events IAW applicable manuals.
2. Demonstrate situational awareness, CRM, and operational knowledge necessary to be a TAC.
3. Demonstrate sound knowledge of the MV-22 NTTP and MV-22 tactical employment.

Instructor. NI/ANI.

Prerequisites. NSQ, RQD-6030, RQD-6031, RQD-6032, TAC-6131, BIP Syllabus complete.

2.15.5 Section Leader (SL)

2.15.5.1 Purpose. To prepare and evaluate PUI's ability to plan, brief, and lead a section of MV-22s in a tactical environment.

2.15.5.2 General

All Basic pilots are required to complete the entire syllabus. Transition pilots who were previously designated section leaders in their prior T/M/S may be assigned to the MV-22 Transition Section Leader syllabus.

Section Leader re-designation is at the discretion of the Commanding Officer for previously designated MV-22/CV-22 section leaders that do not require Core Skill Introduction Refresher training. The minimum re-designation requirement for aircrew that require Core Skill Introduction Refresher training is successful completion of the R-coded section leader events.

Formal assignment to the section leader syllabus shall be preceded by a build-up period established by Group or Squadron SOP. This training, which would normally include leading training flights under the supervision of a designated section leader, shall be designed to provide the board with an indication of an individual's readiness to enter the syllabus and will be recorded with the SL-6230 tracking code.

PUI shall conduct the following day and night workup sorties in order to develop the prospective section lead's flight leadership skills.

Either the SSL-6233 or SL-6234 shall be a FLSE event.

For tactical events, the Operations Department shall provide adequate time for the PUI, evaluator, and mission planners / participants to conduct mission analysis and planning.

Pilots who complete the SL-6234 event may be designated an MV-22 Section Leader. A letter designating the pilot as a section leader shall be placed in the NATOPS jacket and APR.

The SL-6240 tracking code shall be logged on each subsequent Section Lead event to document proficiency.

#### Prerequisites

Mission Skill proficient.

Minimum of 50 Hours as Tiltrotor Aircraft Commander (TAC). Commanding Officers may make exceptions for transition pilots with fewer than 50 MV-22 TAC hours who were previously designated section leaders in any T/M/S.

Recommended by the Squadron Standardization Board.

External Syllabus Support. The SSL-6232 and SSL-6233 require a scenario administered by a TSI. Scenarios shall be designed to accommodate the dominant elements listed in the event description but should be tailored to the unit's next deployment (i.e. shore based versus MEU).

Crew Requirements. Sim: PUI/T2P, Aircraft: SL/PUI/CC/AO.

SELF PACED READINGS	DATE COMP
MCWP 5-1, Marine Corps Planning Process	
NTTP 3-22.5 ASTACSOP Tactical Pocket Guide	
NTTP 3-22.3 MV-22 Chapter 1 Mission Planning	
NTTP 3-22.3 MV-22 Chapter 2 Mission Management	
NTTP 3-22.3 MV-22 Chapter 3 Tac Approach & Remote Area Ldg	
NTTP 3-22.3 MV-22 Chapter 4 Enroute Tactics	
NTTP 3-22.3 MV-22 Chapter 6 Refuel	
NTTP 3-22.3 MV-22 Chapter 8 Alternate Insert and Extract	
NTTP 3-22.3 MV-22 Chapter 9 Assault Support	
Local Range Regulations/Procedures	
ACPM-8630 TACC	
ACPM-8660 Joint OPS Intro	



ACAD-6210    1.0    \*    B,T    CLS

Problem Framing

Goal. The PUI will have an understanding of how to appropriately analyze a mission.

Required Reading. How to Plan an Air Assault.

Instructor. Section Leader.

Prerequisite. TAC-6132.

ACAD-6211    1.0    \*    B,T    CLS

Tactical Flight Briefing

Goal. The PUI will have an understanding of how to accurately plan and brief an assault flight.

Instructor. Section Leader.

Prerequisite. SL-6210.

LAB-6220    0.3    \*    B,T,CV    CLS

Section IFR Departure and Arrival Chalk Talk

Goal. The PUI will have an understanding of how to lead a section through an IFR Departure and Arrival.

Instructor. Section Leader.

Prerequisite. Recommended by the Squadron Standardization Board.

LAB-6221    0.3    \*    B,T,CV    CLS

IIMC Break-up and Rejoin Chalk Talk

Goal. The PUI will have an understanding of how to lead a section through an IIMC Break-up and rejoin.

Instructor. Section Leader.

Prerequisite. Recommended by the Squadron Standardization Board.

LAB-6222    0.3    \*    B,T,CV    CLS

Section Medium Altitude Tactical Approach Chalk Talk

Goal. The PUI will have an understanding of how to lead a section through high altitude tactical approach.

Instructor. Section Leader.

Prerequisite. Recommended by the Squadron Standardization Board.

LAB-6223      0.3      \*      B,T,CV      CLS

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LAT Chalk Talk

Goal. The PUI will have an understanding of how to lead a section through a LAT route.

Instructor. Section Leader.

Prerequisite. Recommended by the Squadron Standardization Board.

LAB-6224      0.3      \*      B,T,CV      CLS

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Section Air to Air Refueling Chalk Talk

Goal. The PUI will have an understanding of how to lead a section through an air to air refueling operation.

Instructor. Section Leader.

Prerequisite. Recommended by the Squadron Standardization Board.

LAB-6225      0.3      \*      B,T,CV      CLS

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Section Contingencies Chalk Talk

Goal. The PUI will have an understanding of how to manage standard tactical contingencies.

Instructor. Section Leader.

Prerequisite. Recommended by the Squadron Standardization Board.

SL-6230      0.0      \*      B,T,CV      E

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Goal. To be used as a tracking code for all "brief and lead" events prior to entry into the formal section leader syllabus.

Instructor. Section Leader.

Prerequisite. Recommended by the Squadron Standardization Board.

SL-6231      2.0      \*      B,T,CV      (NS)      E      A      2      MV-22

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Goal. Demonstrate the ability to discuss, brief, and execute section responses for section leader skills to include various off-normal and additive conditions in a training environment.

Requirement. Given a section training mission, plan, brief, lead, and debrief a flight consisting of Trail formation, Low Altitude Tactics, and Confined Area Landings. If able, incorporate Air to Air Refueling, Tail Gunnery, and Ground Threat Reaction.

1. Discuss:

- a. LAT and Night ROC.
- b. Fuel Planning and intra-flight CMS management.
- c. Lighting.
- d. TOT planning.
- e. Divert planning and procedures.
- f. Section IFR departure.
- g. Section Abort.
- h. Section IFR Arrival.
- i. Deliberate enroute weather penetration.
- j. Inadvertent IMC.
- k. Tanker rendezvous.
- l. Lost sight during LAT in mountainous terrain.
- m. Rendezvous and rejoin procedures (day and night).
- n. Wingman Lost Comm.
- o. Wingman emergency or system failure.
- p. Downed aircraft/OSC duties.

2. Introduce:

- a. Flight preparation to include DTM loading, briefing and execution products.
- b. Flight brief.
- c. Turn-up, check-in, taxi procedures.
- d. Section IFR procedures.
- e. Military Training Route activation/entry.
- f. Tactical Formation Maneuvering.
- g. Tactical approach and landing.
- h. Contingencies.

Performance Standards

1. Conduct flight brief in accordance with NTTP and applicable SOPs.
2. Conduct RIO in accordance with ASTACSOP.
3. Execute all LAT maneuvers IAW the NTTP.
4. Remain oriented within the planned lateral boundaries of the route. Employ proper tactical formation maneuvers to control the flight.
5. Demonstrate proper procedures for tactical CAL approaches IAW the NTTP.
6. Maintain assigned landing heading within 10 degrees.
7. Land within 50m of intended point of landing.
8. When confronted with various off-normal or additive conditions control the flight IAW the flight brief, applicable directives, and local SOP.

Instructor. Section Leader.

Prerequisite. Mission Skill Phase proficient, 50 Tiltrotor Aircraft Commander (TAC) Hours, recommended by the Squadron Standardization Board.

SSL-6232	4.0	*	B,CV	NS	E	S	2	FFS/FTD	TEN+
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Goal. Demonstrate the ability to plan, brief, lead, and debrief a medium threat air assault mission incorporating TRAP or CASEVAC.

Requirements. Given an air assault mission, plan, brief, and lead the execution of a section air assault mission with appropriate contingencies. This event should be flown in conjunction with a SCAT-3231 event. The SLUI should serve as the AFL.

1. Discuss:
  - a. Definition of low and medium threat.
  - b. Integration of Landing Plan with Ground Tactical Plan.
  - c. Development of Objective Area Diagram through integration of Fire Support Plan with Landing Plan.
  - d. Development of Air Movement Plan relative to threat, to include attached and detached escort utilization.
  - e. Development of efficient Loading Plan.
  - f. FARP Planning.

- g. Air Assault Task Force.
- h. Command and Control of Air Assault operations.
- i. Utilization of JMPS to create .DRW files relative to FSCMs and ACAs.
- j. Utilization of JMPS to create appropriate threat files.
- k. Sectors of fire.
- l. Rules of engagement.
- m. Mission GO/NO-GO criteria.
- n. Hot LZ Criteria and considerations.
- o. Extract considerations.
- p. Casualty Evacuation.
- q. Immediate re-embarkation.
- r. Emergency Extract.
- s. Downed Aircraft.
- t. Resupply via Air Delivery.
- u. Assault Landing Table.
- v. Assault Wave Serial Assignment Table.
- w. Communications Plan.
- x. Execution Checklist.
- y. ASE planning and utilization.
- z. Comm Degradation v Chattermark.
- aa. Emissions Control Conditions.

2. Review:

- a. Mission Analysis.
- b. Air Assault mission planning.
- c. Developing a Landing Plan.

- d. Developing an Objective Area Diagram to include Fire Support Plan, Escorts, and Sectors of fire.
- e. Developing a medium threat Air Movement Plan.
- f. Developing a Loading Plan.
- g. Developing appropriate contingency plans.
- h. Developing ASLT.
- i. Developing ASSAT.
- j. Developing Communications Plan.
- k. Developing Execution Checklist.
- l. Creating briefing and execution documents.
- m. Air Assault Mission Briefing.
- n. Threat analysis and ASE optimization.
- o. Turn-up, check-in, taxi procedures.
- p. Threat Update/DASC Coordination.
- q. FENCE Checks.
- r. Fuel planning (route and timeline changes).
- s. Threat reaction.
- t. Actions in the objective area.
- u. Tactical Reports.
- v. Contingencies.

Performance Standards

1. Direct and supervise mission planning cell.
2. Conduct coordination with supported and supporting agencies during planning.
3. Properly assess the threat and identify counter tactics.
4. Select an appropriate ASE configuration relative to the briefed threat.
5. Develop an integrated Landing Plan that supports the Ground Tactical Plan.

6. Develop a coherent, effective objective area plan that integrates a Fire Support and Escort Plan that support the Landing Plan and Ground Tactical Plan.
7. Develop an Air Movement Plan relative to the briefed threat.
8. Maximize useful load / allowable combat load in order to maximize the Ground Tactical Plan.
9. Develop briefing and execution documents IAW NTTP, ASTACSOP, and squadron SOP.
10. Develop and deliver a logical, chronological AFL Brief in accordance with NTTP and ASTACSOP.
11. Maintain situational awareness relative to friendly and enemy situation and mission progress.
12. Maintain appropriate formation and tactics during the Air Movement Plan.
13. Land in accordance with the Landing Plan within 10 meters of intended point of landing and 30 seconds of L-Hour.
14. Demonstrate sound decision making in response to off-normal and additive conditions to ensure mission success.
15. Successfully complete the assigned mission while preserving assigned assets.

Instructor. Section Leader.

Prerequisite. SL-6231.

SSL-6233	4.0	*	B,T,CV	(NS)	E	S	2	FFS/FTD	TEN+
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Goal. Demonstrate the ability to plan, brief, lead, and debrief a medium threat long range urban air assault raid mission incorporating AAR.

Requirements. Given a Platoon(REIN) Air Assault Task Force and associated mission, plan, brief, and lead the execution of a section air assault raid mission with appropriate contingencies. This event should be flown in conjunction with a SCAT-3232 event. The SLUI should serve as the AFL.

1. Discuss:
  - a. Air Assault Raid considerations.
  - b. Landing to X, Y, Offset.
  - c. En route Air to Air refueling.

- d. Aviation operations in an Urban Environment.
- e. Definition of low and medium threat.
- f. Integration of Landing Plan with Ground Tactical Plan.
- g. Development of Objective Area Diagram through integration of Fire Support Plan with Landing Plan.
- h. Development of Air Movement Plan relative to threat, to include attached and detached escort utilization.
- i. Development of efficient Loading Plan.
- j. FARP / AAR Planning.
- k. Air Assault Task Force.
- l. Command and Control of Air Assault operations.
- m. Utilization of JMPS to create .DRW files relative to FSCMs and ACAs.
- n. Utilization of JMPS to create appropriate threat files.
- o. Sectors of fire.
- p. Rules of engagement.
- q. Mission GO/NO-GO criteria.
- r. Hot LZ Criteria and considerations.
- s. Extract considerations.
- t. Casualty Evacuation.
- u. Immediate re-embarkation.
- v. Emergency Extract.
- w. Downed Aircraft.
- x. Resupply via Air Delivery.
- y. Assault Landing Table.
- z. Assault Wave Serial Assignment Table.
- aa. Communications Plan.
- bb. Execution Checklist.



- cc. ASE planning and utilization.
- dd. Comm Degradation v Chattermark.
- ee. Emissions Control Conditions.

2. Review:

- a. Mission Analysis.
- b. Air Assault mission planning.
- c. Developing a Landing Plan.
- d. Developing an Objective Area Diagram to include Fire Support Plan, Escorts, and Sectors of fire.
- e. Developing a medium threat Air Movement Plan.
- f. Developing a Loading Plan.
- g. Developing appropriate contingency plans.
- h. Developing ASLT.
- i. Developing ASSAT.
- j. Developing Communications Plan.
- k. Developing Execution Checklist.
- l. Creating briefing and execution documents.
- m. Air Assault Mission Briefing.
- n. Threat analysis and ASE optimization.
- o. En route Air to Air Refueling.
- p. Aviation operations in an urban area.
- q. Turn-up, check-in, taxi procedures.
- r. Threat Update/DASC Coordination.
- s. FENCE Checks.
- t. Fuel planning (route and timeline changes).
- u. Threat reaction.

v. Actions in the objective area.

w. Tactical Reports.

x. Contingencies.

Performance Standards

1. Direct and supervise mission planning cell.
2. Conduct coordination with supported and supporting agencies during planning.
3. Properly assess the threat and identify counter tactics.
4. Select an appropriate ASE configuration relative to the briefed threat.
5. Develop an integrated Landing Plan that supports the Ground Tactical Plan.
6. Develop a coherent, effective objective area plan that integrates a Fire Support and Escort Plan that support the Landing Plan and Ground Tactical Plan.
7. Develop an Air Movement Plan relative to the briefed threat.
8. Maximize useful load / allowable combat load in order to maximize the Ground Tactical Plan.
9. Develop briefing and execution documents IAW NTTP, ASTACSOP, and squadron SOP.
10. Develop and deliver a logical, chronological AFL Brief in accordance with NTTP and ASTACSOP.
11. Maintain situational awareness relative to friendly and enemy situation and mission progress.
12. Maintain appropriate formation and tactics during the Air Movement Plan.
13. Land in accordance with the Landing Plan within 10 meters of intended point of landing and 30 seconds of L-Hour.
14. Demonstrate sound decision making in response to off-normal and additive conditions to ensure mission success.
15. Successfully complete the assigned mission while preserving assigned assets.

Instructor. FLSE/Division Leader.

Prerequisite. SL-6232.

SL-6234      3.0      \*      B,T,R,CV      (NS)      E      A      2      MV-22

Goal. Section leader certification flight. Demonstrate the ability to lead a section in a low to medium threat environment. At the discretion of the evaluator, the PUI may be assigned any assault support mission.

Requirement. The PUI will be evaluated from mission receipt to mission completion. The PUI shall conduct mission analysis, direct and complete planning tasks based on resources and time available, deliver the brief, and successfully lead the section to execute the assigned mission. This event should be flown in conjunction with a CAT-3233 event. The SLUI should serve as the AFL. When possible, this event should be flown in support of a ground combat element with actual escort aircraft and/or fire support agencies. Live fire is preferred.

1. Discuss:

- a. Definition of low and medium threat.
- b. Integration of Landing Plan with Ground Tactical Plan.
- c. Development of Objective Area Diagram through integration of Fire Support Plan with Landing Plan.
- d. Development of Air Movement Plan relative to threat, to include attached and detached escort utilization.
- e. Development of efficient Loading Plan.
- f. FARP Planning.
- g. Air Assault Task Force.
- h. Command and Control of Air Assault operations.
- i. Utilization of JMPS to create .DRW files relative to FSCMs and ACAs.
- j. Utilization of JMPS to create appropriate threat files.
- k. Sectors of fire.
- l. Rules of engagement.
- m. Mission GO/NO-GO criteria.
- n. Hot LZ Criteria and considerations.
- o. Extract considerations.
- p. Casualty Evacuation.

- q. Immediate re-embarkation.
  - r. Emergency Extract.
  - s. Downed Aircraft.
  - t. Resupply via Air Delivery.
  - u. Assault Landing Table.
  - v. Assault Wave Serial Assignment Table.
  - w. Communications Plan.
  - x. Execution Checklist.
  - y. ASE planning and utilization.
  - z. Comm Degradation vs. Chattermark.
  - aa. Emissions Control Conditions.
2. Review:
- a. Air Assault mission planning.
  - b. Mission Analysis.
  - c. Developing a Landing Plan.
  - d. Developing an Objective Area Diagram to include Fire Support Plan, Escorts, and Sectors of fire.
  - e. Developing a medium threat Air Movement Plan.
  - f. Developing a Loading Plan.
  - g. Developing appropriate contingency plans.
  - h. Developing ASLT.
  - i. Developing ASSAT.
  - j. Developing Communications Plan.
  - k. Developing Execution Checklist.
  - l. Creating briefing and execution documents.
  - m. Air Assault Mission Briefing.

- n. Threat analysis and ASE optimization.
- o. Turn-up, check-in, taxi procedures.
- p. Threat Update/DASC Coordination.
- q. FENCE Checks.
- r. Fuel planning (route and timeline changes).
- s. Threat reaction.
- t. Actions in the objective area.
- u. Tactical Reports.
- v. Contingencies.

Performance Standards

1. Direct and supervise mission planning cell.
2. Conduct coordination with supported and supporting agencies during planning.
3. Properly assess the threat and identify counter tactics.
4. Select an appropriate ASE configuration relative to the briefed threat.
5. Develop an integrated Landing Plan that supports the Ground Tactical Plan.
6. Develop a coherent, effective objective area plan that integrates a Fire Support and Escort Plan that support the Landing Plan and Ground Tactical Plan.
7. Develop an Air Movement Plan relative to the briefed threat.
8. Maximize useful load / allowable combat load in order to maximize the Ground Tactical Plan.
9. Develop briefing and execution documents IAW NTTP, ASTACSOP, and squadron SOP.
10. Develop and deliver a logical, chronological AFL Brief in accordance with NTTP and ASTACSOP.
11. Maintain situational awareness relative to friendly and enemy situation and mission progress.

12. Maintain appropriate formation and tactics during the Air Movement Plan.
13. Land in accordance with the Landing Plan within 10 meters of intended point of landing and 30 seconds of L-Hour.
14. Demonstrate sound decision making in response to off-normal and additive conditions to ensure mission success.
15. Successfully complete the assigned mission while preserving assigned assets.

Instructor. FLSE/Division Leader.

Prerequisite. SSL-6233, SL academics complete.

SL-6240      0.0      180      M

Goal. Section Leader proficiency tracking code. This code shall be logged to document Section Lead proficiency when applicable.

#### 4.15.6 Division Leader (DL)

4.15.6.1 Purpose. To prepare and evaluate PUI's ability to plan, brief, and lead a division of MV-22s in a tactical environment.

#### 4.15.6.2 General

All Basic pilots are required to complete the entire syllabus. Transition pilots who were previously designated division leaders in their prior T/M/S may be assigned to the MV-22 Transition Division Leader syllabus.

Division Leader re-designation is at the discretion of the Commanding Officer for previously designated MV-22/CV-22 division leaders that do not require Core Skill Introduction Refresher training. The minimum re-designation requirement for aircrew that require Core Skill Introduction Refresher training is successful completion of the R-coded division leader events.

Formal assignment to the division leader syllabus shall be preceded by a build-up period established by Group or Squadron SOP. The build-up period provides the squadron standardization board with an indication of an individual's aptitude to enter the syllabus. "Brief and lead" events will be recorded with the DL-6330 tracking code and an ATF.

PUI shall conduct the following day and night workup sorties in order to develop the prospective division lead's flight leadership skills.

Either DL-6332 or DL-6333 shall be evaluated by a Flight Leader designated as an FLSE.

For tactical events, flight scheduling shall provide for adequate planning time for the PUI, the evaluator, and mission planners/participants.

Pilots who complete the DL-6333 may be designated an MV-22 Division Leader. A letter designating the pilot as a division leader shall be placed in the NATOPS jacket and APR.

The DL-6340 tracking code shall be logged on each subsequent Section Lead event to document proficiency.

Prerequisites

Led a minimum of three flights as a designated MV-22 Section Leader.

Minimum of 600 total flight hours and 200 flight hours in MV-22. In accordance with NATOPS, Commanding Officers may make exceptions for transition pilots with fewer than 200 MV-22 flight hours, who were previously designated division leaders in any T/M/S.

Recommended by the Squadron Standardization Board.

External Syllabus Support. DL-6332 requires a scenario administered by a TSI. Scenarios shall be designed to accommodate the dominant elements listed in the event descriptions but should be tailored to the units next deployment (i.e. shore based versus MEU).

Crew Requirements. Sim: PUI/T2P, Aircraft: Division Leader/PUI/CC/AO.

SELF PACED READINGS	DATE COMP
MAWTS-1 ASSAULT SUPPORT PLANNING GUIDE	
NTTP 3-22.5 ASTACSOP Tactical Pocket Guide	
Local Range Regulations/Procedures	
ACPM-8640 Joint Data Network	
ACPM-8641 Theater and National ISR	

LAB-6320      0.3      \*      B,T,CV      CLS

Division IFR Departure and Arrival Chalk Talk

Goal. The PUI will have an understanding of how to lead a division through an IFR Departure and Arrival.

Instructor. Division Leader.

Prerequisite. Recommended by the Squadron Standardization Board.

LAB-6321      0.3      \*      B,T,CV      CLS

Tactical Division Formations Chalk Talk

Goal. The PUI will have an understanding of how to lead each of the tactical division formations.

Instructor. Division Leader.

Prerequisite. Recommended by the Squadron Standardization Board.

DL-6330      0.0      \*      B,T,CV      E

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Goal. To be used as a tracking code for all "brief and lead" events prior to entry into the formal division leader syllabus.

Instructor. Division Leader.

Prerequisite. Recommended by the Squadron Standardization Board.

DL-6331      2.0      \*      B,CV      (NS) E      A/S      3+      MV-22

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Goal. Demonstrate the ability to discuss, brief, and execute division responses for division leader skills to include various off-normal and additive conditions in a training environment.

Requirement. Given a division training mission, plan, brief, lead, and debrief a flight consisting of Trail formation, Low Altitude Tactics, and Confined Area Landings. If able, incorporate Air to Air Refueling, Tail Gunnery, and Ground Threat Reaction.

1. Discuss:

- a. Division IFR departure and VFR On Top Rendezvous.
- b. Division separation On Top and IFR Arrival.
- c. Deliberate enroute weather penetration.
- d. Inadvertent IMC.
- e. Tanker rendezvous and flow.
- f. Rendezvous and rejoin procedures (day and night).
- g. Division formation maneuvering.

2. Review:

- a. Flight preparation to include DTM loading, briefing and execution products.
- b. Flight brief.
- c. Turn-up, check-in, taxi procedures.
- d. Division IFR procedures.
- e. Division Tactical Formation Maneuvering.
- f. Tactical approach and landing.
- g. Contingencies.



Performance Standards

1. Conduct flight brief in accordance with NTTP and applicable SOPs.
2. Conduct RIO in accordance with ASTACSOP.
3. Execute all LAT maneuvers IAW the NTTP.
4. Remain oriented within the planned lateral boundaries of the route. Employ proper tactical formation maneuvers to control the flight.
5. Demonstrate proper procedures for tactical CAL approaches IAW the NTTP.
6. Maintain assigned landing heading within 10 degrees.
7. Land within 50 m of intended point of landing.
8. When confronted with various off-normal or additive conditions control the flight IAW the flight brief, applicable directives, and local SOP.

Instructor. Division Leader.

Prerequisite. Led a minimum of three flights as a designated MV-22 Section Leader. Minimum of 600 total flight hours and 200 flight hours in MV-22. Recommended by the squadron Standardization Board.

SDL-6332	2.0	*	B,T,CV	(NS)	E	S	3	FFS/FTD	TEN+
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Goal. Demonstrate the ability to plan, brief, lead, and debrief a medium threat air assault mission incorporating TRAP or CASEVAC.

Requirement. Given an air assault mission, plan, brief, and lead the execution of a section air assault mission with appropriate contingencies. This event should be flown in conjunction with a SCAT-3231 event. The SLUI should serve as the AFL.

1. Discuss:
  - a. Definition of low and medium threat.
  - b. Integration of Landing Plan with Ground Tactical Plan.
  - c. Development of Objective Area Diagram through integration of Fire Support Plan with Landing Plan.
  - d. Development of Air Movement Plan relative to threat, to include attached and detached escort utilization.
  - e. Development of efficient Loading Plan.
  - f. FARP Planning.
  - g. Air Assault Task Force.

- h. Command and Control of Air Assault operations.
  - i. Utilization of JMPS to create .DRW files relative to FSCMs and ACAs.
  - j. Utilization of JMPS to create appropriate threat files.
  - k. Sectors of fire.
  - l. Rules of engagement.
  - m. Mission GO/NO-GO criteria.
  - n. Hot LZ Criteria and considerations.
  - o. Extract considerations.
  - p. Casualty Evacuation.
  - q. Immediate re-embarkation.
  - r. Emergency Extract.
  - s. Downed Aircraft.
  - t. Resupply via Air Delivery.
  - u. Assault Support Landing Table.
  - v. Assault Support Serial Assignment Table.
  - w. Communications Plan.
  - x. Execution Checklist.
  - y. ASE planning and utilization.
  - z. Comm Degradation v Chattermark.
  - aa. Emissions Control Conditions.
  - bb. Division weather penetration considerations.
2. Review:
- a. Air Assault mission planning.
  - b. Mission Analysis.
  - c. Developing a Landing Plan.
  - d. Developing an Objective Area Diagram to include Fire Support Plan, Escorts, and Sectors of fire.
  - e. Developing a medium threat Air Movement Plan.
  - f. Developing a Loading Plan.

- g. Developing appropriate contingency plans.
- h. Developing ASLT.
- i. Developing ASSAT.
- j. Developing Communications Plan.
- k. Developing Execution Checklist.
- l. Creating briefing and execution documents.
- m. Air Assault Mission Briefing.
- n. Threat analysis and ASE optimization.
- o. Turn-up, check-in, taxi procedures.
- p. Threat Update/DASC Coordination.
- q. FENCE Checks.
- r. Fuel planning (route and timeline changes).
- s. Threat reaction.
- t. Actions in the objective area.
- u. Tactical Reports.
- v. Contingencies.

Performance Standards

- 1. Direct and supervise mission planning cell.
- 2. Conduct coordination with supported and supporting agencies during planning.
- 3. Properly assess the threat and identify counter tactics.
- 4. Select an appropriate ASE configuration relative to the briefed threat.
- 5. Develop an integrated Landing Plan that supports the Ground Tactical Plan.
- 6. Develop a coherent, effective objective area plan that integrates a Fire Support and Escort Plan that support the Landing Plan and Ground Tactical Plan.
- 7. Develop an Air Movement Plan relative to the briefed threat.
- 8. Maximize useful load / allowable combat load in order to maximize the Ground Tactical Plan.
- 9. Develop briefing and execution documents IAW NTTP, ASTACSOP, and squadron SOP.

10. Develop and deliver a logical, chronological AFL Brief in accordance with NTTP and ASTACSOP.
11. Maintain situational awareness relative to friendly and enemy situation and mission progress.
12. Maintain appropriate formation and tactics during the Air Movement Plan.
13. Land in accordance with the Landing Plan within 10 meters of intended point of landing and 30 seconds of L-Hour.
14. Demonstrate sound decision making in response to off-normal and additive conditions to ensure mission success.
15. Successfully complete the assigned mission while preserving assigned assets.

Instructor. FLSE/Flight Leader.

Prerequisite. DL-6331.

DL-6333	3.0	*	B,T,R,CV	(NS)	E	A	3+	MV-22
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Goal. Division Leader certification flight. Demonstrate the ability to lead a division in a low to medium threat environment. At the discretion of the evaluator, the PUI may be assigned any assault support mission.

Requirement. The PUI will be evaluated from mission receipt to mission completion. The PUI shall conduct mission analysis, direct and complete planning tasks based on resources and time available, deliver the brief, and successfully lead the section to execute the assigned mission. This event should be flown in conjunction with a CAT-3233 event. The DLUI should serve as the AFL. When possible, this event should be flown in support of a ground combat element with actual escort aircraft and/or fire support agencies. Live fire is preferred.

1. Discuss:

- a. Definition of low and medium threat.
- b. Integration of Landing Plan with Ground Tactical Plan.
- c. Development of Objective Area Diagram through integration of Fire Support Plan with Landing Plan.
- d. Development of Air Movement Plan relative to threat, to include attached and detached escort utilization.
- e. Development of efficient Loading Plan.
- f. FARP Planning.
- g. Air Assault Task Force.

- h. Command and Control of Air Assault operations.
  - i. Utilization of JMPS to create .DRW files relative to FSCMs and ACAs.
  - j. Utilization of JMPS to create appropriate threat files.
  - k. Sectors of fire.
  - l. Rules of engagement.
  - m. Mission GO/NO-GO criteria.
  - n. Hot LZ Criteria and considerations.
  - o. Extract considerations.
  - p. Casualty Evacuation.
  - q. Immediate re-embarkation.
  - r. Emergency Extract.
  - s. Downed Aircraft.
  - t. Resupply via Air Delivery.
  - u. Assault Landing Table.
  - v. Assault Wave Serial Assignment Table.
  - w. Communications Plan.
  - x. Execution Checklist.
  - y. ASE planning and utilization.
  - z. Comm Degradation v Chattermark.
  - aa. Emissions Control Conditions.
2. Review:
- a. Air Assault mission planning.
  - b. Mission Analysis.
  - c. Developing a Landing Plan.
  - d. Developing an Objective Area Diagram to include Fire Support Plan, Escorts, and Sectors of fire.

- e. Developing a medium threat Air Movement Plan.
- f. Developing a Loading Plan.
- g. Developing appropriate contingency plans.
- h. Developing ASLT.
- i. Developing ASSAT.
- j. Developing Communications Plan.
- k. Developing Execution Checklist.
- l. Creating briefing and execution documents.
- m. Air Assault Mission Briefing.
- n. Threat analysis and ASE optimization.
- o. Turn-up, check-in, taxi procedures.
- p. Threat Update/DASC Coordination.
- q. FENCE Checks.
- r. Fuel planning (route and timeline changes).
- s. Threat reaction.
- t. Actions in the objective area.
- u. Tactical Reports.
- v. Contingencies.

Performance Standards

1. Direct and supervise mission planning cell.
2. Conduct coordination with supported and supporting agencies during planning.
3. Properly assess the threat and identify counter tactics.
4. Select an appropriate ASE configuration relative to the briefed threat.
5. Develop an integrated Landing Plan that supports the Ground Tactical Plan.

6. Develop a coherent, effective objective area plan that integrates a Fire Support and Escort Plan that support the Landing Plan and Ground Tactical Plan.
7. Develop an Air Movement Plan relative to the briefed threat.
8. Maximize useful load / allowable combat load in order to maximize the Ground Tactical Plan.
9. Develop briefing and execution documents IAW NTTP, ASTACSOP, and squadron SOP.
10. Develop and deliver a logical, chronological AFL Brief in accordance with NTTP and ASTACSOP.
11. Maintain situational awareness relative to friendly and enemy situation and mission progress.
12. Maintain appropriate formation and tactics during the Air Movement Plan.
13. Land in accordance with the Landing Plan within 10 meters of intended point of landing and 30 seconds of L-Hour.
14. Demonstrate sound decision making in response to off-normal and additive conditions to ensure mission success.
15. Successfully complete the assigned mission while preserving assigned assets.

Instructor. FLSE/Flight Leader.

Prerequisite. DL-6332, DL academics complete.

DL-6340      0.0    180    M

Goal. Division Leader proficiency tracking code. This code shall be logged to document Division Lead proficiency when applicable.

#### 2.15.7 Flight Leader (FL)

2.15.7.1 Purpose. To qualify a PUI's ability to plan, brief, and lead a multiple assault element flight composed of no fewer than five assault aircraft and incorporating fire support, strike or escort flight support.

#### 2.15.7.2 General

All Basic, Transition, and Refresher pilots are required to complete the entire syllabus.

Flight Leader re-designation is at the discretion of the Commanding Officer for previously designated MV-22/CV-22 flight leaders that do not require Core Skill Introduction Refresher training. The minimum re-designation requirement for aircrew that require Core Skill Introduction

Refresher training is successful completion of the R-coded division leader events.

The FL-6430 shall be evaluated by a Flight Leader designated as an FLSE.

For tactical events, flight scheduling shall provide for adequate planning time for the PUI, the evaluator, and mission planners/participants.

Pilots who complete the FL-6430 may be designated an MV-22 Flight Leader. A letter designating the pilot as a flight leader shall be placed in the NATOPS jacket and APR.

The FL-6440 tracking code shall be logged on each subsequent Flight Lead event to document proficiency.

#### Prerequisites

Have flown a minimum of three flights as a designated MV-22 Division Leader.

Minimum of 750 total flight hours.

Recommended by the Squadron Standardization Board.

If not flown in conjunction with MEU workups, WTI, or a MAGTF level exercise, this event requires a scenario monitored by an AMC and administered by a TSI utilizing human-in-the-loop escorts and GCE participants.

External Syllabus Support. Scenarios shall be designed to accommodate the dominant elements listed in the unit's current or planned deployment workup.

Crew Requirements. FL/PUI/CC/AO.

SELF PACED READINGS	DATE COMP
MAWTS-1 Air Assault Operations (Draft)	

FL-6430      3.0      \*      B,T,R,CV      (NS)      E      A      2+ MV-22/5+ Aslt A/C

Goal. Flight Leader certification flight. Demonstrate the ability lead an assault flight with multiple maneuver elements in addition to escort and ground units within a METL based tactical scenario. At the discretion of the evaluator, the PUI may be assigned a deliberate air assault, raid, NEO, or QRF response mission during planning.

Requirement. The PUI will be evaluated from mission receipt to mission completion. The PUI shall conduct mission analysis, direct and complete planning tasks based on resources and time available, deliver the brief, and successfully lead the section to execute the assigned mission. This event should be flown in conjunction with a CAT-3233 event. The FLUI should serve as the AFL. When possible, this event should be flown in support of a ground combat element with actual escort aircraft and/or fire support agencies. Live fire is preferred.



1. Discuss:

- a. Definition of low and medium threat.
- b. Integration of Landing Plan with Ground Tactical Plan.
- c. Development of Objective Area Diagram through integration of Fire Support Plan with Landing Plan.
- d. Development of Air Movement Plan relative to threat, to include attached and detached escort utilization.
- e. Development of efficient Loading Plan.
- f. FARP Planning.
- g. Air Assault Task Force.
- h. Command and Control of Air Assault operations.
- i. Utilization of JMPS to create .DRW files relative to FSCMs and ACAs.
- j. Utilization of JMPS to create appropriate threat files.
- k. Sectors of fire.
- l. Rules of engagement.
- m. Mission GO/NO-GO criteria.
- n. Hot LZ Criteria and considerations.
- o. Extract considerations.
- p. Casualty Evacuation.
- q. Immediate re-embarkation.
- r. Emergency Extract.
- s. Downed Aircraft.
- t. Resupply via Air Delivery.
- u. Assault Support Landing Table.
- v. Assault Support Serial Assignment Table.
- w. Communications Plan.
- x. Execution Checklist.

- y. ASE planning and utilization.
- z. Comm Degradation vs. Chattermark.
- aa. Emissions Control Conditions.

2. Review:

- a. Air Assault mission planning.
- b. Mission Analysis.
- c. Developing a Landing Plan.
- d. Developing an Objective Area Diagram to include Fire Support Plan, Escorts, and Sectors of fire.
- e. Developing a medium threat Air Movement Plan.
- f. Developing a Loading Plan.
- g. Developing appropriate contingency plans.
- h. Developing ASLT.
- i. Developing ASSAT.
- j. Developing Communications Plan.
- k. Developing Execution Checklist.
- l. Creating briefing and execution documents.
- m. Air Assault Mission Briefing.
- n. Threat analysis and ASE optimization.
- o. Turn-up, check-in, taxi procedures.
- p. Threat Update/DASC Coordination.
- q. FENCE Checks.
- r. Fuel planning (route and timeline changes).
- s. Threat reaction.
- t. Actions in the objective area.
- u. Tactical Reports.

v. Contingencies.

Performance Standards

1. Direct and supervise mission planning cell.
2. Conduct coordination with supported and supporting agencies during planning.
3. Properly assess the threat and identify counter tactics.
4. Select an appropriate ASE configuration relative to the briefed threat.
5. Develop an integrated Landing Plan that supports the Ground Tactical Plan.
6. Develop a coherent, effective objective area plan that integrates a Fire Support and Escort Plan that support the Landing Plan and Ground Tactical Plan.
7. Develop an Air Movement Plan relative to the briefed threat.
8. Maximize useful load / allowable combat load in order to maximize the Ground Tactical Plan.
9. Develop briefing and execution documents IAW NTTP, ASTACSOP, and squadron SOP.
10. Develop and deliver a logical, chronological AFL Brief in accordance with NTTP and ASTACSOP.
11. Maintain situational awareness relative to friendly and enemy situation and mission progress.
12. Maintain appropriate formation and tactics during the Air Movement Plan.
13. Land in accordance with the Landing Plan within 10 meters of intended point of landing and 30 seconds of L-Hour.
14. Demonstrate sound decision making in response to off-normal and additive conditions to ensure mission success.
15. Successfully complete the assigned mission while preserving assigned assets.

Instructor. FLSE.

Prerequisite. 3 flights as a designated MV-22 Division Leader, 750 total flight hours, FL academics complete.

FL-6440      0.0      \*

Goal. Flight Leader proficiency tracking code. This code shall be logged to document Flight Lead proficiency when applicable.

## 2.15.8 Air Mission Commander (AMC)

2.15.8.1 Purpose. To qualify a PUI's ability to plan, brief, and command a multi-element tactical flight.

### 2.15.8.2 General

All Basic pilots are required to complete the entire syllabus.

Transition pilots previously designated as an AMC in their legacy platform may be designated an AMC upon designation as a TAC in the MV-22 at the discretion of the Commanding Officer.

Air Mission Commander re-designation is at the discretion of the Commanding Officer for previously designated Air Mission Commanders that do not require Core Skill Introduction Refresher training. The minimum re-designation requirement for pilots that require Core Skill Introduction Refresher training is successful completion of the R-coded Air Mission Commander POI events.

Flight scheduling shall provide for adequate planning time for the check pilot, the evaluator, the strike or escort flight lead, and all mission planners/participants.

AMC-6530 shall be evaluated by an Air Mission Commander designated as an FLSE.

Pilots who complete this event may be designated an Air Mission Commander. A letter designating the pilot as an Air Mission Commander shall be placed in the NATOPS jacket and APR.

The AMC-6540 tracking code shall be logged on each subsequent Air Mission Commander event to document proficiency.

### Prerequisites

Designated MV-22 Flight Leader. (See General Note (2) above.)

Recommended by the Squadron Standardization Board.

If not flown in conjunction with MEU workups, WTI, or a MAGTF level exercise, this event requires a scenario monitored by an AMC and administered by a TSI utilizing human-in-the-loop escorts and GCE participants.

External Syllabus Support. Scenarios shall be designed to accommodate the dominant elements listed in the unit's current or planned deployment workup.

Crew Requirements. Lead: PUI/T2P, Wings: TAC/T2P.

AMC-6530	3.0	*	B,T,R,CV	(NS)	E	A	3+	Elements
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Goal. Conduct an Air Mission Commander (AMC) check.

Requirement. The PUI should be evaluated on ability to integrate the 6 Functions of Marine aviation. The PUI should lead the mission from a C&C platform if available.

Performance Standards

1. Plan, brief, and lead a successful mission of multiple T/M/S aircraft in a low or medium threat scenario.
2. Per the tactical scenario, demonstrate the ability to integrate all applicable functions of Marine Aviation in support of the MAGTF.

Instructor. FLSE.

Prerequisite. Flight Leader.

AMC-6540      0.0      \*

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Goal. Air Mission Commander proficiency tracking code. This code shall be logged to document Air Mission Commander proficiency when applicable.

2.15.9      Functional Check Pilot (FCP)

2.15.9.1 Purpose. To track requirements as outlined in the COMNAVAIRFOR 4790.2.

2.15.9.2 General. This section allows squadrons to document and track initial functional check pilot training as well as functional check flight proficiency.

Prerequisites

Designated MV-22 Tiltrotor Aircraft Commander. It is recommended that this designation be pursued simultaneously to TAC. Designation may not occur until the PUI is a designated TAC.

Recommended by the Squadron Standardization Board.

Crew Requirements. Events will be per all applicable directives and local maintenance SOPs. Events may be accomplished in the trainer or the aircraft.

ACAD-6610      1.0      \*      B,T,R,CV      CLS

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Functional Check Flight QA Lecture

Goal. The PUI will have an understanding of the procedures to conduct MV-22 functional check flights.

Required Reading. Per squadron directives.

Instructor. FCP.

Prerequisite. Recommended by the Squadron Standardization Board.

SFCP-6630 1.0 \* B,T,R,CV E S/A 1 FFS/FTD

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Goal. Conduct an evaluation of Rotor Track and Balance (RT&B) procedures.

General. Squadrons shall evaluate pilots for designation at the discretion of the Commanding Officer per the criteria in the MV-22 NATOPS Flight Manual, OPNAVINST 3710.7, COMNAVAIRFOR 4790.2, and local SOPs. Prospective FCPs shall complete the ground-training syllabus per Squadron Order prior to commencing flight training. RQD-639 and RQD-640 represent the minimum requirements for designation.

Requirements. A pilot in the FCP syllabus will receive a brief from a Quality Assurance Representative (QAR) or from Maintenance Control personnel on QA and Maintenance Control procedures related to FCFs, use of IETMS and other publications, phase Inspections, discussion of logbooks, ADBs, Test Cards and general paperwork related to FCFs, use of VSLED for track and balance procedures and use of the AMEGS for maintenance data downloads, Maintenance Control debriefs and vibration trend analysis.

1. Discuss:

- a. COMNAVAIRFOR 4790 and OPNAV 3710 FCF requirements.
- b. Level 1 and Level 2 vibration criteria.
- c. Use of optical sensors.
- d. Flight regimes, airspeed and vertical speed constraints.
- e. IETMS RT&B requirements.
- f. CMS RT&B functions (moves made, performance calculation and configurations edited).
- g. AMEGS review of RT&B and trend analysis data.

2. Evaluate:

- a. Data collection in all RT&B regimes.
- b. Post flight data processing using the CMS.
- c. Post flight data processing using the AMEGS.
- d. Squadrons shall base this evaluation on completion of a locally prepared syllabus.

Performance Standards. Perform RT&B IAW the MV-22 NATOPS.

Instructor. FCP.

Prerequisite. ACAD-6610, Recommended by Squadron Standardization Board. Required Reading - COMNAVAIRFOR 4790.2G Volume I, Ch 12.1.4 Functional Check Flights, OPNAVINST 3710.7R Paragraph 3.8, A1-V22AB-NFM-000, IETM rotor track and balance procedures and V-22 Periodic Maintenance Information Cards.

SFCP-6631 1.5 \* B,T,R,CV E S/A 1 FFS/FTD

Goal. Conduct an evaluation of FCF procedures. After the completion of this flight the pilot will receive the FCP designation.

1. Discuss:

- a. COMNAVAIRFOR 4790 and OPNAV 3710 FCF requirements.
- b. Systems checks.
- c. Engine performance checks, with and without VSLED.
- d. Flight control checks.

2. Evaluate:

- a. Systems checks.
- b. Engine performance checks.
- c. Flight control checks.
- d. Stall check.
- e. Fire toggle check.

Performance Standards. Perform a complete FCF IAW the MV-22 NATOPS.

Instructor. FCP.

Prerequisite. SFCP-6630.

TRK-6800 0.0 365 Tracking Strategic Tanking

Goal. Conduct Strategic tanking.

Requirement. Conduct aerial refueling from a strategic tanking platform. Should be flown day or night as appropriate for upcoming mission.

Performance Standard. As outlined in ATP-56

Prerequisite. AAR-2431, (AAR-2433 if at night).

NAVMC 3500.11D  
24 Oct 14

External Syllabus Support. Strategic Tanker

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2.16 AVIATION CAREER PROGRESSION MODEL (ACPM)

2.16.1 Purpose. To establish provide specific academic requirements that supplement the 2000-6000 syllabus. These courses are designed to broaden the PUIs understanding of Marine Aviation.

2.16.2 General

2.16.2.1 Admin Notes

The courses are not prerequisites for a specific flight event.

These courses must be complete to be considered complete in the corresponding phase or stage of training.

2.16.2.2 Stages. The following stages are included in the Aviation Career Progression Model Phase of training.

Par No.	Stage Name
2.16.3	Core Skill ACPM Classes
2.16.4	Mission Skill ACPM Classes
2.13.5	Section/Division/Flight Leader ACPM Classes

2.16.3 Core Skill ACPM Classes

ACAD-8200    0.5    \*    CLS

MACCS Agencies, Functions, and Control of Aircraft and Missiles

Goal. The PUI will have an understanding of the MACCS Agencies, Functions, and Control of Aircraft and Missiles.

Prerequisites. T2P. Required Reading - MACCS Workbook (MAWTS-1 WTI Read Ahead), and Control of Aircraft and Missiles (MAWTS-1 WTI Read Ahead).

ACAD-8201    0.5    \*    CLS

MWCS Brief

Goal. The PUI will have an understanding of the MWCS.

Prerequisite. T2P.

ACAD-8202    0.8    \*    CLS

ACA and Airspace

Goal. The PUI will have an understanding of ACAs and airspace.

Prerequisites. T2P. Required Reading - Fire Support Coordination Measures (MAWTS-1 WTI Read Ahead).

ACAD-8210    0.7    \*    CLS

Aviation Ground Support

Goal.    The PUI will have an understanding of Aviation Ground Support.

Prerequisites.    T2P.    Required Reading - Aviation Ground Support  
(MAWTS-1 WTI Read Ahead).

ACAD-8230    0.5    \*    CLS

ACE Battle Staff

Goal.    The PUI will have an understanding of the ACE Battle Staff.

Prerequisite.    T2P.

ACAD-8231    0.5    \*    CLS

Battle Command Display

Goal.    The PUI will have an understanding of the Battle Command  
Display.

Prerequisite.    T2P.

ACAD-8240    1.7    \*    CLS

Six Functions of Marine Aviation

Goal.    The PUI will have an understanding of the Six Functions of  
Marine Aviation.

Prerequisites.    T2P.    Required Reading - Six Functions of Marine  
Aviation (MAWTS-1 WTI Read Ahead).

ACAD-8241    1.3    \*    CLS

JTAR / ASR Introduction and Practical Application

Goal.    The PUI will have an understanding of the JTAR and ASR process.

Prerequisite.    T2P.

ACAD-8242    0.5    \*    CLS

Site Command Primer

Goal.    The PUI will have an understanding of Site Command.

Prerequisite. T2P.

ACAD-8250 0.8 \* CLS

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Theater Air Ground System

Goal. The PUI will have an understanding of the Theater Air Ground System.

Prerequisite. T2P.

2.16.4 Mission Skill ACPM Classes

ACAD-8300 0.8 \* CLS

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Air Defense

Goal. The PUI will have an understanding of Air Defense.

Prerequisite. T2P.

ACAD-8310 0.8 \* CLS

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Forward Arming and Refueling Point (FARP) Operations

Goal. The PUI will have an understanding of the FARP operations.

Prerequisite. T2P.

ACAD-8311 0.8 \* CLS

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Marine Corps Tactical Fuel Systems

Goal. The PUI will have an understanding of the Marine Corps Tactical Fuel Systems.

Prerequisite. T2P.

ACAD-8320 1.0 \* CLS

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Joint Structure and Joint Air Operations

Goal. The PUI will have an understanding of the Joint Structure and Joint Air Operations.

Prerequisite. T2P.

ACAD-8321    0.4    \* CLS

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Joint Air Tasking Cycle Phase 1: Strategy Development

Goal. The PUI will have an understanding of the Strategy Development portion of the Joint Air Tasking Cycle.

Prerequisite. T2P.

ACAD-8322    0.4    \* CLS

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Joint Air Tasking Cycle Phase 2: Target Development

Goal. The PUI will have an understanding of the Target Development portion of the Joint Air Tasking Cycle.

Prerequisite. T2P.

ACAD-8323    0.4    \* CLS

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Joint Air Tasking Cycle Phase 3: Weaponing and Allocation

Goal. The PUI will have an understanding of the Weaponing and Allocation portion of the Joint Air Tasking Cycle.

Prerequisite. T2P.

ACAD-8324    0.4    \* CLS

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Joint Air Tasking Cycle Phase 4: Joint ATO Production

Goal. The PUI will have an understanding of the Joint ATO Production portion of the Joint Air Tasking Cycle.

Prerequisite. T2P.

ACAD-8325    0.4    \* CLS

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Joint Air Tasking Cycle Phase 5: Force Execution

Goal. The PUI will have an understanding of the Force Execution portion of the Joint Air Tasking Cycle.

Prerequisite. T2P.

ACAD-8326    0.4    \* CLS

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Joint Air Tasking Cycle Phase 6: Combat Assessment

Goal. The PUI will have an understanding of the Combat Assessment portion of the Joint Air Tasking Cycle.

Prerequisite. T2P.

ACAD-8340 0.5 \* CLS

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Integrating Fires & Airspace within the MAGTF

Goal. The PUI will have an understanding of how to integrate fires and airspace within the MAGTF.

Prerequisite. T2P.

ACAD-8350 0.8 \* CLS

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Phasing Control Ashore

Goal. The PUI will have an understanding of how to Phase Control Ashore.

Prerequisite. T2P.

ACAD-8351 0.5 \* CLS

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TACRON Organization and Functions

Goal. The PUI will have an understanding of the organization of the TACRON and its Functions.

Prerequisite. T2P.

2.16.5 Section Leader ACPM Classes

ACAD-8630 1.0 \* CLS

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Tactical Air Command Center

Goal. The PUI will have an understanding of the TACC.

Prerequisite. T2P.

ACAD-8660 0.5 \* CLS

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Joint Operations Introduction

Goal. The PUI will have an understanding of Joint Operations.

Prerequisite. T2P.

2.16.6 Division Leader ACPM Classes

ACAD-8640    0.8    \* CLS

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Joint Data Network

Goal.    The PUI will have an understanding of the Joint Data Network.

Prerequisite.    T2P.

ACAD-8641    1.3    \* CLS

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Theater & National ISR Employment

Goal.    The PUI will have an understanding of theater and national ISR employment.

Prerequisite.    T2P.

2.16.7 Flight Leader ACPM Classes

ACAD-8620    0.5    \* CLS

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ESG/CSG Integration

Goal.    The PUI will have an understanding of the integration between the ESG and CSG.

Prerequisite.    T2P.

## 2.17 T&amp;R ATTAIN AND MAINTAIN MATRIX

MV-22B PILOT ATTAIN AND MAINTAIN MATRIX													
EVENT DESCRIPTION	STAGE	CODE	REFLY	BASIC POI		TRANSITION POI		REFRESHER POI		MAINTAIN POI		PREREQUISITE	CHAINING
				STAGE	CODE	STAGE	CODE	STAGE	CODE	STAGE	CODE		
CORE SKILLS (2000 Phase)													
ACAD	ACAD	A2010	*	FAM	A2010	FAM	A2010	FAM		FAM		T2P	
ACAD	ACAD	A2011	*		A2011		A2011					T2P	
LAB	LAB	L2020	*		L2020		L2020					T2P	
FAM	SFAM	S2030	*		S2030							2010, 2011, 2020	
FAM	SFAM	S2031R	365		S2031R		S2031R		S2031R		T2P		
RVL PROCEDURES	ACAD	A2110R	*	CAL	A2110R	CAL	A2110R	CAL	A2110R	CAL			
SINGLE CAL	SCAL	S2130	*		S2130		S2130						
RVL	SCAL	S2131R	*		S2131R		S2131R		S2131R			2110	
SINGLE CAL	CAL	2132	365		2132		2132					2130	
RVL	CAL	2133R	180		2133R		2133R		2133R		2133R	2131	
SECTION CAL	SCAL	S2134R	*		S2134R		S2134R		S2134R			2132	
SECTION CAL	CAL	2135	365		2135		2135					2134, 2132	2132
DIVISION CAL	CAL	2136R	365		2136R		2136R		2136R		2136R	2135	2135, 2132
TAC FORM	ACAD	A2160	*	FORM	A2160	FORM	A2160	FORM		FORM		T2P	
IFR FORM	ACAD	A2161	*		A2161		A2161					T2P	
TAC FORM	SFORM	S2180R	*		S2180R		S2180R		S2180R			2130, 2160	
IFR FORM	SFORM	S2181R	180		S2181R		S2181R		S2181R		S2181R	2031, 2161	2031
TAC FORM	FORM	2182R	365		2182R		2182R		2182R		2182R	2180, 2181	
DIVISION FORM	FORM	2183	*		2183		2183				2182		
LAT IV	ACAD	A2210R	*	LAT	A2210R	LAT	A2210R	LAT	A2210R	LAT		2160	
TAC AIRWREW COORD	ACAD	A2211R	*		A2211R		A2211R		A2211R			2160	
ROUTE PLANNING	ACAD	A2212	*		A2212		A2212					2135	
LAT MANEUVERS	LAB	L2220R	*		L2220R		L2220R		L2220R			2210	
SINGLE LAT	SLAT	S2230R	*		S2230R		S2230R		S2230R			2130, 2220	
SINGLE LAT	LAT	2231	365		2231		2231					2132, 2211, 2212, 2230	
SECTION LAT	SLAT	S2232R	*		S2232R		S2232R		S2232R			2134, 2180, 2230	
SECTION LAT	LAT	2233R	365		2233R		2233R		2233R		2233R	2135, 2182, 2231, 2232	2231, 2182
RW MISHAP LL	ACAD	A2310	*	NS HLL	A2310	NS HLL	A2310	NS HLL		NS HLL		T2P	
FW MISHAP LL	ACAD	A2311	*		A2311		A2311					T2P	
LASER THEORY/SAFETY	ACAD	A2312R	*		A2312R		A2312R		A2312R			T2P	
SENSOR INTEGRATION	ACAD	A2313	*		A2313		A2313					2135	
TACTICS AT NIGHT	ACAD	A2314	*		A2314		A2314					2135	
SECTION CAL	SNS	S2330R	*		S2230R		S2230R		S2230R			2131, 2134, 2310, 2311, 2312, 2314	
SINGLE CAL	NS	2331	365		2331		2331					2132, 2330, 2313	2132
SECTION CAL	NS	2332	365		2332		2332					2135, 2182, 2331	2331, 2182, 2135, 2134 2132
SECTION LAT	SNS	S2333	*		S2333		S2333					2332, 2330, 2314	
SINGLE LAT	NS	2334	240		2334		2334					2233, 2331, 2333	2231
SECTION LAT	NS	2335R	240	2335R	2335R	2335R	2335R	2335R	2332, 2334	2334, 2332, 2331, 2233, 2231, 2182, 2135, 2132			
DIVISION CAL	NS	2336R	*	2336R	2336R	2336R	2336R		2136, 2332	2332, 2331, 2182, 2136, 2135, 2132			

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MV-22B PILOT ATTAIN AND MAINTAIN MATRIX													
EVENT DESCRIPTION	STAGE	CODE	REFLY	BASIC POI		TRANSITION POI		REFRESHER POI		MAINTAIN POI		PREREQUISITE	CHAINING
				STAGE	CODE	STAGE	CODE	STAGE	CODE	STAGE	CODE		
SECTION CAL	SNSLLL	S2380R	*	NS LLL	S2380R	NS LLL	S2380R	NS LLL	S2380R	NS LLL		2330	
SINGLE CAL	NS LLL	2381	240		2381						2380, 2336	2331, 2132	
SECTION CAL	NS LLL	2382R	240		2382R		2382R		2382R		2381	2381, 2332, 2331, 2182, 2135, 2132	
SECTION LAT	SNSLLL	S2383	*		S2383		S2383				2333, 2380	2132	
SECTION LAT	NS LLL	2384R	180		2384R		2384R		2384R		2382, 2383	2382, 2381, 2335, 2334, 2332, 2331, 2233, 2231, 2182, 2135, 2132	
DIVISION CAL	NS LLL	2385R	240		2385R		2385R		2385R		2336, 2382	2382, 2381, 2332, 2331, 2182 2180, 2136, 2135, 2134, 2132	
AIR TO AIR REFUELING	ACAD	A2410R	*	AAR	A2410R	AAR	A2410R	AAR	A2410R	AAR		2160	
DAY AAR	SAAR	S2430	*		S2430		S2430				2180, 2410		
DAY AAR	AAR	2431R	365		2431R		2431R		2431R		2182, 2430		
NIGHT AAR	SAAR	S2432	*		S2432		S2432				2330, 2430		
NIGHT AAR	AAR	2433R	365		2433R		2433R		2433R		2431, 2432, 2336~NS, 2385~LLL	2431	
M240D FAM	ACAD	A2510	*	TG	A2510	TG	A2510	TG		TG		T2P	
GAU-16 FAM	ACAD	A2511	*		A2511		A2511				T2P		
GAU-21 FAM	ACAD	A2512	*		A2512		A2512				T2P		
DAY SECTION TG	TG	2532	365		2532		2532				2135, 2510, 2511, 2512	2182	
NIGHT SECTION TG	TG	2535R	365		2535R		2535R		2535R		2332, 2382~LLL, 2532	2532, 2182	
PARAOPS	ACAD	A2610	*	AD	A2610	AD	A2610	AD		AD		T2P	
AIR DELIVERY	SAD	S2630R	365		S2630R		S2630R		S2630R		2230, 2610		
AIR DELIVERY	AD	2631R	365		2631R		2631R		2631R		2233, 2630	2630	
HIGH ALT OPS	ACAD	A2710	*	MAT	A2710	MAT	A2710	MAT		MAT		2135	
DAY SINGLE CAL	SMAT	S2730	365		S2730R		S2730R		S2730R		2130, 2710	2132	
NIGHT SINGLE CAL	SMAT	S2731R	365		S2731R		S2731R		S2731R		2330, 2730	2730	
DAY SINGLE CAL	MAT	2732R	365		2732R		2732R		2732R		2132, 2730	2730, 2132	
NIGHT SINGLE CAL	MAT	2733R	365		2733R		2733R		2733R		2731, 2732, 2385~LLL, 2336~NS	2732, 2731, 2730, 2331, 2132	
ALE-47	ACAD	A2810	*	GTR	A2810	GTR	A2810	GTR		GTR		T2P	
APR-39	ACAD	A2811	*		A2811		A2811				T2P		
AAR-47	ACAD	A2812	*		A2812		A2812				T2P		
ADA THREAT	ACAD	A2813	*		A2813		A2813				T2P		
IR SAM THREAT	ACAD	A2814	*		A2814		A2814				T2P		
RADAR SAM THREAT	ACAD	A2815	*		A2815		A2815				T2P		
Ps E-M	ACAD	A2816	*		A2816		A2816				2233		
MV-22 GTR	ACAD	A2817R	*		A2817R		A2817R		A2817R		2233		
GTR WALK THROUGH	LAB	L2820R	*		L2820R		L2820R		L2820R		2817		
SINGLE GTR	SGTR	S2830	*		S2830		S2830				2233, 2820		
SECTION GTR	SGTR	S2831R	365		S2831R		S2831R		S2831R		S2831R	2830	2832
SECTION GTR	GTR	S2832R	365		S2832R		S2832R		S2832R			2831	2831, 2233, 2231, 2182



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MV-22B PILOT ATTAIN AND MAINTAIN MATRIX													
EVENT DESCRIPTION	STAGE	CODE	REFLY	BASIC POI		TRANSITION POI		REFRESHER POI		MAINTAIN POI		PREREQUISITE	CHAINING
				STAGE	CODE	STAGE	CODE	STAGE	CODE	STAGE	CODE		
SHIPBOARD OPS	ACAD	A2910	*	CQ	A2910	CQ	A2910	CQ		CQ		T2P	
DAY SHIP LANDING	SCQ	S2930R	365		S2930R		S2930R		S2930R			2130	2931
DAY FCLP	CQ	2931R	365		2931R		2931R		2931R			2132, 2930	2930, 2132
DAY CARRIER QUAL	CQ	2932R	365		2932R		2932R		2932R			2931	2931, 2930, 2132
NIGHT SHIP LANDING	SCQ	S2933R	365		S2933R		S2933R		S2933R			2330, 2930	2930
NIGHT FCLP	CQ	2934R	365		2934R		2934R		2934R			2331, 2931, 2933	2933, 2931, 2930, 2331, 2132,
NIGHT SHIP QUAL	CQ	2935R	365		2935R		2935R		2935R		2935R	2336~NS, 2385~LLL, 2932, 2934	2934, 2933, 2932, 2931, 2930, 2331, 2132
MISSION SKILLS (3000 Phase)													
TACTICAL AIR C2	ACAD	A8630R	*	SHORE	A8630R	SHORE	A8630R	SHORE	A8630R	SHORE		T2P	
JOINT AIR OPS	ACAD	A8660R	*		A8660R		A8660R		A8660R			T2P	
ACEOI & TRIAD AUTH	ACAD	A3012	*		A3012		A3012					T2P	
LOW THREAT SHORE BASED MISSION	SHORE	3030R	365		3030R		3030R		3030R		3030R	2336~NS, 2385~LLL, 2433, 2532, 2733	
LOW THREAT SEA BASED MISSION	SEA	3130R	365	SEA	3130R	SEA	3130R	SEA	3130R	SEA	3130R	2336~NS, 2385~LLL, 2433, 2935, 2532, 2733	
AIR ASSAULT PLANNING PRODUCTS	ACAD	A3210R	*	CAT	A3210R	CAT	A3210R	CAT	A3210R	CAT		T2P	
AIR ASSAULT OPS	ACAD	A3211R	*		A3211R		A3211R		A3211R			3210	
AIR ASSAULT KEY PLAYERS	ACAD	A3212R	*		A3212R		A3212R		A3212R			3211	
OBJECTIVE AREA PLANNING	ACAD	A3213R	*		A3213R		A3213R		A3213R			3212	
MV-22 ESCORT TACTICS	ACAD	A3214R	*		A3214R		A3214R		A3214R			3213	
R2P2	ACAD	A3215R	*		A3215R		A3215R		A3215R			3214	
MOUT	ACAD	A3216R	*		A3216R		A3216R		A3216R			3215	
AS PLANNING PROBLEM	LAB	L3220R	*		L3220R		L3220R		L3220R			3215	
LOW THREAT SECTION	CAT	3230R	365		3230R		3230R		3230R			2336~NS, 2385~LLL, 2532, 2731, 2831, 3220	2182, 2135, 2132
MED THREAT DIVISION	SCAT	S3231R	*		S3231R		S3231R		S3231R			3230	2132
MED THREAT SECTION NIGHT RAID	SCAT	S3232R	365		S3232R		S3232R		S3232R			3230	3230, 2132
ESCORT SECTION		3233R	180		3233R		3233R		3233R		3233R	3231, 3232, 3330	2182, 2135, 2132, 3230, 3232
CASEVAC	ACAD	A3310	*	AE	A3310	AE	A3310	AE		AE		T2P	
NEO EXECUTION	ACAD	A3311	*		A3311		A3311					T2P	
CASEVAC MISSION	AE	3330R	365		3330R		3330R		3330R		3330R	3230	2182, 2135, 2132
PERSONNEL RECOVERY	ACAD	A3410	*	TRAP	A3410	TRAP	A3410	TRAP		TRAP		T2P	
TRAP MISSION	TRAP	3430R	365		3430R		3430R		3430R		3430R	3230A	2182, 2135, 2132
SECTION AIR DELIVERY MISSION	SAD	S3530R	365	AD	S3530R	AD	S3530R	AD	S3530R	AD	S3530R	3230, 2631	2630

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MV-22B PILOT ATTAIN AND MAINTAIN MATRIX													
EVENT DESCRIPTION	STAGE	CODE	REFLY	BASIC POI		TRANSITION POI		REFRESHER POI		MAINTAIN POI		PREREQUISITE	CHAINING
				STAGE	CODE	STAGE	CODE	STAGE	CODE	STAGE	CODE		
PARAOPS (PERSONNEL)	AD	4030R	365	AD	4030R	AD	4030R	AD	4030R	AD	4030R	2132, 2610	2132
DAY/NIGHT EXTERNALS	SAD	S4031	*		S4031		S4031				2330		
DAY EXTERNALS	AD	4032R	365		4032R		4032R		4032R		2132, 4031	2132	
NIGHT EXTERNALS	AD	4034R	365		4034R		4034R		4034R		2331, 2385~LLL, 4032	4032, 2331, 2132	
FASTROPE, RAPPEL, SPIE, HOIST OPS	ACAD	A4111	*	AI/E	A4111	AI/E	A4111	AI/E		AI/E		T2P	
HELOCAST OPS	ACAD	A4112	*		A4112		A4112				T2P		
FASTROPE/RAPPEL	AI/E	4130R	365		4130R		4130R		4130R		4130R	4032, 4034~NS, 4111	2132
HOISTING	AI/E	4131R	365		4131R		4131R		4131R		4131R	4032, 4034~NS, 4111	2132
SPIE	AI/E	4132R	365		4132R		4132R		4132R		4132R	4032, 4034~NS, 4111	2132
HELOCAST/SOFT DUCK	AI/E	4133R	365		4133R		4133R		4133R		4133R	2133, 4032, 4212	2133
RAPID INSERTION / EXTRACTION MISSION	RI/E	4180R	365	RI/E	4180R	RI/E	4180R	RI/E	4180R	RI/E	4180R	APPRPRIATE AIE SKILL PROF	
ADGR LECTURE	ACAD	A4210R	*	ADGR	A4210R	ADGR	A4210R	ADGR	A4210R	ADGR		T2P	
ADGR PRAC APP	LAB	L4220	*		L4220		L4220				4210		
ADGR MISSION	ADGR	4230R	365		4230R		4230R		4230R		4230R	2132, 2331, 2385~LLL, 4220	2132
BATTLEFIELD ILLUM	ACAD	A4310R	*	BI	A4310R	BI	A4310R	BI	A4310R	BI		T2P	
BI MISSION	BI	4330R	365		4330R		4330R		4330R		4330R	4310	
AIRBORNE C2	ACAD	A4410R	*	AC2	A4410R	AC2	A4410R	AC2	A4410R	AC2		T2P	
AIRBONE C2 LAB	TRAP	L4420	*		A4420		A4420				4410		
C2 MISSION	SAD	4430R	730		4430R		4430R		4430R		4430R	4420, 2336~NS, 2385~LLL	
DWS FAM LECTURE	ACAD	A4510R	*	DWS	A4510R	DWS	A4510R	DWS	A4510R	DWS		2511	
DWS CRM & PROC FAM	LAB	L4520R	*		L4520R		L4520R		L4520R		4510		
DWS INSTALLATION	LAB	L4521R	*		L4521R		L4521R		L4521R		4510, 4520		
DAY SECTION	DWS	4531R	365		4531R		4531R		4531R		2233, 2535, 4510, 4520, 4521		
DAY EMPLOYMENT	DWS	4533R	365		4533R		4533R		4533R		4531	4531	
NIGHT SECTION	DWS	4534R	365		4534R		4534R		4534R		4533	4531	
NIGHT EMPLOYMENT	DWS	4536R	365	4536R	4536R	4536R	4536R	4534, 2336~NS, 2385~LLL	4534, 4533, 4531				
EQUIPMENT FIT & FAM	LAB	L4620R	*	CBRN	L4620R	CBRN	L4620R	CBRN	L4620R	CBRN		T2P	
DAY EMPLOYMENT	SCBRN	S4630	*		S4630		S4630				2130, 4620		
NIGHT EMPLOYMENT	SCBRN	S4631R	*		S4631R		S4631R		S4631R		2330, 4630		
RVL SCALE 4-5	RVL	4730R	180	RVL	4730R	RVL	4730R	RVL	4730R	RVL	4730R	2133	2133
NIGHT UNAIDED SIM	SCQ	S4780R	365	CQ	S4780R	CQ	S4780R	CQ	S4780R	CQ		2930	2930
NIGHT UNAIDED FCLP	CQ	4781R	365		4781R		4781R		4781R		2931, 4780	2132, 2933, 4780	
NIGHT UNAIDED CQ	CQ	4782R	365		4782R		4782R		4782R		4782R	2932, 4781	2132, 2931, 2932, 4780, 4781
RW THREAT TO AS	ACAD	A4810	*	DCM	A4810	DCM	A4810	DCM		DCM		LATQ	
FW THREAT TO AS	ACAD	A4811	*		A4811		A4811				LATQ		
DEFENSIVE COMBAT MANEUVERS	ACAD	A4812	*		A4812		A4812				2832		
DCM WALKTHROUGH	LAB	L4820R	*		L4820R		L4820R		L4820R		4812		
FW AGGRESSOR	SDCM	S4830R	365		S4830R		S4830R		S4830R		LATQ, 2832, 4820	2831	
FW AGGRESSOR	DCM	4831R	365		4831R		4831R		4831R		4831R	4830	4830, 2832, 2831, 2233, 2231 2182
HIGH THREAT TACTICAL MISSION	SHTT	4930R	365	HTT	4930R	HTT	4930R	HTT	4930R	HTT	4930R	3233	2831

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MV-22B PILOT ATTAIN AND MAINTAIN MATRIX															
EVENT DESCRIPTION	STAGE	CODE	REFLY	BASIC POI		TRANSITION POI		REFRESHER POI		MAINTAIN POI		PREREQUISITE	CHAINING		
				STAGE	CODE	STAGE	CODE	STAGE	CODE	STAGE	CODE				
INSTRUCTOR TRAINING (5000 Phase)															
BIP COURSE	ACAD	A5010R	*	BIP	A5010R	BIP	A5010R	BIP	A5010R	BIP		STANBOARD RECOMMENDED			
FAM/CAL/FORM OPS	SBIP	S5030R	*		A5010R		A5010R		A5010R			5010			
AD/MOUT/CQ OPS	SBIP	S5031R	*		A5010R		A5010R		A5010R			5010 AD			
CV-MV INBRIEF	ACAD	A5110	*	FIT	FIT	FIT	FIT	FIT	FIT						
BIP COURSE	ACAD	A5111R	*							A5111R	A5111R	A5111R		STAN BOARD RECOMMENDED	
AF DAY/NIGHT FAM	SFIT	S5130	*											0001,0200,0012,0014,0109 1020,5110	
AF DAY VFR NAV	SFIT	S5131	*											5130	
AF INSERTS/RVL/FLIR	SFIT	S5132	*											5131	
AF IFR PLAN/INST SIM	SFIT	S5133	*											5131	
AF FAM/CAL	FIT	5134	*											5130,5132	
AF FORM SIM	SFIT	S5135	*											5132	
AF FORM FLIGHT	FIT	5136	*											5134,5135	
INTRO/FAM STAGE	FIT	5140R	*							5140R	5140R	5140R		6234	
NIGHT FAM STAGE	FIT	5141R	*							5141R	5141R	5141R		5140	
INSTRUMENT SIM	SFIT	S5142R	*							S5142R	S5142R	S5142R		6234	
CAL INSTRUCTION	FIT	5143R	*							5143R	5143R	5143R		6234	
NAV INSTRUCTION	SFIT	S5144R	*							S5144R	S5144R	S5144R		6234	
FORM INSTRUCTION	FIT	5145R	*							5145R	5145R	5145R		6234	
LAT INSTRUCTION	SFIT	S5146R	*							S5146R	S5146R	S5146R		6234,5144	
STAN CHECK	FIT	5147R	*							5147R	5147R	5147R		6234,5140-5146	
FLSE LECTURE	ACAD	A5210R	*	FLSE	A5210R	FLSE	A5210R	FLSE	A5210R	FLSE					
AARI LECTURE	ACAD	A5310	*	AARI	A5310	AARI	A5310	AARI		AARI		STAN BOARD RECOMMENDED			
DAY NIGHT AAR	SAARI	S5330	*		S5330		S5330					2433,5310			
NIGHT AAR	AARI	5331R	*		5331R		5331R		5331R			5330			
TEN FUNCTIONS & OPS	ACAD	A5510R	*	TSI	A5510R	TSI	A5510R	TSI	A5510R	TSI		STAN BOARD RECOMMENDED			
IOS FUNCTIONS & OPS	ACAD	A5511	*		A5511		A5511					STAN BOARD RECOMMENDED			
TACTICAL SCENARIO DEVELOPMENT	ACAD	A5512	*		A5512		A5512					STAN BOARD RECOMMENDED			
TSI ASSIST	LAB	L5520	*		L5520		L5520					COURSE CATALOG			
TSI CERT	LAB	L5521R	*		L5521R		L5521R		L5521R			COURSE CATALOG			
LATI LECTURE	ACAD	A5610	*	LATI	A5610	LATI	A5610	LATI		LATI		COURSE CATALOG			
SINGLE LAT	SLATI	S5630	*		S5630		S5630					COURSE CATALOG			
SECTION LAT	LATI	5631	*		5631		5631					COURSE CATALOG			
LATI CHECK	LATI	5632R	*		5632R		5632R		5632R			COURSE CATALOG			
LAT STAN I CHECK	SLAT	5633R	*		5633R		5633R		5633R			COURSE CATALOG			
NSFI LECTURE	ACAD	A5710	*	NSFI	A5710	NSFI	A5710	NSFI		NSFI		COURSE CATALOG			
SIM INST TECH	SNSFI	S5730	*		S5730		S5730					COURSE CATALOG			
AIRCRAFT INST TECH	NSFI	5731	*		5731		5731					COURSE CATALOG			
NSFI CERT	NSFI	5731R	*		5731R		5731R		5731R			COURSE CATALOG			
DCMI LECTURE	ACAD	A5810	*	DCMI	A5810	DCMI	A5810	DCMI		DCMI		COURSE CATALOG			
SIM SECTION	SDCMI	S5830	*		S5830		S5830					COURSE CATALOG			
AIRCRAFT SECTION	DCMI	5831	*		5831		5831					COURSE CATALOG			
AIRCRAFT SECTION	DCMI	5831R	*		5831R		5831R		5831R			COURSE CATALOG			

MV-22B PILOT ATTAIN AND MAINTAIN MATRIX													
EVENT DESCRIPTION	STAGE	CODE	REFLY	BASIC POI		TRANSITION POI		REFRESHER POI		MAINTAIN POI		PREREQUISITE	CHAINING
				STAGE	CODE	STAGE	CODE	STAGE	CODE	STAGE	CODE		
NSI LECTURE	ACAD	A5910	*	NSI	A5910	NSI	A5910	NSI		NSI		COURSE CATALOG	
SINGLE SIM	SNS	S5930	*		S5930		S5930					COURSE CATALOG	
SINGLE A/C	NSI	5931	*		5931		5931					COURSE CATALOG	
SECTION SIM	SNSI	S5932	*		S5932		S5932					COURSE CATALOG	
SECTION A/C	NSI	5933	*		5933		5933					COURSE CATALOG	
SINGLE SHIP CERT	NSI	5934R	*		5934R		5934R		5934R			COURSE CATALOG	
SECTION CERT	NSI	5935R	*		5935R		5935R		5935R			COURSE CATALOG	
WTI COURSE	WTI	5950	*	WTI	5950	WTI	5950	WTI		WTI		COURSE CATALOG	
REQUIREMENTS, QUALIFICATIONS, AND DESIGNATIONS (6000 Phase)													
NATOPS OPEN BOOK	ACAD	A6010R	365	RQD	A6010R	RQD	A6010R	RQD	A6010R	RQD	6010		
NATOPS CLOSED BOOK	ACAD	A6011R	365		A6011R		A6011R		A6011R		6011	6010	
NATOPS ORAL EXAM	ACAD	A6012R	365		A6012R		A6012R		A6012R		6012	6011	
IGS	ACAD	A6013R	365		A6013R		A6013R		A6013R		6013		
INSTRUMENT EXAM	ACAD	A6014R	365		A6014R		A6014R		A6014R		6014	6013	
ORAL INST EXAM	ACAD	A6015R	365		A6015R		A6015R		A6015R		6015	6014	
CRM REFRESHER LECT	ACAD	A6016R	365		A6016R		A6016R		A6016R		6016		
NATOPS EVAL	RQD	6030R	365		6030R		6030R		6030R		6030	6012	
CRM EVAL	RQD	6031R	365		6031R		6031R		6031R		6031	6016	
INSTRUMENT EVAL	RQD	6032R	365		6032R		6032R		6032R		6032	6015	
EP REVIEW	RQD	6033R	90		6033R		6033R		6033R		6033	T2P	
TAC ORAL EXAM	ACAD	A6110	*	TAC	A6110	TAC	A6110	TAC		TAC		STAN BOARD RECOMMENDED	
DAY TAC REVIEW	TAC	6130	*		6130		6130					6110	
NIGHT TAC REVIEW	TAC	6131	*		6131		6131					6130	
TAC CHECK	TAC	6132R	*		6132R		6132R		6132R			NSQ, 6030, 6031, 6032, 6131, BIP SYLLABUS COMPLETE	
PROBLEM FRAMING	ACAD	A6210	*	SL	A6210	SL	A6210	SL		SL		TAC-6132	
TAC FLIGHT BRIEFING	ACAD	A6211	*		A6211		A6211					6210	
IFR CHALK TALK	LAB	L6220	*		L6220		L6220					STAN BOARD RECOMMENDED	
IIMC CHALK TALK	LAB	L6221	*		L6221		L6221					STAN BOARD RECOMMENDED	
SECTION MATA	LAB	L6222	*		L6222		L6222					STAN BOARD RECOMMENDED	
LAT CHALK TALK	LAB	L6223	*		L6223		L6223					STAN BOARD RECOMMENDED	
SECTION AAR CHALK TALK	LAB	L6224	*		L6224		L6224					STAN BOARD RECOMMENDED	
SECTION CONTINGENCIES	LAB	L6225	*		L6225		L6225					STAN BOARD RECOMMENDED	
BRIEF AND LEAD	SL	6230	*		6230		6230					STAN BOARD RECOMMENDED	
SECTION TRAINING ENVIRONMENT	SL	6231	*		6231		6231					MSP PROFICIENT, 50 TAC HRS, STAN BOARD RECOMMENDED	
MEDIUM THREAT	SSL	S6232	*		S6232							6231	
MEDIUM THREAT LONG RANGE	SSL	S6233	*		S6233		S6233					6232	
CERTIFICATION FLIGHT	SL	6234R	*		6234R		6234R		6234R			6233, SL ACAD COMPLETE	
PROFICIENCY TRACKING CODE	SL	6240	180								6240		

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MV-22B PILOT ATTAIN AND MAINTAIN MATRIX														
EVENT DESCRIPTION	STAGE	CODE	REFLY	BASIC POI		TRANSITION POI		REFRESHER POI		MAINTAIN POI		PREREQUISITE	CHAINING	
				STAGE	CODE	STAGE	CODE	STAGE	CODE	STAGE	CODE			
DIVISION IFR	LAB	L6320	*	DL	L6320	DL	L6320	DL		DL				
DIVISION TAC FORM	LAB	L6321	*		L6321		L6321							
BREIF AND LEAD	DL	6330	*		6330		6330						STAN BOARD RECOMMENDED	
DIVISION TRAINING ENVIRONMENT	DL	6331	*		6331								LED MIN OF 3 FLTS AS SL 600 TOTAL HRS,200 MV HRS STAN BOARD RECOMMENDED	
TRAP OR CASEVAC	SDL	6332	*		6332		6332						6331	
CERTIFICATION FLIGHT	DL	6333R	*		6333R		6333R		6333R				6332, DL ACAD COMPLETE	
PROFICIENCY TRACKING CODE	DL	6340	180						6340					
FLIGHT LEAD CERTIFICATION FLIGHT	FL	6430R	*	FL	6430R	FL	6430R	FL	6430R	FL		LED MIN OF 3 FLTS AS DL 750 TOTAL HRS FL ACADEMICS COMPLETE		
PROFICIENCY TRACKING CODE	FL	6440	*											
AMC CHECK	AMC	6530R	*	AMC	6530R	AMC	6530R	AMC	6530R	AMC		FLIGHT LEADER		
PROFICIENCY TRACKING CODE	AMC	6540	*											
QA LECTURE	ACAD	A6610R	*	FCP	A6610R	FCP	A6610R	FCP	A6610R	FCP		STAN BOARD RECOMMENDED		
RT&B	SFCP	S6630R			S6630R		S6630R		S6630R			6610 STAN BOARD RECOMMENDED		
FCF EVAL	SFCP	S6631R			S6631R		S6631R		S6631R			6630		
6000 Tracking	TRK	6800	365									2431, 2433		

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

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CORE SKILL INTRODUCTION FRS ACADEMIC PHASE														
STAGE	CODE	EVENT DESCRIPTION	LAB/ADL HOURS	ACAD HOURS	SIM HOURS	FLT HOURS	REFLY INTERVAL	DEVICE	# OF AIRCRAFT	CONDITIONS	PREREQUISITE TRAINING CODES	POI	EVAL	CHaining FLIGHT TRNG CODES
GROUND SCHOOL														
ACAD	0100	1000 LVL INBRIEF		1.0			*	CLS	-	-	-	B, T, R, MR, AF, CI, CV		
ADL	0001	COURSEWARE INTRO	1.5				*	CBT	-	-	-	B, T, R, MR, AF, CI		
ACAD	0101	CRM INITIAL		2.5			*	CLS	-	-	0100	B, T, R, MR, AF, CI		
ADL	0002	AIRFRAME BASICS	2.5				*	CBT	-	-	0001	B, T, R, MR, AF, CI		
ADL	0003	INTRO TO COCKPIT	2.5				*	CBT	-	-	0001	B, T, R, MR, AF, CI		
ADL	0004	ELECTRICAL SYSTEM	2.0				*	CBT	-	-	0003	B, T, R, MR, AF, CI		
ACAD	0102	ELECTRICAL SYSTEM		3.0			*	CLS	-	-	0004	B, T, R, MR, AF, CI		
ADL	0005	HYDRAULIC SYSTEM	2.0				*	CBT	-	-	0003	B, T, R, MR, AF, CI		
ACAD	0103	HYDRAULIC SYSTEM		4.0			*	CLS	-	-	0005	B, T, R, MR, AF, CI		
ADL	0006	VMS	3.5				*	CBT	-	-	0003	B, T, R, MR, AF, CI		
ACAD	0104	VMS		3.0			*	CLS	-	-	0006	B, T, R, MR, AF, CI		
ADL	0007	DRIVE SYSTEM	2.5				*	CBT	-	-	0003	B, T, R, MR, AF, CI		
ACAD	0105	DRIVE SYSTEM		3.0			*	CLS	-	-	0007	B, T, R, MR, AF, CI		
ADL	0008	POWERPLANT	2.5				*	CBT	-	-	0003	B, T, R, MR, AF, CI		
ACAD	0106	POWERPLANT		3.0			*	CLS	-	-	0008	B, T, R, MR, AF, CI		
ADL	0009	FUEL SYSTEM	2.0				*	CBT	-	-	0003	B, T, R, MR, AF, CI		
ACAD	0107	FUEL SYSTEM		2.0			*	CLS	-	-	0009	B, T, R, MR, AF, CI		
ADL	0010	ECS, OBOGS/ OBIGGS	2.0				*	CBT	-	-	0003	B, T, R, MR, AF, CI		
ACAD	0108	ECS, OBOGS/ OBIGGS		2.0			*	CLS	-	-	0010	B, T, R, MR, AF, CI		
ADL	0011	INTRO TO COMM, NAV, FD	2.5				*	CBT	-	-	0003	B, T, R, MR, AF, CI		
LAB	0200	CMS LAB-OVERVIEW BASICS	2.0				*	CMS	-	-	0011	B, T, R, MR, AF, CI		
ADL	0012	NORMAL PROCEDURE CHKLST	2.0				*	CBT	-	-	0200	B, T, R, MR, AF, CI, CV		
ADL	0013	MAINT-VSLED, AMEGS, BFWS	1.5				*	CBT	-	-	0003	B, T, R, MR, AF, CI		
LAB	0201	CMS LAB	2.0				*	CMS	-	-	0012	B, T, R, MR, AF, CI		
ADL	0014	LOCAL COURSE RULES	1.0				*	CBT	-	-	-	B, T, R, MR, AF, CI		
ACAD	0109	COURSE RULES EXAM		3.0			*	CLS	-	-	0014	B, T, R, MR, AF, CI		
ADL	0015	PERF CHARTS, WT BAL (FORM F)	2.0				*	CBT	-	-	0106	B, T, R, MR, AF, CI		
ACAD	0110	PERF CHARTS, WT BAL, LD COMP		3.0			*	CLS	-	-	0015	B, T, R, MR, AF, CI		
ACAD	0111	AERODYNAMIC BASICS REVIEW		5.0			*	CLS	-	-	0002	B, T, R, MR, AF, CI		
ACAD	0112	TILTROTOR AERO		5.0			*	CLS	-	-	0111	B, T, R, MR, AF, CI		
ACAD	0113	AERO		2.0			*	CLS	-	-	1039	B, T, R, MR, AF, CI		
LAB	0223	A/C COMPONENTS	2.0				*	CMS	-	-		B, T, AF, MR, CI		
			38.0	41.5	0.0	0.0								

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CORE SKILL INTRODUCTION PHASE (CONT)															
STAGE	CODE	EVENT DESCRIPTION	LAB/ADL HOURS	ACAD HOURS	SIM HOURS	FLT HOURS	REFLY INTERVAL	DEVICE	# OF AIRCRAFT	CONDITIONS	PREREQUISITE TRAINING CODES	POI	EVAL	CHAINING FLIGHT TRNG CODES	EVENT CONVERSION
FAM															
ACAD	1010	FAM STAGE INBRIEF		1.0			*	CLS	-	-	0100-0110, 0001-0015, 0200, 0201	B, T, R, MR, AF, CI			
ACAD	1011	FLIR THEORY		.5			*	CLS			1010	B, T, AF, CI			
ACAD	1012	FLIR SYSTEMS		.5			*	CLS			1011	B, T, AF, CI			
ACAD	1013	FLIR OPERATIONAL		.5			*	CLS			1012	B, T, AF, CI			
ACAD	1014	MV-22B FLIR		1.0			*	CLS			1013	B, T, AF, CI			
CFAM	1030	CHECKLIST			2.0		*	C/S	-	-	0110, 1010	B, T, R, AF, CI			
CFAM	1031	CHECKLIST PRACTICE			2.0		*	C/S	-	-	1030	B, T, AF, CI			
CFAM	1032	NORM PROC, BFWS, GND EP'S			2.0		*	C/S	-	-	1031	B, T, R, AF, CI			
SFAM	1033	CHKLST, NAC DRILLS, HVR WORK			2.0		*	S	1	-	1032 0112	B, T, AF, CI			
SFAM	1034	CHKLST, NAC DRILLS, CONV PTRN			2.0		*	S	1	-	1033	B, T, R, AF, CI			
SFAM	1035	CHKLST, CONV PTRN, STEEP APPR			2.0		*	S	1	-	1034	B, T, AF, CI			
SFAM	1036	CONV PTRN, TRNS/CONV			2.0		*	S	1	-	1035	B, T, AF, CI			
SFAM	1037	STO, ROL, CONV PTRN, APLN PTRN			2.0		*	S	1	-	1036	B, T, R, MR, AF, CI			
SFAM	1038	APLN PTRN, HIGH AOB, SLOW FLT			2.0		*	S	1	-	1037	B, T, AF, CI			
SFAM	1039	APLN PTRN, STALLS, ELP			2.0		*	S	1	-	1038	B, T, R, MR, AF, CI			
SFAM	1040	EMERG PROC			2.0		*	S	1	-	1039	B, T, R, MR, AF, CI			
SFAM	1041	FLT CONT EPs, DEGRADED HAND			2.0		*	S	1	-	1040	B, T, R, MR, AF, CI			
SFAM	1042	FAM STAGE REVIEW			2.0		*	S	1	-	1041	B, T, AF, CI			
LAB	1020	A/C PREFLT, EGRESS, SQDN PROC / A/C SYS HARDWARE FAM	3.5				*	A	1	-	1042	B, T, R, MR, AF, CI, CV			
FAM	1043	ENG START, NAC DRILL, CONV PAT				1.5	*	A	1	-	1020, 1042	B, T, R, AF, CI			
FAM	1044	CONV PTRN, STP APP, MGW				1.5	*	A	1	-	1043	B, T, R, MR, AF, CI			
FAM	1045	CONV PTRN, TRNS/CONV, LSC				1.5	*	A	1	-	1044	B, T, R, AF			
FAM	1046	APLN PTRN				1.5	*	A	1	-	1045	B, T, AF, CI			
FAM	1047	APLN PTRN, HIGH AOB, STALLS				1.5	*	A	1	-	1046	B, T, R, MR, AF			
FAM	1048	APLN PTRN, STALLS, ELP				1.5	*	A	1	-	1047	B, T, AF			
FAM	1049	FAM PROGRESS CHK				1.5	*	A	1	-	1048	B, T, R, MR, AF			
SFAM	1050	NIGHT FAM			2.0		*	S	1	N*	1046	B, T, R, MR, AF, CI			
FAM	1051	NIGHT FAM				1.0	*	A	1	N*	1049, 1050	B, T, R, AF			
			3.5	3.5	28.0	11.5									

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CORE SKILL INTRODUCTION PHASE (CONT)														
STAGE	CODE	EVENT DESCRIPTION	LAB/ADL HOURS	ACAD HOURS	SIM HOURS	FLT HOURS	REFLY INTERVAL	DEVICE	# OF AIRCRAFT	CONDITIONS	PREREQUISITE TRAINING CODES	POI	EVAL CHAINING FLIGHT TRNG CODES	EVENT CONVERSION
NAV														
ACAD	1110	NAV STAGE INBRIEF		1.0			*	CLS	-	-	1042	B, T, AF, CI		
ADL	1101	DDMS, INAV FUNCTIONS	2.0				*	CBT	-	-	1042	B, T, R, MR, AF, CI		
LAB	1120	VMPS 1 BUILD WP, RTS, COM PLN	6.0				*	CLS	-	-	1110 1101	B, T, R, MR, AF, CI		
LAB	1121	DDMS, MSN, INAV, ENAV, WYPT, FLPN	2.0				*	CMS	-	-	1110 1101	B, T, R, MR, AF, CI		
CNAV	1130	DDMS, MSN, INAV, ENAV, WYPT, FLPN			2.0		*	C/S	-	-	1120 1121	B, T, R, MR, AF, CI		
SNAV	1131	FLT PLNS, TOT, FUEL MAN, FD CORE			2.0		*	S	1	-	1130	B, T, AF, CI		
SNAV	1132	FLT PLNS, TOT, FUEL, FD INAV			2.0		*	S	1	-	1131	B, T, R, AF, CI		
			10.0	1.0	6.0	0.0								
INST														
ACAD	1210	INST STAGE INBRIEF		1.0			*	CLS	-	-	1042	B, T, AF, CI		
ACAD	6013	IGS		6.0			365	CLS	-	-	1210	B, T, R, MR, CI, CV		
ACAD	6014	INSTRUMENT EXAM		2.0			365	CLS	-	-	6013	B, T, R, MR, CI, CV	X	
LAB	1220	VMPS 2	5.0				*	CLS	-	-	1132 1210	B, T, R, MR, AF, CI		
SINST	1230	BASIC INST			2.0		*	S	1	(N*)	1132 1220	B, T, R, AF, CI		
SINST	1231	NON-PRECISION APP, HIGH ALT			2.0		*	S	1	(N*)	1230	B, T, R, MR, AF, CI		
SINST	1232	PRECISION APP			2.0		*	S	1	(N*)	1231	B, T, R, MR, AF, CI		
SINST	1233	ENROUTE PROC, HIGH ALT			2.0		*	S	1	(N*)	1232	B, T, AF, CI		
INST	1234	BI, NON-PRECISION APP				2.0	*	A	1	(N*)	1049 1232	B, T, R, AF		
INST	1235	ENROUTE, HIGH/LOW APP				2.0	*	A	1	(N*)	1234	B, T, R, MR, AF, CI		
SINST	1236	INST REV, EP			2.0		*	S	1	(N*)	1235	B, T, AF, CI		1238
ACAD	6015	INSTRUMENT ORAL EXAM		1.0			365				6014	B, T, R, MR, CI, CV	X	
RQD	6032	INST EVAL			2.0		*	S/A	1	(N*)	1238 6015	B, T, R, MR, CI, CV	X	
			5.0	10.0	12.0	4.0								



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CORE SKILL INTRODUCTION PHASE (CONT)																	
STAGE	CODE	EVENT DESCRIPTION	LAB/ADL HOURS	ACAD HOURS	SIM HOURS	FLT HOURS	REFLY INTERVAL	DEVICE	# OF AIRCRAFT	CONDITIONS	PREREQUISITE TRAINING CODES	POI	EVAL	CHANGING FLIGHT TRNG CODES	EVENT CONVERSION		
CAL																	
ACAD	1310	CAL STAGE INBRIEF		1.0			*	CLS CMS	-	-	1049	B, T, AF, CI					
SCAL	1330	CAL PRTN, TAC STRT-IN, LAND			2.0		*	S	1	-	1310	B, T, AF, CI					
SCAL	1331	TAC STRT-IN, AUG CPL HVR, RVL			2.0		*	S	1	-	1330	B, T, R, MR, AF, CI					
CAL	1332	CAL PTRN, TAC STRT-IN, RVL				2.0	*	A	1	-	1331	B, T, R, MR, AF					
CAL	1333	RVL PROFILE, COUPLE LANDINGS				1.5	*	A	1	-	1332	AF					
			0.0	1.0	4.0	2.0											
FORM																	
ACAD	1410	FORM STAGE INBRIEF		1.0			*	CLS	-	-	1049	B, T, AF, CI					
SFORM	1430	FORM PRINCIPLES			2.0		*	S	2	-	1410	B, T, AF, MR, CI					
SFORM	1431	FORM SEQ			2.0		*	S	2	-	1430	B, T, R, AF, CI					
FORM	1432	FORM SEQ				2.0	*	A	2	-	1332 1431	B, T, AF					
			0.0	1.0	4.0	2.0											
LAT																	
ACAD	1510	LAT STAGE INBRIEF		1.0			*	CLS	-	-	1235	B, T, R, MR, AF, CI					
ACAD	1511	LAT I		0.5			*	CLS	-	-	1510	B, T, R, MR, AF, CI					
ACAD	1512	LAT II		0.5			*	CLS	-	-	1511	B, T, R, MR, AF, CI					
ACAD	1513	LAT III		0.5			*	CLS	-	-	1512	B, T, R, MR, AF, CI					
LAB	1520	VMPS 3: MTRS, DRW FILES	6.0				*	CLS	-	-	1513	B, T, R, MR, AF, CI					
LAB	1521	MAP FUNC, LOS, HAT,	2.0				*	CMS	-	-	1520	B, T, R, MR, AF, CI					
SLAT	1530	LAT MANEUVERS, RTE			2.0		*	S	1	-	1521	B, T, R, MR, AF, CI					
LAB	1522	VMPS PROG CHK	4.0				*	CLS	-	-	1530	B, T, R, MR, AF, CI					
LAT	1531	LAT MANEUVERS, LOW LEVEL NAV, CMS PROG CHECK				2.5	*	A	1	-	1522	B, T, R, MR, AF					
			12.0	2.5	2.0	2.5											

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CORE SKILL INTRODUCTION PHASE (CONT)															
STAGE	CODE	EVENT DESCRIPTION	LAB/ADL HOURS	ACAD HOURS	SIM HOURS	FLT HOURS	REFLY INTERVAL	DEVICE	# OF AIRCRAFT	CONDITIONS	PREREQUISITE TRAINING CODES	POI	EVAL	CHANGING FLIGHT TRNG CODES	EVENT CONVERSION
NS															
ADL	1601	NVD SYSTEMS	2.0				*	CBT	-	-	1233	B, T, R, MR, AF, CI			
ACAD	1610	NS STAGE INBRIEF		0.5			*	CLS	-	-	1332 1601	B, T, R, MR, CI			
ACAD	1611	MV-22 HUD		1.0			*	CLS	-	-	1610	B, T, R, AF, CI			1615
SNS	1630	NVD FAM, FLIR USE			2.0		*	S	1	NS	1611 1050	B, T, R, MR, CI			
NS	1631	NVD FAM, FLIR USE				1.5	*	A	1	NS	1630 1050	B, T, R,			
SNS	1632	NVD CAL, FLIR			2.0		*	S	1	NS	1630	B, T, R, MR, CI			
NS	1633	NVD CAL, FLIR				1.5	*	A	1	NS	1631 1632	B, T, R, MR			
SNS	1634	NVD FORM			2.0		*	S	2	NS	1432 1632	B, T, CI			
NS	1635	NVD FORM				2.0	*	A	2	NS	1432 1633 1634	B, T			
			2.0	1.5	6.0	5.0									
REV															
ACAD	6010	NATOPS OPEN BOOK		3.0			365	CLS	-	-	-	B, T, R, MR, AF, CI	X		-
ACAD	6011	NATOPS CLOSED BOOK		1.0			365	CLS	-	-	6010	B, T, R, MR, AF, CI	X		-
SREV	1830	EP REV			2.0		*	S	1	-	6011 CS INTRO CMPLT	B, T, R, MR, AF, CI			
SREV	1831	REV ALL MANEUVERS			2.0		*	S	1	-	1830	B, T, R, AF, CI			
REV	1832	REV ALL MANEUVERS				1.5	*	A	1	(N)	1831	B, T, AF			
ACAD	6012	NATOPS ORAL EXAM		1.0			365	CLS	-	-	1832 6011	B, T, R, MR, AF, CI	X		
RQD	6030	T2P CHECK				1.5	365	A	1	-	6012	B, T, R, MR, AF, CI	X		
			0.0	5.0	4.0	3.0									
USMC TOTAL HOURS			70.5	67.0	66.0	30.0									

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CORE SKILL PHASE														
STAGE	CODE	EVENT DESCRIPTION	LAB/ HRS	ACAD HRS	SIM HRS	FLT HOURS	REFLY INTERVAL	DEVICE	# OF A/C	CONDITIONS	PREREQ	POI	EVAL	EVENT CONVE
FAM														
ACAD	2010	MV-22 SINGARS		1.0			*	CLS	-	-		B,T		2010
ACAD	2011	MV-22 SATCOM		1.0			*	CLS	-	-		B,T		2011
LAB	2020	ARC-210	2.0				*	CLS	-	-		B,T		2020
SFAM	2030	FAM			2.0		*	S/A	1	(N)		B		2030
SFAM	2031	INST			2.0		365	S/A	1	(N)		B,T,R,M		2031
			2.0	2.0	4.0	0.0								
CAL														
ACAD	2110	RVL PROCEDURES		0.5			*	CLS	-	-		B,T,R		2110
SCAL	2130	SINGLE CAL			2.0		*	S	1	-		B,T		2132
SCAL	2131	RVL			2.0		*	S	1	-		B,T,R		2130
CAL	2132	SINGLE CAL				2.0	365	A	1	-		B,T		2133
CAL	2133	RVL				1.5	180	A	1	-		B,T,R,M		2131
SCAL	2134	SECTION CAL			2.0		*	S	2	-		B,T,R		2134
CAL	2135	SECTION CAL				2.0	365	A	2	-		B,T		2135
CAL	2136	DIVISION CAL				1.5	365	A	3	-		B,T,R,M		2136
			0.0	0.5	6.0	7.0								
FORM														
ACAD	2160	TACFORM		1.0			*	CLS	-	-		B,T		2160
ACAD	2161	IFR FORM FLIGHT		1.0			*	CLS	-	-		B,T		2161
SFORM	2180	TAC FORM			1.0		*	S	2	-		B,T,R		2180
SFORM	2181	IFR FORMATION			2.0		180	S	2	-		B,T,R,M		2181
FORM	2182	TAC FORM				1.5	365	A	2	-		B,T,R,M		2182
FORM	2183	DIVISION FORM				1.5	*	A	3	-		B,T		2183
			0.0	2.0	3.0	3.0								
LAT														
ACAD	2210	LAT IV		0.5			*	CLS	-	-		B,T,R		2210
ACAD	2211	TAC AC COOR		0.5			*	CLS	-	-		B,T,R		2211
ACAD	2212	RTE PLANNING		0.5			*	CLS	-	-		B,T		2212
LAB	2220	LAT WALK-THR	0.5				*	CLS	-	-		B,T,R		2220
SLAT	2230	LAT MAN / RTE			2.0		*	S	1	-		B,T,R		2230
LAT	2231	LAT MAN / RTE				2.0	365	A	1	-		B,T		2231
SLAT	2232	SEC LAT			2.0		*	S	2	-		B,T,R		2232
LAT	2233	SECTION LAT				2.0	365	A	2	-		B,T,R,M		2233
			0.5	1.5	4.0	4.0								
NS HLL														
ACAD	2310	RWING MISHAP		0.5			*	CLS	-	-		B,T		2310
ACAD	2311	F W MISHAP		0.5			*	CLS	-	-		B,T		2311
ACAD	2312	LASER SYS		0.5			*	CLS	-	-		B,T,R		2312
ACAD	2313	SENSOR INT		0.5			*	CLS	-	-		B,T		2313
ACAD	2314	TACTICS		0.5			*	CLS	-	-		B,T		2314
SNSHLL	2330	SGL/SEC CAL			2.0		*	S	2	NS		B,T,R		2330
NS HLL	2331	HLL SGLE CAL				2.0	365	A	1	NS		B,T		2331
NS HLL	2332	HLL SEC CAL				2.0	365	A	2	NS		B,T		2332
SNSHLL	2333	HLL LAT			2.0		*	S	2	NS		B,T		2333
NS HLL	2334	HLL SGLE LAT				2.0	240	A	1	NS		B,T		2334
NS HLL	2335	HLL SEC LAT				2.5	240	A	2	NS		B,T,R,M		2335
NS HLL	2336	HLL DIV CAL				1.5	*	A	3	NS		B,T,R		
			0.0	2.5	4.0	10.0								
NS LLL														
SNSLLL	2380	SGLE /SEC CAL			2.0		*	S	2	NS		B,T,R		2380
NS LLL	2381	LLL SGLE CAL				2.0	240	A	1	NS		B		2381
NS LLL	2382	SECTION CAL				2.0	240	A	2	NS		B,T,R		2382
SNSLLL	2383	SGLE/ SEC LAT			2.0		*	S	2	NS		B,T		2383
NSLLL	2384	SECTION LAT				2.5	180	A	2	NS		B,T,R,M		2384
NSLLL	2385	DIV FORM/ CAL				2.5	240	A	3	NS		B,T,R,M		2385
			0.0	0.0	4.0	9.0								

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CORE SKILL PHASE (CONT)															
STAGE	CODE	EVENT DESCRIPTION	LAB/ADL HOURS	ACAD HOURS	SIM HOURS	FLT HOURS	REFLY INTERVAL	DEVICE	# OF AIRCRAFT	CONDITIONS	PREREQUISITE TRAINING CODES	POI	EVAL	CHAINING FLIGHT TRNG CODES	EVENT CONVERSION
AAR															
ACAD	2410	MV-22 AIR TO AIR REFUELING		0.5			*	CLS	-	-		B,T,R			2410
SAAR	2430	DAY AAR			1.0		*	S	1			B,T			2430
AAR	2431	DAY AAR				1.5	365	A	1			B,T,R			2431
SAAR	2432	NIGHT AAR			1.0		*	S	1	NS		B,T			2432
AAR	2433	NIGHT AAR				1.5	365	A	1	NS		B,T,R,M			2433
			0.0	0.5	2.0	3.0									
TG															
ACAD	2510	M240D FAM		0.5			*	CLS	-	-		B,T			2510
ACAD	2511	GAU-16 FAM		0.5			*	CLS	-	-		B,T			2511
ACAD	2512	GAU-21 FAM		0.5			*	CLS	-	-		B,T			2512
TG	2532	DAY SECTION TG				1.5	365	A	2	-		B,T			2532
TG	2535	NIGHT SECTION TG				1.5	365	A	2	NS		B,T,R,M			2535
			0.0	1.5	0.0	3.0									
AD															
ACAD	2610	AD / PARAOPS		0.5			*	CLS	-	-		B,T			4210
SAD	2630	AIR DELIVERY OF CARGO			2.0		365	S/A	1	-		B,T,R			4230
AD	2631	AIR DELIVERY OF CARGO				1.5	365	A	1	-		B,T,R,M			4230
			0.0	0.5	2.0	1.5									
MAT															
ACAD	2710	HIGH ALTITUDE OPERATIONS		0.5			*	CLS	-	-		B,T			2710
SMAT	2730	DAY MAT SIM			1.0		365	S	1	-		B,T,R,M			2730
SMAT	2731	NS MAT SIM			1.0		365	S	1	NS		B,T,R			2731
MAT	2732	DAY MAT				1.5	365	A	1	-		B,T,R			4530
MAT	2733	NS MAT				1.5	365	A	1	-		B,T,R			4531
				0.5	2.0	3.0									
GTR															
ACAD	2810	MV-22 ALE-47		1.0			*	CLS	-	-		B,T			2810
ACAD	2811	MV-22 APR-39		1.0			*	CLS	-	-		B,T			2811
ACAD	2812	MV-22 AAR-47		1.0			*	CLS	-	-		B,T			2812
ACAD	2813	ADA THREAT		1.0			*	CLS	-	-		B,T			2813
ACAD	2814	IR SAM THREAT		1.0			*	CLS	-	-		B,T			2814
ACAD	2815	RADAR SAM		1.0			*	CLS	-	-		B,T			2815
ACAD	2816	PSE/M		0.5			*	CLS	-	-		B,T			2816
ACAD	2817	GTR		1.0			*	CLS	-	-		B,T,R			2817
LAB	2820	GTR WALK-THR	0.5				*	CLS	-	-		B,T,R			2820
SGTR	2830	SINGLE TR			2.0		*	S	1	(NS)		B,T			2830
SGTR	2831	SECTION TR			2.0		365	S	2	(NS)		B,T,R,M			2831
GTR	2832	SECTION TR				1.5	365	A	2	(NS)		B,T,R			2832
			0.5	7.5	4.0	1.5									

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STAGE	CODE	EVENT DESCRIPTION	LAB/ADL HOURS	ACAD HOURS	SIM HOURS	FLT HOURS	REFLY INTERVAL	DEVICE	# OF AIRCRAFT	CONDITIONS	PREREQUISITE TRAINING CODES	POI	EVAL	CHANNING FLIGHT TRNG CODES	EVENT CONVERSION
CQ															
ACAD	2910	MV-22 SHIP OPS		1.0			*	CLS	-	-		B,T			2910
SCQ	2930	DAY SIM			1.0		365	S	1	-		B,T,R			2930
CQ	2931	DAY FCLP				1.5	365	A	1	D		B,T,R			2931
CQ	2932	DAY CQ				1.5	365	A	1	D		B,T,R			2932
SCQ	2933	NIGHT SIM			1.0		365	S	1	NS		B,T,R			2933
CQ	2934	NIGHT FCLP				1.0	365	A	1	NS		B,T,R			2934
CQ	2935	NIGHT CQ				1.5	365	A	1	NS		B,T,R,M			2935
			0.0	1.0	2.0	6.0									
			3.0	20.0	37.0	50.5									
SHORE															
ACPM	8630	TAC C2		1.0			*	CLS	-	-		B,T,R			8630
ACPM	8660	JOINT AIR OPS		1.0			*	CLS	-	-		B,T,R			8660
ACAD	3012	ACEOI & TRIAD		0.5			*	CLS	-	-		B,T			3112
SHORE	3030	LOW THREAT SHORE BASED MISSION					365	-	-	-		B,T,R,M			3131
			0.0	2.5	0.0	0.0									
SEA															
SEA	3130	LOW THREAT SEA BASED MISSION					365	-	-	-		B,T,R,M			3030
			0.0	0.0	0.0	0.0									
CAT															
ACAD	3210	PLANNING PROD		1.0			*	CLS	-	-		B,T,R			
ACAD	3211	AIR ASLT OPS		1.0			*	CLS	-	-		B,T,R			
ACAD	3212	AIR ASLT KEY		1.0			*	CLS	-	-		B,T,R			3010
ACAD	3213	OBJ PLAN		1.0			*	CLS	-	-		B,T,R			3111
ACAD	3214	TROTOR ESCORT		1.0			*	CLS	-	-		B,T,R			3411
ACAD	3215	R2P2		1.0			*	CLS	-	-		B,T,R			3212
ACAD	3216	MOUT		1.0			*	CLS	-	-		B,T,R			3511
LAB	3220	PLANNING PROB	6.0				*	CLS	-	-		B,T,R			3110
CAT	3230	LOW THRT SEC				2.0	365	A	2	(NS)		B,T,R			3230
SCAT	3231	MED THRT DIV			4.0		*	S/A	4	NS		B,T,R			3231
SCAT	3232	MED THRT SEC			4.0		365	S/A	2	NS		B,T,R			3231
CAT	3233	ESCORT SEC				4.0	180	A	2	(NS)		B,T,R,M			3231
			6.0	7.0	8.0	6.0									
AE															
ACAD	3310	CASEVAC		1.0			*	CLS	-	-		B,T			3512
ACAD	3311	NEO EXECUTION		1.0			*	CLS	-	-		B,T			3510
AE	3330	AIR EVAC MSN				2.0	365	A	2	(NS)		B,T,R,M			3530
			0.0	2.0	0.0	2.0									
TRAP															
ACAD	3410	PERSONNEL REC		1.0			*	CLS	-	-		B,T			3410
TRAP	3430	TRAP MISSION				2.0	365	A	2	(NS)		B,T,R,M			3430
			0.0	1.0	0.0	2.0									
AD															
SAD	3530	AD MISSION			2.0		365	S	2	(NS)		B,T,R,M			3330
			0.0	0.0	2.0	0.0									
			6.0	12.5	10.0	10.0									
AD															
AD	4030	PARAOFS				1.5	365	A	1	(NS)		B,T,R,M			4231
SAD	4031	DAY/NVD EXTERNALS			2.0		*	S	1	(NS)		B,T			2630
AD	4032	DAY EXTERNALS				1.5	365	A	1	D		B,T,R			2632
AD	4034	NVD EXTERNALS				1.5	365	A	1	NS		B,T,R,M			2634
					2.0	4.5									

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STAGE	CODE	EVENT DESCRIPTION	LAB/ADL HOURS	ACAD HOURS	SIM HOURS	FLT HOURS	REFLY INTERVAL	DEVICE	# OF AIRCRAFT	CONDITIONS	PREREQUISITE TRAINING CODES	POI	EVAL	CHAINING FLIGHT TRNG CODES	EVENT CONVERSION
AIE															
ACAD	4111	FASTROPE / RAPPEL / SPIE / HOIST OPS		0.5			*	CLS	-	-		B, T			4211
ACAD	4112	HELOCAST OPS		0.5			*	CLS	-	-		B, T			4212
AIE	4130	FASTROPE / RAPPEL				1.5	365	A	1	(NS)		B, T, R, M			4233
AIE	4131	HOISTING				1.5	365	A	1	(NS)		B, T, R, M			
AIE	4132	SPIE				1.5	365	A	1	(NS)		B, T, R, M			4232
AIE	4133	HELO CAST / SOFT DUCK				1.5	365	A	1	(NS)		B, T, R, M			4234
			0.0	1.0	0.0	6.0									
RI/E															
RI/E	4180	RAPID INSERT / EXTRACT MISSION				2.5	365	A	1	(NS)		B, T, R, M			4730
			0.0	0.0	0.0	2.5									
ADGR															
ACAD	4210	ADGR LECTURE		1.0			*	CLS	-	-		B, T, R			4610
LAB	4220	ADGR LAB	2.0				*	A	-	-		B, T			4620
ADGR	4230	ADGR MISSION				0.5	365	A	1	(NS)		B, T, R, M			4630
			2.0	1.0		0.5									
BI															
ACAD	4310	BI LECTURE		2.0			*	CLS	-	-		B, T, R			
BI	4330	BI MISSION				1.5	365	A	1	NS		B, T, R, M			
			0.0	2.0	0.0	1.5									
AC2															
ACAD	4410	AIRBORNE C2		0.5			*	CLS	-	-		B, T, R			
LAB	4420	AIRBORNE C2 LAB	1.0				*	A	1	-		B, T			
AC2	4430	AIRBORNE C2 MISSION				0.0	730	A	1	(NS)		B, T, R, M			
			1.0	0.5	0.0	0.0									
DWS															
ACAD	4510	DWS FAM		1.0			*	CLS	-	-		B, T, R			
LAB	4520	DWS CRM & PROCEDURES FAM	1.0				*	S	-	-		B, T, R			
LAB	4521	DWS LAB	1.0				*	A	1	-		B, T, R			
DWS	4531	DAY SECTION NO ROUNDS				1.5	365	A	2	-		B, T, R			
DWS	4533	DAY DWS EMPLOYMENT				1.5	365	A	1+	D		B, T, R			
DWS	4534	NIGHT SECTION NO ROUNDS				1.5	365	A	2	NS		B, T, R			
DWS	4536	NIGHT DWS EMPLOYMENT				1.5	365	A	2	NS		B, T, R, M			
			2.0	1.0	0.0	6.0									
CBRN															
LAB	4620	EQUIPMENT FIT & FAM	0.5				*	CLS	-	-		B, T, R			4120
SCBRN	4630	DAY CBRN			1.0		*	S	1	D		B, T, R			4130
SCBRN	4631	NIGHT CBRN			1.0		*	S	1	NS		B, T, R, M			4131
			0.5	0.0	2.0	0.0									
RVL															
RVL	4730	RVL LVL 4-5				1.5	180	A	1	(NS)		B, T, R, M			
			0.0	0.0	0.0	1.5									

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STAGE	CODE	EVENT DESCRIPTION	LAB/ADL HOURS	ACAD HOURS	SIM HOURS	FLT HOURS	REFLY INTERVAL	DEVICE	# OF AIRCRAFT	CONDITIONS	PREREQUISITE TRAINING CODES	POI	EVAL	CHAINING FLIGHT TRNG CODES	EVENT CONVERSION
CQ															
SCQ	4780	NIGHT UNAIDED SIM			1.0		365	S	1	N*		B, T, R			4430
CQ	4781	NIGHT UNAIDED FCLP				1.0	365	A	1	N*		B, T, R			4431
CQ	4782	NIGHT UNAIDED CQ				1.5	365	A	1	N*		B, T, R, M			4432
			0.0	0.0	1.0	2.5									
DCM															
ACAD	4810	HELO THREAT		1.0			*	CLS	-	-		B, T			4010
ACAD	4811	FW THREAT TO AS		1.0			*	CLS	-	-		B, T			4011
ACAD	4812	DCM		1.0			*	CLS	-	-		B, T			4012
LAB	4820	DCM WALKTHROUGH	0.5				*	CLS	-	-		B, T, R			4020
SDCM	4830	DCM AGAINST A FW AGGRESSOR			2.0		365	S	2	-		B, T, R			4030
DCM	4831	DCM AGAINST A FW AGGRESSOR				1.0	365	A	2	D		B, T, R, M			4031
			0.5	3.0	2.0	1.0									
HTT															
SHTT	4930	HIGH THREAT TACTICAL SIM			3.0		365	S	2	NS		B, T, R, M			4330 OR 4331
			0.0	0.0	3.0	2.0									
			6.0	8.5	10.0	25.5									

MV-22														
INSTRUCTOR TRAINING PHASE														
STAGE	CODE	EVENT DESCRIPTION	LAB/ADL HOURS	ACAD HOURS	SIM HOURS	FLT HOURS	REFLY INTERVAL	DEVICE	# OF AIRCRAFT	CONDITIONS	PREREQUISITE TRAINING CODES	POI	EVAL	CHAINING FLIGHT TRNG CODES
BIP														
ACAD	5010	BIP COURSE		4.0			*	CLS	-	-		B, T, R		5010
SBIP	5030	FAM / CAL / FORM			2.0		*	S	1	-		B, T, R	X	5030
SBIP	5031	AD / MAT / CQ			2.0		*	S	-	-		B, T, R	X	5031
			0.0	4.0	4.0	0.0								
FIT														
ACAD	5110	CV-MV PILOT STAGE INBRIEF		1.0			*	CLS	-	-		CV		
SFIT	5130	DAY/NIGHT FAM MANEUVER REVIEW			2.0		*	S	1	N*		CV		
SFIT	5131	DDMS, MSN, INAV, ENAV, WYPT, FL PN, TOT, FUEL			2.0		*	S	1	-		CV		
SFIT	5132	CAL PRTN, TAC APPR, RVL, FLIR			2.0		*	S	1	-		CV		
SFIT	5133	ENROUTE PROC, PREC/NON PREC APPR, FDP			2.0		*	S	1	(N)		CV		
FIT	5134	REVIEW FAM MANEUVERS/CAL /RVL/TAC APPR				3.0	*	A	1	-		CV		
SFIT	5135	REVIEW FORM FLT/SEC LDGS/IIMC PROC			2.0		*	S	2	-		CV		
FIT	5136	REVIEW FORM FLT/SEC LDGS/IIMC PROC				2.0	*	A	2	-		CV		
ACAD	5111	BITC		8.0			*	CLS	-	-		B, T, R, CI, CV		
FIT	5140	FAM				2.0	*	A/S	1	-		B, T, R, CV	X	
FIT	5141	NIGHT FAM				1.0	*	A/S	1	N*		B, T, R, CV	X	
SFIT	5142	INSTRUMENT			2.0		*	S/A	1	(N)		B, T, R, CI, CV	X	
FIT	5143	CAL				1.5	*	A/S	1	-		B, T, R, CI, CV	X	
SFIT	5144	NAVIGATION			1.5		*	S/A	1	-		B, T, R, CI, CV	X	
FIT	5145	FORMATION				1.5	*	A/S	2	-		B, T, R, CI, CV	X	
SFIT	5146	LAT			2.0		*	S	1	-		B, T, R, CI, CV	X	
SFIT	5147	STAN CHECK			2.0		*	S/A	1	-		B, T, R, CI, CV	X	
			0.0	9.0	17.5	11.0								



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INSTRUCTOR TRAINING PHASE (CONT)															
STAGE	CODE	EVENT DESCRIPTION	LAB/ADL HOURS	ACAD HOURS	SIM HOURS	FLT HOURS	REFLY INTERVAL	DEVICE	# OF AIRCRAFT	CONDITIONS	PREREQUISITE TRAINING CODES	POI	EVAL	CHANGING FLIGHT TRNG CODES	EVENT CONVERSION
FLSE															
ACAD	5210	FLSE STAN COURSE		1.0			*	CLS	-	-		B,T,R	X		5210
			0.0	1.0	0.0	0.0									
AARI															
ACAD	5310	MV-22 AAR LECTURE		1.0			*	CLS	-	-		B,T			5310
SAARI	5330	DAT / NT AAR SIM			2.0		*	S	1	(NS)		B,T			5330
AARI	5331	NIGHT AAR CERT				2.0	*	A	1	NS		B,T,R	X		5331
			0.0	1.0	2.0	2.0									
TSI															
ACAD	5510	TEN FUNCTIONS AND OPERATIONS		1.0			*	CLS	-	-		B,T,R			5510
ACAD	5511	TRAINER IOS FUNCTIONS AND OPERATIONS		1.0			*	CLS	-	-		B,T			5511
ACAD	5512	TACTICAL SCENARIO DEVELOPMENT		1.0			*	CLS	-	-		B,T			5512
LAB	5520	TSI ASSIST			2.0		*	CP	-	-		B,T			5520
LAB	5521	TSI CERT			2.0		*	CP	-	-		B,T,R	X		5521
			0.0	3.0	4.0	0.0									
LATI															
ACAD	5610	INSTRUCT LATI COURSE		1.0			*	CLS	-	-		B,T			5610
SLATI	5630	LAT INSTRUCTIONAL TECHNIQUES			2.0		*	S	1	-		B,T	X		5630
LATI	5631	LAT INSTRUCTIONAL TECHNIQUES				2.0	*	A	2	-		B,T	X		5631
LATI	5632	LATI CERTIFICATION				2.0	*	A	2	-		B,T,R	X		5632
SLATI	5633	LAT STANI CERTIFICATION			2.0		*	S	1	-		B,T,R	X		5633
			0.0	1.0	4.0	4.0									
NSFI															
ACAD	5710	INSTRUCT NS COURSE		1.0			*	CLS	-	-		B,T			5710
SNSFI	5730	NSFI SIM INSTRUCTIONAL TECHNIQUES			2.0		*	S/A	-	NS		B,T	X		5730
NSFI	5731	NSFI AIRCRAFT INSTRUCTIONAL TECHNIQUES				2.0	*	A	1	NS		B,T	X		5731
NSFI	5732	NSFI CERT				2.0	*	A	2	NS		B,T,R	X		5732
			0.0	1.0	2.0	4.0									

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INSTRUCTOR TRAINING PHASE (CONT)															
STAGE	CODE	EVENT DESCRIPTION	LAB/ADL HOURS	ACAD HOURS	SIM HOURS	FLT HOURS	REFLY INTERVAL	DEVICE	# OF AIRCRAFT	CONDITIONS	PREREQUISITE TRAINING CODES	POI	EVAL	CHAINING FLIGHT TRNG CODES	EVENT CONVERSION
DCMI															
ACAD	5810	INSTRUCT DCM COURSE		1.0			*	CLS	-	-		B,T			5810
SDCMI	5830	DCMI SIM INSTRUCTIONAL TECHNIQUES			2.0		*	S	2	-		B,T	X		5830
DCMI	5831	DCMI AIRCRAFT INSTRUCTIONAL TECHNIQUES				2.0	*	A	2	-		B,T	X		5831
DCMI	5832	DCMI CERT				2.0	*	A	2	-		B,T,R	X		5832
			0.0	1.0	2.0	4.0									
NSI															
ACAD	5910	INSTRUCT NS COURSE		1.0			*	CLS	-	-		B,T			5910
SNSI	5930	NSI SINGLE SIM INSTRUCTIONAL TECHNIQUES			2.0		*	S	1	NS		B,T	X		5930
NSI	5931	NSI SINGLE AIRCRAFT INSTRUCTIONAL TECHNIQUES				2.0	*	A	1	NS		B,T	X		5931
SNSI	5932	NSI SECTION SIM INSTRUCTIONAL TECHNIQUES			2.0		*	S	2	NS		B,T	X		5932
NSI	5933	NSI SECTION AIRCRAFT INSTRUCTIONAL TECHNIQUES				2.0	*	A	2	NS		B,T	X		5933
NSI	5934	NSI SINGLE CERT				2.0	*	A	1	NS		B,T,R	X		5934
NSI	5935	NSI SECTION CERTIFICATION				2.0	*	A	2	NS		B,T,R	X		5935
			0.0	1.0	4.0	8.0									
WTI															
WTI	5950	MAWTS-1 WTI Course					*					B,T	X		5950
			0.0	0.0	0.0	0.0									
			0.0	22.0	39.5	33.0									

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REQUIREMENTS, CERTIFICATIONS, QUALIFICATIONS, AND DESIGNATIONS PHASE														
STAGE	CODE	EVENT DESCRIPTION	LAB/ADL HOURS	ACAD HOURS	SIM HOURS	FLT HOURS	REFLY INTERVAL	DEVICE	# OF AIRCRAFT	CONDITIONS	PREREQUISITE TRAINING CODES	POI	EVAL	CHAINING FLIGHT TRNG CODES
REQ														
ACAD	6010	NATOPS OPEN BOOK		3.0			365	CLS	-	-		B, T, R, CI, CV, M	X	6010
ACAD	6011	NATOPS CLOSED BOOK		1.0			365	CLS	-	-		B, T, R, CI, CV, M	X	6011
ACAD	6012	NATOPS ORAL EXAM		1.0			365	CLS	-	-		B, T, R, CI, CV, M	X	6012
ACAD	6013	IGS		6.0			365	CLS	-	-		B, T, R, CI, CV, M	X	6013
ACAD	6014	INSTRUMENT EXAM		2.0			365	CLS	-	-		B, T, R, CI, CV, M	X	6014
ACAD	6015	INSTRUMENT ORAL EXAM		1.0			365	CLS	-	-		B, T, R, CI, CV, M	X	6015
ACAD	6016	CRM REFRESHER		1.0			365	CLS	-	-		B, T, R, CI, CV, M	X	6016
RQD	6030	NATOPS EVAL			1.5		365	A/S	1	(N)		B, T, R, CI, CV, M	X	6030
RQD	6031	CRM EVAL			1.5		365	S/A	1	(N)		B, T, R, CI, CV, M	X	6031
RQD	6032	INST EVAL			2.0		365	S/A	1	(N)		B, T, R, CI, CV, M	X	6032
RQD	6033	EP REVIEW			2.0		90	S/A	1	-		B, T, R, CI, CV, M	X	6036
			0.0	15.0	7.0	0.0								
TAC														
ACAD	6110	ORAL TAC BOARD	3.0				*	CLS	-	-		B, T	X	
STAC	6130	TAC REVIEW			2.0		*	S/A	1	-		B, T	X	6033
STAC	6131	NIGHT TAC REVIEW			2.0		*	S/A	1	NS		B, T	X	6034
TAC	6132	TAC CHECK				2.0	*	A	1	(N)		B, T, R	X	6035
			3.0	0.0	4.0	2.0								
SL														
ACAD	6210	PROBLEM FRAMING		1.0			*	CLS	-	-		B, T		6110
ACAD	6211	TACTICAL FLIGHT BRIEFING		1.0			*	CLS	-	-		B, T		6111
LAB	6220	SECTION IFR CHALK TALK	0.3				*	CLS	-	-		B, T, CV		6120
LAB	6221	IIMC CHALK TALK	0.3				*	CLS	-	-		B, T, CV		6121
LAB	6222	SECTION MATA CHALK TALK	0.3				*	CLS	-	-		B, T, CV		6122
LAB	6223	LAT CHALK TALK	0.3				*	CLS	-	-		B, T, CV		6123
LAB	6224	SECTION TAAR CHALK TALK	0.3				*	CLS	-	-		B, T, CV		6124
LAB	6225	SECTION CONTINGENCIES CHALK TALK	0.3				*	CLS	-	-		B, T, CV		
SL	6230	SL BRIEF & LEAD					*			(NS)		B, T, CV	X	6130
SL	6231	ADMIN TRAINING SCENARIO				2.0	*	A	2	-		B, T, CV	X	6131
SSL	6232	NIGHT MED THREAT MISSION TRAP / CASEVAC			4.0		*	S	2	NS		B, CV	X	6133
SSL	6233	MED THREAT LONG RANGE RAID TAAR			4.0		*	S	2	(NS)		B, T, CV	X	6133
SL	6234	SL CERT				3.0	*	A	2	(NS)		B, T, R, CV	X	6134
SL	6240	SL PROF TRACKER					180	A	2	(NS)	-	M		
			1.8	2.0	8.0	5.0								

MV-22															
REQUIREMENTS, CERTIFICATIONS, QUALIFICATIONS, AND DESIGNATIONS PHASE (CONT)															
STAGE	CODE	EVENT DESCRIPTION	LAB/ADL HOURS	ACAD HOURS	SIM HOURS	FLT HOURS	REFLY INTERVAL	DEVICE	# OF AIRCRAFT	CONDITIONS	PREREQUISITE TRAINING CODES	POI	EVAL	CHAINING FLIGHT TRNG CODES	EVENT CONVERSION
DL															
LAB	6320	DIVISION IFR CHALK TALK	0.3				*	CLS	-	-		B, T, CV			6220
LAB	6321	DIVISION FORMATION CHALK TALK	0.3				*	CLS	-	-		B, T, CV			6221
DL	6330	DL BRIEF & LEAD					*	A	3+	(NS)		B, T, CV	X		6230
DL	6331	ADMIN TRAINING SCENARIO				2.0	*	A/S	3+	(NS)		B, CV	X		6231
SDL	6332	MED THREAT MISSION WITH TRAP / CASEVAC			2.0		*	S	3	(NS)		B, T, CV	X		6232
DL	6333	DL CERT				3.0	*	A	3+	(NS)		B, T, R, CV	X		6233
DL	6340	DL PROF TRACKER					180	A	3+			M			
			0.6	0.0	2.0	5.0									
FL															
FL	6430	FL CERT				3.0	*	A	2+ MV & 5+ A/C	(NS)		B, T, R, CV	X		6330
FL	6440	FL PROF TRACKER					*	A	2+ MV & 5+ A/C	(NS)			X		
			0.0	0.0	0.0	3.0									
AMC															
AMC	6530	AMC CERT				3.0	*	A	3+ ELEM	(NS)		B, T, R, CV	X		6430
AMC	6540	AMC TRACKER					*	A	3+ ELEM	(NS)			X		6430
			0.0	0.0	0.0	3.0									
FCP															
ACAD	6610	QA LECTURE		1.0			*	CLS	-	-		B, T, R, CV			6510
SFCP	6630	RTB			1.0		*	S/A	1	-		B, T, R, CV	X		6530
SFCP	6631	FCF CERT			1.5		*	S/A	1	-		B, T, R, CV	X		6531
			0.0	1.0	2.5	0.0									
TRK															
TRK	6800	Tracking Strategic Tanking					365	A		(NS)	2431 2433 if night	B, T, R, M, CV			
			0.0	0.0	0.0	0.0									
			5.4	18.0	19.5	22.0									

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AVIATION CAREER PROGRESSION MODEL (ACPM)															
STAGE	CODE	EVENT DESCRIPTION	LAB/ADL HOURS	ACAD HOURS	SIM HOURS	FLT HOURS	REFLY INTERVAL	DEVICE	# OF AIRCRAFT	CONDITIONS	PREREQUISITE TRAINING CODES	POI	EVAL	CHaining FLIGHT TRNG CODES	EVENT CONVERSION
ACPM															
ACPM	8200	MACCS AGENCIES AND FUNCTIONS		0.5			*	CLS	-	-	-	B			8200
ACPM	8201	MWCS		0.5			*	CLS	-	-	-	B			8201
ACPM	8202	ACA AND AIRSPACE		0.8			*	CLS	-	-	-	B			8202
ACPM	8210	AVIATION GROUND SUPPORT		0.7			*	CLS	-	-	-	B			8210
ACPM	8230	ACE BATTLE STAFF		0.5			*	CLS	-	-	-	B			8230
ACPM	8231	BATTLE COMMAND DISPLAY		0.5			*	CLS	-	-	-	B			8231
ACPM	8240	SIX FUNCTIONS OF MARINE AVIATION		1.7			*	CLS	-	-	-	B			8240
ACPM	8241	JTAR / ASR INTRO AND PRAC APP		1.3			*	CLS	-	-	-	B			8241
ACPM	8242	SITE COMMAND PRIMER		0.5			*	CLS	-	-	-	B			8242
ACPM	8250	THEATER AIR GROUND SYSTEM		0.8			*	CLS	-	-	-	B			8250
ACPM	8300	AIR DEFENSE		0.8			*	CLS	-	-	-	B			8300
ACPM	8310	FARP		0.8			*	CLS	-	-	-	B			8310
ACPM	8311	USMC TACTICAL FUEL SYSTEMS		0.8			*	CLS	-	-	-	B			8311
ACPM	8320	JOINT STRUCTURE AND JOINT AIR OPS		1.0			*	CLS	-	-	-	B			8320
ACPM	8321	JOINT AIR TASKING CYCLE, PHASE 1		0.4			*	CLS	-	-	-	B			8321
ACPM	8322	JOINT AIR TASKING CYCLE, PHASE 2		0.4			*	CLS	-	-	-	B			8322
ACPM	8323	JOINT AIR TASKING CYCLE, PHASE 3		0.4			*	CLS	-	-	-	B			8323
ACPM	8324	JOINT AIR TASKING CYCLE, PHASE 4		0.4			*	CLS	-	-	-	B			8324
ACPM	8325	JOINT AIR TASKING CYCLE, PHASE 5		0.4			*	CLS	-	-	-	B			8325
ACPM	8326	JOINT AIR TASKING CYCLE, PHASE 6		0.4			*	CLS	-	-	-	B			8326
ACPM	8340	INTEGRATING FIRES AND AIRSPACE		0.5			*	CLS	-	-	-	B			8340
ACPM	8350	PHASING CONTROL ASHORE		0.8			*	CLS	-	-	-	B			8350
ACPM	8351	TACRON ORGANIZATIONS AND FUNCTIONS		1.0			*	CLS	-	-	-	B			8351
ACPM	8630	TACC		1.0			*	CLS	-	-	-	B			8630
ACPM	8660	JOINT OPS INTRO		0.5			*	CLS	-	-	-	B			8660
ACPM	8640	JOINT DATA NETWORK		0.8			*	CLS	-	-	-	B			8640
ACPM	8641	THEATER AND NATIONAL ISR		1.3			*	CLS	-	-	-	B			8641
ACPM	8620	ESG/CSG INTEGRATION		0.5			*	CLS	-	-	-	B			8620
			0.0	20.0	0.0	0.0									

2.19 SYLLABUS EVALUATION FORMS. Contact the Fleet Projects Office at VMMT-204 to receive access to the integrated ATF for your unit.

2.20 SIMULATOR TRAINING

1. Events designated by a "C" or an "S" in the event header shall be executed in a training device equipped to meet the objectives listed in the event description; each event requires specific cockpit trainer "C" or simulator "S" capabilities. For each individual event, a cockpit trainer or flight simulator is categorized as Full Mission Capable (FMC), Partial Mission Capable (PMC), or Non-Mission Capable (NMC) based on the status of mission essential simulator subsystems. The following definitions apply:

a. FMC. All subsystems required to meet the training objectives for the event are installed and operating properly.

b. PMC. A subsystem or capability considered highly desirable, but not essential, to meet the training objectives is not installed or is not operating properly. While the event can still be completed, the quality of training is degraded.

c. NMC. The device lacks the capability to complete the event due to a critical subsystem or capability being inoperative or not installed. A simulator will be considered NMC if its configuration is greater than 3 months out of date as compared with the current aircraft configuration.

2. Completion of an event in a PMC simulator shall be noted on the ATF with a description of the impact to training. Commanding Officers shall be notified of all scheduled events in NMC simulators. Each commanding officer should notify DC/Aviation APW-71/APC [Info appropriate MCI/MARCORBASE, CG TECOM ATB and PMA- 205(MARFED)] by DMS message (via the applicable chain of command) when NMC simulators due to aircraft configuration changes occur for greater than six months or when in the commanding officer's judgment the NMC rate has had an adverse effect on the squadron's ability to train.

3. Simulator Mission Essential Subsystems Matrix (MESM) Application. Figure 2-2 illustrates how the absence of a particular subsystem or capability effects MC status for each training event in this Manual. All events will be completed in a FMC or PMC device as determined by the MESM. Completion of an event in a PMC device shall be noted on the ATF with a description of the impact to training. Under no circumstances will an event be completed in a device determined to be NMC for that event without the approval of the commanding officer.

4. Simulator event briefs shall be identical, both procedurally and in content, to aircraft event briefs. The length of the brief should be based upon the mission to be flown and content to be covered, and should not be forced to fit into the standard simulator briefing period.

5. If the flight simulator is not available, simulator periods may be flown in the aircraft.

6. Scheduling. The time between a simulator event and the corresponding aircraft event should be minimized to the maximum extent possible.

7. Motion. Motion systems significantly enhance training quality and are always preferred if available. Allocation of full motion simulators shall favor the Core Skill Introduction phase due to the fundamental nature of this training.

8. Tactical Environment. Events designated as "S-TEN" require an approved tactical environment simulation capable of introducing both semi-autonomous threats and moving models controllable from the tactical operator station.

9. Networked Simulation. Events designated as "S-TEN+" require an approved tactical environment simulation and at least one additional, networked, man-in-the-loop MV-22 simulator to meet the training objectives. A moving model controlled from the operator station does not satisfy the man-in-the-loop requirement.

10. Database Selection. Gaming areas should be selected based on their ability to best meet the training objectives for the event.

Table 2-11.--Simulator Mission Essential Subsystems Matrix (MESM)

Failed Sub-system	NMC for:	PMC for:
Any VMS component	Any event	
Motion		Any 1000-level event, SFORM, SAAR, SCQ, SEXT, SGTR, SDCM
Aural	Any SGTR, any Mission Skill event, SDCM	Any other event
Visual	Any event other than SINST, CFAM, or CNAV	
NVG Visual	Any event that requires NS environmental conditions	
DIGMAP	SNAV, SCAL, SLAT, SNS LAT, any Mission Skill event	Any other event
FLIR	Any event that requires N or NS environmental conditions	
NVG HUD	Any event that requires NS environmental conditions	
Flight Director	Any 1000-phase SINST, SNAV, SCAL 1331	Any SFAM
Basic ENAV functions	Any SINST	SFAM 2030, Any SCQ
Basic INAV functions	CNAV 1130, Any SNAV, SCAL, SLAT, SNS LAT, any Mission Skill event	Any other event
Basic Moving Models	SFORM, SEXT, SCQ, SAAR	
Tactical Environment	Any event designated TEN	
Networked Players	Any event designated TEN+	
Lead-ship/Demo Record/Playback		Any 1000 level event, SFORM
EW Suite	SGTR, SDCM, Mission Skill event	
Gun	TBD	TBD
RADALT	Any SFAM, SCAL, SLAT, SNS	Any other event
Debrief Station		Any event
Left Pilot MFDs	Any event	
Left Pilot RFIS		Any event
Right Pilot MFDs	Any event	
Right Pilot RFIS		Any event
MDL	CNAV 1130, SNAV, SLAT, SNS LAT, and Mission Skill event	Any other event
Standby Instruments	SINST 1230, REQ 6032	Any other event

# CHAPTER 3

## MV-22 CREW CHIEF/6176 / AERIAL OBSERVER/6199

### INDIVIDUAL TRAINING AND READINESS REQUIREMENTS

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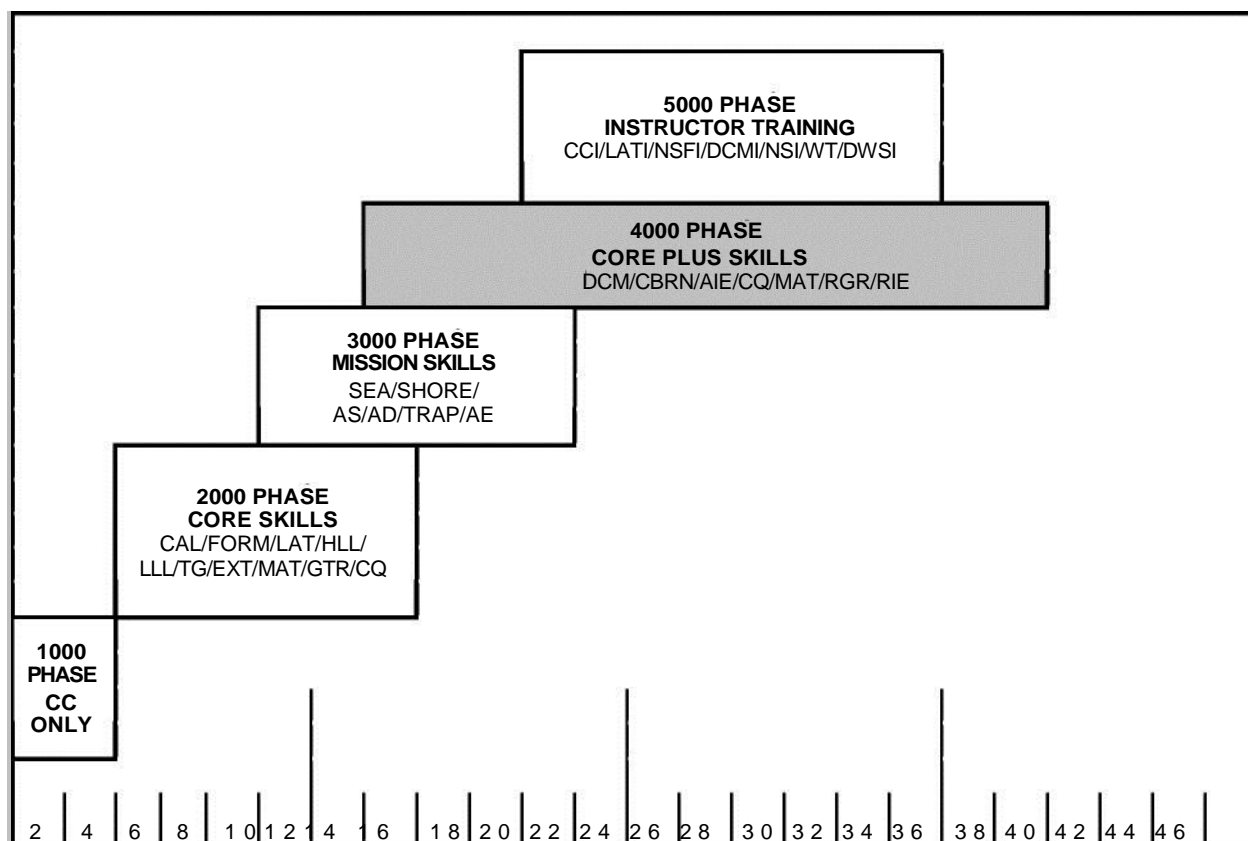
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CHAPTER 3  
MV-22 CREW CHIEF/6176 / AERIAL OBSERVER/6199  
INDIVIDUAL TRAINING AND READINESS REQUIREMENTS

3.0 MV-22 CREW CHIEF/6176 AND AERIAL OBSERVER/6199 INDIVIDUAL TRAINING AND READINESS REQUIREMENTS. This T&R Syllabus is based on specific goals and performance standards designed to ensure individual proficiency in Core and Mission Skills. The goal of this chapter is to develop individual and unit warfighting capabilities.

3.1 6176/6199 TRAINING PROGRESSION MODEL. This model represents the recommended training progression for the average MV-22 Crew Chief/Aerial Observer. Units should use the model as a point of departure to generate individual training plans.

3.1.1 MV-22 Crew Chief/Aerial Observer Notional Training Progression Model  
This model represents the recommended training progression for the average MV-22 Crew Chief/Aerial Observer. Units should use the model as a point of departure to generate individual training plans.



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

3.2.1 Events Required for the Crew Chief to Attain and Maintain Individual CSP. To initially attain CSP in a Core Skill, an individual must simultaneously have a proficient status in all 2000 phase T&R events listed for that Core Skill. To maintain CSP in a Core Skill, an individual must maintain proficiency in all 2000 phase T&R events listed for that Core Skill:

MV-22B CREW CHIEF ATTAIN AND MAINTAIN MATRIX							
CORE SKILLS (2000 Phase)							
ATTAIN PROFICIENCY				MAINTAIN PROFICIENCY			
BASIC POI		TRANSITION POI		REFRESHER POI		MAINTAIN POI	
SKILL	CODE	SKILL	CODE	SKILL	CODE	SKILL	CODE
FAM	A2012	FAM	A2012	FAM		FAM	
	L2020		L2020				
	2032		2032				
CAL	2132	CAL		CAL		CAL	
	2133R		2133R		2133R		2133R
	2135		2135				
FORM	2136R	FORM	2136R	FORM	2136R	FORM	2136R
	A2160		A2160				
	2182R		2182R		2182R		2182R
LAT	2183	LAT	2183	LAT		LAT	
	A2210		A2210				
	A2211		A2211				
NS HLL	L2220R	NS HLL	L2220R	NS HLL	L220R	NS HLL	
	2231		2231				
	2233R		2233R		2233R		2233R
NS LLL	A2310	NS LLL	A2310	NS LLL		NS LLL	
	A2311		A2311				
	2331		2331				
NS HLL	2332R	NS HLL	2332R	NS HLL	2332R	NS HLL	
	2334		2334				
	2335R		2335R		2335R		2335R
NS LLL	2336R	NS LLL	2336R	NS LLL	2336R	NS LLL	
	2381		2381				
	2382R		2382R		2382R		
TG	2384R	TG	2384R	TG	2384R	TG	2384R
	2385R		2385R		2385R		2385R
TG	A2510	TG	A2510	TG		TG	
	A2511		A2511				
	A2512		A2512				
TG	A2513	TG	A2513	TG		TG	
	A2514		A2514				
	L2520R		L2520R		L2520R		
TG	L2521R	TG	L2521R	TG	L2521R	TG	
	2530		2530				
	2531		2531				
TG	2532R	TG	2532R	TG	2532R	TG	2532R
	2533		2533				
	2534		2534				
TG	2535R	TG	2535R	TG	2535R	TG	2535R
AD	A2610	AD	A2610	AD		AD	
	2631R		2631R		2631R		2631R
MAT	2732	MAT	2732	MAT		MAT	
	2733R		2733R		2733R		2733R
GTR	A2810	GTR	A2810	GTR		GTR	
	A2811		A2811				
	A2812		A2812				
GTR	A2813	GTR	A2813	GTR		GTR	
	A2814		A2814				
	A2815R		A2815R		A2815R		
GTR	L2820	GTR	L2820	GTR		GTR	
	2832R		2832R		2832R		2832R

MV-22B CREW CHIEF ATTAIN AND MAINTAIN MATRIX							
CORE SKILLS (2000 Phase)							
ATTAIN PROFICIENCY						MAINTAIN PROFICIENCY	
BASIC POI		TRANSITION POI		REFRESHER POI		MAINTAIN POI	
SKILL	CODE	SKILL	CODE	SKILL	CODE	SKILL	CODE
CQ	2931R	CQ	2931R	CQ	2931R	CQ	
	2932R		2932R		2932R		
	2934R		2934R		2934R		
	2935R		2935R		2935R		2935R

3.2.2 Events Required for the Aerial Observer to Attain and Maintain Individual CSP. To initially attain CSP in a Core Skill, an individual must simultaneously have a proficient status in all 2000 phase T&R events listed for that Core Skill. To maintain CSP in a Core Skill, an individual must maintain proficiency in all 2000 phase T&R events listed for that Core Skill:

MV-22B AERIAL OBSERVER ATTAIN AND MAINTAIN MATRIX					
CORE SKILLS (2000 Phase)					
ATTAIN PROFICIENCY				MAINTAIN PROFICIENCY	
BASIC POI		REFRESHER POI		MAINTAIN POI	
SKILL	CODE	SKILL	CODE	SKILL	CODE
FAM	A2010	FAM		FAM	
	A2011				
	A2012				
	L2020				
	L2021				
	L2022				
	L2023				
	L2024				
	L2025				
	L2026				
CAL	2032	CAL		CAL	
	2132				
	2133R		2133R		2133R
	2135				
FORM	2136R	FORM	2136R	FORM	2136R
	A2160				
	2182R		2182R		2182R
LAT	2183	LAT		LAT	
	A2210				
	A2211				
	L2220R		L2220R		
NS HLL	2231	NS HLL		NS HLL	
	2233R		2233R		2233R
	A2310				
	A2311				
	2331				
	2332R		2332R		
NS LLL	2334	NS LLL		NS LLL	
	2335R		2335R		2335R
	2336R		2336R		
	2381				
NS LLL	2382R	NS LLL	2382R	NS LLL	
	2384R		2384R		2384R
	2385R		2385R		2385R

MV-22B AERIAL OBSERVER ATTAIN AND MAINTAIN MATRIX					
CORE SKILLS (2000 Phase)					
ATTAIN PROFICIENCY				MAINTAIN PROFICIENCY	
BASIC POI		REFRESHER POI		MAINTAIN POI	
SKILL	CODE	SKILL	CODE	SKILL	CODE
TG	A2510	TG		TG	
	A2511				
	A2512				
	A2513				
	A2514				
	L2520				
	L2521R		L2521R		
	2530				
	2531				
	2532R		2532R		2532R
	2533				
	2534				
	2535R		2535R		2535R
AD	A2610	AD		AD	
	2631R		2631R		2631R
MAT	2732	MAT		MAT	
	2733R		2733R		2733R
GTR	A2810	GTR		GTR	
	A2811				
	A2812				
	A2813				
	A2814				
	A2815				
	L2820				
	2832R		2832R		2832R
CQ	2931R	CQ	2931R	CQ	
	2932R		2932R		
	2934R		2934R		
	2935R		2935R		2935R

**\*NOTE\***

Specific Maintain events are selected by community SMEs to update corresponding skills in the Attain table. Maintaining proficiency in these select events will ensure the individual will never go delinquent in that corresponding skill in the Attain table.

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

3.3.1 Events Required for the Crew Chief and Aerial Observer to Attain and Maintain Individual MSP. To initially attain MSP in a Mission Skill, an individual must simultaneously have a proficient status in all 3000 phase T&R events listed for that Mission Skill. To maintain MSP in a Mission Skill, an individual must maintain proficiency in all 3000 phase T&R events listed for that Core Skill:

MV-22B CREW CHIEF AND AERIAL OBSERVER ATTAIN AND MAINTAIN MATRIX							
MISSION SKILLS (3000 Phase)							
ATTAIN PROFICIENCY						MAINTAIN PROFICIENCY	
BASIC POI		TRANSITION POI		REFRESHER POI		MAINTAIN POI	
SKILL	CODE	SKILL	CODE	SKILL	CODE	SKILL	CODE
SHORE	A3012	SHORE	A3012	SHORE	3030R	SHORE	3030R
	3030R		3030R				
SEA	3130R	SEA	3130R	SEA	3130R	SEA	3130R
CAT	A3216	CAT	A3216	CAT	3230R	CAT	3230R
	A3217		A3217				
	3230R		3230R				
	3233R		3233R				
AE	A3310	AE	A3310	AE	3330R	AE	3330R
	A3311		A3311				
	3330R		3330R				
TRAP	A3410	TRAP	A3410	TRAP	3430R	TRAP	3430R
	3430R		3430R				
AD	3530R	AD	3530R	AD	S3530R	AD	S3530R

**\*NOTE\***

Specific Maintain events are selected by community SMEs to update corresponding skills in the Attain table. Maintaining proficiency in these select events will ensure the individual will never go delinquent in that corresponding skill in the Attain table.

3.4 INDIVIDUAL CORE PLUS SKILL PROFICIENCY REQUIREMENTS. Proficiency in Core Plus Skills is not required to obtain unit CSP. Training to Core Plus Skills is at the discretion of the unit commanding officer. To be considered proficient in a Core Plus Skill, an individual must attain and maintain proficiency in Core Plus Skill events as delineated in the below paragraphs.

3.4.1 Events Required to Attain Individual Proficiency in Core Plus Skills. To initially attain CPSP in a Core Plus Skill, an individual must simultaneously have a proficient status in all 4000 phase T&R events listed for that Core Plus Skill. To maintain CPSP in a Core Plus Skill, an individual must maintain proficiency in all 4000 phase T&R events listed for that Core Plus Skill:

MV-22B CREW CHIEF ATTAIN AND MAINTAIN MATRIX							
CORE PLUS (4000 Phase)							
ATTAIN PROFICIENCY						MAINTAIN PROFICIENCY	
BASIC POI		TRANSITION POI		REFRESHER POI		MAINTAIN POI	
SKILL	CODE	SKILL	CODE	SKILL	CODE	SKILL	CODE
AD	4030R	AD	4030R	AD	4030R	AD	4030R
	4031R		4031R		4031R		
	4032R		4032R		4032R		
	4033R		4033R		4033R		
	4034R		4034R		4034R		4034R
AIE	A4111	AIE	A4111	AIE	4130R	AIE	4130R
	A4112		A4112				
	4130R		4130R				4130R
	4131R		4131R		4131R		4131R
	4132R		4132R		4132R		4132R
	4133R		4133R		4133R		4133R
RI/E	4180R	RI/E	4180R	RI/E	4180R	RI/E	4180R
ADGR	A4210	ADGR	A4210	ADGR	4230R	ADGR	4230R
	L4220		L4220				
	4230R		4230R				

MV-22B CREW CHIEF ATTAIN AND MAINTAIN MATRIX							
CORE PLUS (4000 Phase)							
ATTAIN PROFICIENCY						MAINTAIN PROFICIENCY	
BASIC POI		TRANSITION POI		REFRESHER POI		MAINTAIN POI	
SKILL	CODE	SKILL	CODE	SKILL	CODE	SKILL	CODE
BI	A4310	BI	A4310	BI		BI	
	4330R		4330R		4330R		4330R
AC2	A4410R	AC2	A4410R	AC2	A4410R	AC2	
	A4420		A4420				
	4430R		4430R		4430R		4430R
DWS	A4510	DWS	A4510	DWS	A4510	DWS	
	A4511		A4511				
	L4520		L4520				
	L4521		L4521				
	L4522R		L4522R		L4522R		L4522R
	L4523		L4523				
	4531		4531				
	4532R		4532R		4532R		
	4533R		4533R		4533R		4533R
	4534		4534				
CBRN	L4620	CBRN	L4620	CBRN		CBRN	
	S4630		S4630				
	S4631		S4631		S4631		S4631
RVL	4730R	RVL	4730R	RVL	4730R	RVL	4730R
CQ	4781R	CQ	4781R	CQ	4781R	CQ	
	4782R		4782R		4782R		4782R
DCM	A4810	DCM	A4810	DCM		DCM	
	A4811		A4811				
	A4812		A4812				
	L4820		L4820				
	4831R		4831R		4831R		4831R

3.4.2 Events Required for the Aerial Observer to Attain and Maintain Individual Proficiency in Core Plus Skills. To initially attain CPSP in a Core Plus Skill, an individual must simultaneously have a proficient status in all 4000 phase T&R events listed for that Core Plus Skill. To maintain CPSP in a Core Plus Skill, an individual must maintain proficiency in all 4000 phase T&R events listed for that Core Plus Skill:

MV-22B AERIAL OBSERVER ATTAIN AND MAINTAIN MATRIX					
CORE PLUS (4000 Phase)					
ATTAIN PROFICIENCY				MAINTAIN PROFICIENCY	
BASIC POI		REFRESHER POI		MAINTAIN POI	
SKILL	CODE	SKILL	CODE	SKILL	CODE
AD	4030R	AD	4030R	AD	4030R
	4031R		4031R		
	4032R		4032R		
	4033R		4033R		
	4034R		4034R		4034R
AIE	A4111	AIE		AIE	
	A4112				
	4130R		4130R		4130R
	4131R		4131R		4131R
	4132R		4132R		4132R
	4133R		4133R		4133R
RI/E	4180R	RI/E	4180R	RI/E	4180R
ADGR	A4210	ADGR		ADGR	
	L4220				
	4230R		4230R		4230R
BI	A4310	BI		BI	
	4330R		4330R		4330R

MV-22B AERIAL OBSERVER ATTAIN AND MAINTAIN MATRIX					
CORE PLUS (4000 Phase)					
ATTAIN PROFICIENCY				MAINTAIN PROFICIENCY	
BASIC POI		REFRESHER POI		MAINTAIN POI	
DWS	A4510	DWS	A4510	DWS	
	A4511				
	L4520				
	L4521				
	L4522R		L4522R		L4522R
	L4523				
	4531				
	4532R		4532R		
	4533R		4533R		4533R
	4534				
CBRN	4535R		4535R		
	4536R		4536R		4536R
	L4620				
	S4630				
	S4631	CBRN		CBRN	
RVL	4730R	RVL	4730R	RVL	4730R
CQ	4781R	CQ	4781R	CQ	
	4782R		4782R		4782R
DCM	A4810	DCM		DCM	
	A4811				
	A4812				
	L4820				
	4831R		4831R		4831R

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

INDIVIDUAL QUALIFICATION REQUIREMENTS	
Qualification	Event Requirements
NATOPS	6010R, 6011R, 6012R, 6030R
LATQ	2231, 2233R
NSQ HLL	2331, 2332R, 2334, 2335R, 2336R
NSQ	2381, 2382R, 2384R, 2385R
TGQ	6533
CQ	2931R, 2932R, 2934R, 2935R
DCMQ	4831R
DWSQ	4531, 4532R, 4533R, 4534, 4535R, 4536R
INDIVIDUAL DESIGNATION REQUIREMENTS	
Designation	Event Requirements
CC INITIAL	Successful completion of the Core Skill Introduction phase. 6030 also serves as the initial NATOPS Evaluation
AERIAL OBSERVER	NSQ, TGQ, 6030
BICC	5010, 5020, 5030
FRS CCI	5010, 5130, 5131, 5132, 5133
CCLATI	5630, 5631R
TGI	5410, 5411, 5420, 5430, 5431, 5432
DWSI	5511 Through 5533
CCNSFI	5731, 5732R
CCDCMI	5830, 5831R
CCNSI	5931, 5933, 5934R, 5935R
CCWTI	Completion of the MAWTS-1 WTI course



### 3.6 PROGRAMS OF INSTRUCTION (POI)

3.6.1 Basic Crew Chief POI. The entire syllabus shall be flown for personnel assigned to this category.

<u>WEEKS</u>	<u>COURSE/PHASE</u>	<u>ACTIVITY</u>
1-10	MV-22 Tiltrotor Mechanics Course	MTU
11-18	MV-22 Crew Chief Ground School	Training Squadron
19-28	Core Skill Introduction Phase	Training Squadron
29-40	Core Skill Phase	Tactical Squadron
41-50	Mission Skill Phase	Tactical Squadron
51-52	Core Plus Phase	Tactical Squadron

3.6.2 Transition Crew Chief POI (Rotary). Previously qualified crew chiefs from rotary wing platforms shall be placed in the Transition POI and shall complete all events designated by a 'T' for the 1000-6000 phase. This assumes that the transition crew chief has had previous proficiency in that stage of training. If the transition crew chief has no previous proficiency in a stage or particular event, then the transition crew chief should fly the entire stage or all events not previously flown. Crew Chief Instructors who were previously designated in another Type/Model/Series aircraft must complete the applicable instructor syllabus in its entirety in order to regain that designation in accordance with the MAWTS-1 Course catalog. Event proficiency updating for aircrew assigned to the Transition syllabus is per Chapter 2 of the Aviation T&R Program Manual. When all T events in a stage are successfully completed, all remaining events in that stage are updated. Upon completion of the Transition POI, aircrew shall be assigned to the Refresher POI and follow Refresher POI proficiency updating procedures.

<u>WEEKS</u>	<u>COURSE/PHASE</u>	<u>ACTIVITY</u>
1-5	MV-22 Tiltrotor Mechanics Course	MTU
6-13	MV-22 Crew Chief Ground School	Training Squadron
14-21	Core Skill Introduction Phase	Training Squadron
22-32	Core Skill Phase	Tactical Squadron
33-42	Mission Skill Phase	Tactical Squadron
43-44	Core Plus Phase	Tactical Squadron

3.6.3 Basic Aerial Observer POI. The entire syllabus will be flown for personnel assigned to this category.

<u>WEEKS</u>	<u>COURSE/PHASE</u>	<u>ACTIVITY</u>
1-11	Core Skill Phase	Tactical Squadron
12-20	Mission Skill Phase	Tactical Squadron
21-22	Core Plus Phase	Tactical Squadron

3.6.3.1 Designation as Aerial Gunner/Observer. After being qualified NSQ LLL, TGQ, and completion of RQD-6030 an AGOUI may be designated a Naval Aircrewman and an Aerial Gunner/Observer by the Commanding Officer. A designation letter, signed by the commanding officer is required. Aerial Gunners/Observers shall complete all events designated by an 'A' for the 2000-6000 phase.

The original shall be placed in the AGO's NATOPS jacket, and a copy in his APR with a corresponding logbook entry. An appropriate entry should be made in MCTFS granting the AGO the additional MOS 6199.

3.6.4 Refresher Crew Chief/Aerial Observer POI. Previously designated MV-22 crew chief/aerial observers who have been out of the MV-22 for more than 730 days shall be placed in the Refresher POI, to be completed at the tactical squadron. Refresher training at the tactical squadron is predicated on the

experience of the crew chief/aerial observer.

A Refresher crew chief/aerial observer need not fly every event within a stage of training to regain proficiency in that stage. The unit commanding officer may tailor the Refresher syllabus to fit the experience of the Refresher crew chief/aerial observer per the T&R Program Manual. Any modification to the Refresher syllabus by the unit commanding officer shall be documented in Section 3 of the crew chief/aerial observer's APR prior to commencement of training. When all R-coded events in a stage are successfully completed, all remaining events in that stage that are proficient or delinquent are updated. NBA and Incomplete events are not updated and must be completed in addition to R-coded events. If the Refresher crew chief/aerial observer has no previous proficiency in a stage or particular event, then the Refresher should fly the entire stage or all events not previously flown.

A Modified Refresher syllabus for personnel out of the aircraft for 486-730 days can be individually tailored as specified by the commanding officer of the tactical squadron. The tactical squadron will establish the modified refresher's syllabus. It will be based upon the Refresher syllabus but may be modified by the squadron commanding officer. The Refresher syllabus applies only up to the stage achieved during the prior tour. After that, the crew chief/aerial observer will complete the entire remaining syllabus.

<u>WEEKS</u>	<u>COURSE/PHASE</u>	<u>ACTIVITY</u>
1-2	MV-22 Familiarization	Training/Tactical Squadron
3-4	Ground Schools / OJT	Training/Tactical Squadron
5-7	Core Skill Introduction Phase	Tactical Squadron
8-10	Core Skill Phase	Tactical Squadron
11-12	Mission Skill Phase	Tactical Squadron
13-14	Core Plus Phase	Tactical Squadron

### 3.7 ACADEMIC TRAINING

3.7.1 Academic training shall be conducted for each phase/stage of the syllabus. Academic Training consists of Advanced Distributed Learning (ADL), Academic Lectures (ACAD), and Chalk Talks / Laboratory events (LAB). ADLs are self-paced computer based modules on particular subjects. Lectures are stand up instruction given to an entire class by a qualified instructor. Chalk Talks and Laboratory events are instructor guided, free-play, and interactive events given to an individual or entire class by a qualified instructor. Responsibilities for development and delivery of these courses are as follows:

Core Skill Introduction. The Training Squadron is responsible for the requirements, content, and execution of all ground training events for the Core Skill Introduction phase to include Ground School except for those contained within the LAT and NS syllabi. MAWTS-1 is responsible for the development of the academic lectures that support LAT and NS; the Training Squadron is responsible for the delivery of these lectures.

Core Skill/Mission Skill/Core Plus Skill/Mission Plus Skills. MAWTS-1 is responsible for the development of the academic lectures that support these phases of training. These lectures will be available through the MAWTS-1 Academic Support Package. The individual Tactical Squadrons are responsible for the delivery of these academic training events for the Core Skill, Mission Skill, Core Plus Skill, and Mission Plus Skills phases.

Aircrew Training References. Aircrew shall use the following references to ensure safe and standardized training and maintenance procedures, grading criteria, and aircraft operation:

OPNAVINST 3710.7	NATOPS Gen Flt & Operating Inst
OPNAVINST 4790.2	Naval Aviation Maintenance Program
NAVAIR 00-80T-106	LHA/LHD/MCS NATOPS Manual
NWP-42	Shipboard Helicopter Ops Manual
NTTP 3-22.1-MV-22	MV-22 NTTP Manual (Classified)
NTTP 3-22.3-MV-22	MV-22 NTTP Manual (Unclassified)
A1-V22AB-NFM-000	MV-22 NATOPS Flight Manual
NAVMC 3500.14	T&R Program Manual
MCO P4790.12	MAWTS-1 NVD Manual
MCO 3500.27/OPNAV 3500.39	Operational Risk Management (ORM)
NAVAIR 11-95-13	Weapons and Tactics Training Program (WTTP)
NAVAIR 11-95M240D1-1	GAU-16/A Technical manual
MCO P3500.12	Individual Training Standards Systems (MATMEP)

### 3.8 SYLLABUS NOTES

3.8.1 Event Training Nomenclature. The following nomenclature is used to differentiate aircraft, simulator, cockpit trainer, cockpit management system part task trainer, computer based trainer, and classroom events. The aircraft is used for those events designated with an A, the flight simulator is used for those events designated with an S, the cockpit trainer is used for those events designated with a C, the cabin part task trainer is used for those events designated with a CPTT, the computer based trainer is used for those events designated with a CBT, and a classroom is used for those events designated with a CLSRM in the event header. To give commanding officers the maximum amount of flexibility for training, some events allow for the optional use of simulators or aircraft and cockpit trainer or simulator. Those types of events will use the designator A/S for aircraft preferred, simulator optional and S/A for simulator preferred, aircraft optional and C/S for cockpit trainer preferred, simulator optional.

3.8.2 Simulator Training. While it is recognized that the simulator does not specifically train to the crew chief or aerial observer positions, the Flight Training Device (FTD), Full Flight Simulator (FFS), Interactive Cockpit Learning Environment (ICLE) and Cabin Parts Task Trainer (CPTT) have been incorporated into the Core Skill Introduction and the Core Skill Basic phases of the syllabus to integrate the crew chief into cockpit procedures prior to entering the aircraft. To further clarify the use of the simulator, an event marked as ESFAM designates that the enlisted aircrewman is the priority for that particular simulator event and a dedicated Contract Instructor or Pilot is required. Any other simulator event in the crew chief syllabus can be conducted in conjunction with pilot training vice having a dedicated pilot for crew chief-only training.

3.8.3 Environmental Conditions. Aircrew shall fly events annotated with an N or NS at least 30 minutes after official sunset. Events shall be flown in accordance with environmental conditions listed in the matrix below:

ENVIRONMENTAL CONDITIONS	
Code	Meaning
D	Shall be flown during hours of daylight: (by exception - there is no use of a symbol)
N	Shall be flown during hours of darkness, may be aided or unaided
N*	Shall be flown during hours of darkness must be flown unaided
NS	Shall be flown during hours of darkness - Mandatory use of Night Vision Devices
(N*)	May be flown during hours of darkness - If flown during hours of darkness must be flown unaided
(N)	May be flown during darkness - If flown during hours of darkness may be flown aided or unaided
(NS)	May be flown during darkness - If flown during hours of darkness must be flown with Night Vision Devices

### 3.8.4 Training Event Performance Requirements

3.8.4.1 Purpose. To familiarize the CCUI/AOUI with general syllabus expectations, definitions, and the observation scale found on the Integrated Aircrew Training Forms (IATF).

#### 3.8.4.2 General

This manual generalizes mission guidance to allow for local conditions and to allow this Manual to remain unclassified. HQMC (DC AVN) and CG MCCDC encourage squadrons to use the full range of tactics contained in the tactical manuals and adopt the latest developed and proven tactics.

The 1000 phase syllabus includes all emergencies that are indicated with warnings, all emergency procedures with critical memory items, those with associated warnings, land immediately or land as soon as possible emergencies, and those that refer to any of the above. CCUI/AOUI's will be expected to memorize critical memory items and warnings associated with emergency procedures. They will be familiar with and be able to quickly look up other (non-memory) emergency procedures and their notes and cautions. To reinforce the latter, during flight briefs, CCUI/AOUIs will open PCLs to the appropriate page to review notes, cautions, and other non-memory items.

CCUI/AOUI's shall be familiar with, but will not be required to memorize numerical system limitations for those systems whose indications are displayed with a green, yellow or red scale on either the EICAS or MFD's.

All flights shall terminate with a comprehensive debrief with emphasis on aircrew performance and procedures or systems discussed. Instructors should use all available debriefing techniques.

#### 3.8.4.3 Definitions

##### Discuss

The CCI shall discuss a system, procedure, or maneuver during the brief, in flight, or debrief.

The CCUI/AOUI shall demonstrate an understanding of all discussed items listed in the event description.

All Demonstrate/Introduce flight events shall be discussed during the brief. The CCUI/AOUI shall perform the maneuver with coaching as necessary and is responsible for knowledge of the procedures prior to the flight.

##### Demonstrate

The CCI performs the maneuver with accompanying description.

The CCUI/AOUI observes the maneuver and is responsible for knowledge of the procedures during the brief.

Introduce. At his option, the CCI may perform the maneuver with an accompanying description, or he may coach the CCUI/AOUI through the maneuver without demonstration.

Practice. The performance of a maneuver or procedure by the student that may have been previously introduced in order to attain a specified level of performance.

Review

The CCI observes and grades the maneuver without coaching the CCUI/AOUI. An airborne critique of the CCUI/AOUI's performance is at the option of the instructor.

The CCUI/AOUI is expected to perform the maneuver without coaching and is devoid of procedural error at a level acceptable to warrant progress into the next stage of training.

Evaluate

The CCI observes and grades the maneuver without coaching the CCUI/AOUI.

An airborne critique of the CCUI/AOUI's performance is at the option of the instructor.

The CCUI/AOUI is expected to perform the maneuver without coaching, with minor or no procedural errors, and at a level acceptable to warrant progress in the syllabus.

The expectation is that the CCUI/AOUI will consistently apply timely corrections with very few and quickly corrected excursions outside performance standards.

Expose

The CCI shall expose the CCUI/AOUI to the procedure or consideration during the brief, in flight or debrief.

The CCUI/AOUI is not responsible for the knowledge of the procedure or consideration prior to the flight.

Observation Scale. The following table describes the numerical observations assigned for graded events. The comments that relate to each score are designed to assist instructors in assigning the correct observation based upon a student's demonstrated performance.

Table 3-10.--Observation Scale

Observation Scale				
erv ati	Level of Learning	General	Training as an Individual	Scenario Training as a Crew Member*
5	Correlation	Proactive. Ahead of the situation. Reacts correctly with changing conditions .And/or changing mission.	Performance is correct, efficient, and skillful. Deviations are very minor. The student initiates corrections, if required, and they are appropriate, smooth, and rapid.	Proactive management of resources in dynamic environment. Mission effectiveness and safety enhanced by planning and coordination. ABCD.
4	Application	Self / crew recognition of errors. Correct application of resources.	Self-Assess and correct errors in time. Deviations are brief and minor. Corrections are appropriate and timely.	Active Management. Recognize and Correct Errors. Maintain redundancy to improve mission effectiveness and reduce risk.
3	Understanding	Minor errors not detected. Crew Redundancy diminished.	Errors not detected and/or corrected in a timely manner. Corrections noticeably lag deviations.	Minor errors not detected and/or corrected. Risk unchanged.
2	Rote	Task accomplished Mechanically and/or with limited situational awareness. Crew Redundancy Lost. Risk Increased.	Errors not recognized and/or corrected	Errors not recognized and/or corrected.
1	Unfamiliar	Unable.	Skills not up to task.	Skills not up to task.
*There is a slight shift in thinking as you move to SBT and actual mission scenarios: based on their current performance, how well could they handle an unexpected increase in task loading, additive conditions, or crew factors?				

#### 3.8.4.4 Integrated Aircrew Training Forms (IATFs)

Also known as syllabus evaluation forms, IATFs are required for any initial event completed by crew members in one of the formal POIs to include ACADs, Labs, or flight events, or as recommended by the Squadron Standardization Board.

If the commanding officer has waived or deferred a syllabus event, the squadron training officer shall place a waiver or deferral letter in section 3 of the APR.

**3.8.4.5 Aircrew Evaluation Flights.** All enlisted aircrew shall have an appropriate NATOPS evaluation form completed annually upon completion of the NATOPS Check (RQD-6030). A designated NATOPS Evaluator, NATOPS Instructor/Assistant NATOPS Instructor shall evaluate RQD-6030.

#### 3.8.4.6 Instructor Requirements

For all simulator and flight events the instructor requirement is noted at the instructor line. If the instructor line does not contain an instructor requirement then the minimum requirement is a crew chief that is complete with the basic instructor crew chief syllabus and proficient in the given event.

For Core Skill Introduction flight events, the minimum instructor requirement is an FRS CCI. An FRS CCI, once designated by the FRS Commanding Officer, may instruct Core Skill Introduction flight events as qualified by stage of flight as described below. Additional instructor designation requirements are specified in the right margin of the event header.

For Core Skill Introduction simulator events, the minimum instructor requirement is an FRS Instructor qualified to operate the device.

3.8.4.7 Crew Requirements/Position Designations. Crew requirements are listed for each stage of training. The requirement for an aerial observer is intended to provide a second crewmember in the aircraft cabin section. A designated aerial observer or crew chief may fill this requirement. On training flights a crew chief or aerial observer under instruction (CCUI/AOUI) may fill this requirement when flying with an appropriate syllabus instructor. The squadron commanding officer may, at his discretion, employ an aerial observer on any flight event.

3.8.4.8 Event Completion. Event completion is predicated upon demonstrated proficiency. When an individual successfully accomplishes the requirements of an event per the performance standards, the individual should log completion of the event (enter the appropriate T&R code) in M-SHARP. When the event is entered into M-SHARP, the individual's proficiency date for that event is automatically updated to reflect the date the event was completed. When supervising individual events, unit instructors/leaders shall ensure that trainees demonstrate proficiency per T&R standards prior to logging successful event completion. Evaluating individual proficiency in an event normally requires both objective and subjective assessment. If, in the instructor's opinion, the CCUI/AOUI does not adequately perform a required event, then all or parts of the sortie shall be repeated until adequate performance is demonstrated. If an individual fails to accomplish the requirements of an event per the performance standards, the individual should not log that event and the proficiency status for that event remains unchanged. Times indicated for each event are for planning purposes only.

3.8.4.9 Sequence. Training should be accomplished by flying events within a stage in sequence and stages in sequence when practical.

3.8.4.10 Crew Resource Management (CRM). Aircrew shall brief techniques of CRM for all flights and/or events. The crew chief will act as an observer, always being alert for other aircraft or obstacles to flight. He will supervise internal cargo loading, verbally direct the pilot during external hookups and releases, and supervise the embarkation and debarkation of passengers. The crew chief may detect system failures before the pilot and must inform him of potential malfunctions. He can affect minor airborne repairs and supervise any additional crewmembers that the mission may require.

3.8.4.11 Operational Risk Management (ORM). Aircrews shall brief those factors that affect risk mitigation decisions for every flight or mission.

### 3.9 CORE SKILL INTRODUCTION FRS ACADEMIC PHASE (GROUND SCHOOL)

3.9.1 Purpose. Prepare the student for the flight portion of the core skill introduction phase. Emphasis is placed on major aircraft systems, Cockpit Management System (CMS), Plane Captain duties, and specific mission roles.

#### 3.9.2 General

Ground school is setup into nine major blocks of instruction. The blocks of instruction build progressively on the preceding blocks. Each major block of instruction consists of ADL lessons guided by a crew chief certified to give academic instruction. Each block of instruction has accompanying lab sessions interspaced within in order to amplify and apply the ADL and classroom instruction.

The blocks of academic instruction may be followed by practical application for plane captain daily and turnaround responsibilities. This training will be documented in ASM/MATMEP records in accordance with the current edition of OPNAV 4790.

Specific lessons as well as Terminal (TLOs) and enabling learning objectives (ELOs) for periods of instruction are defined in the Training Course Control Document (TCCD) for MV-22 Enlisted Aircrew Training.

Instructor certification for academic instruction shall be conducted per the USN Journeyman Instructor Training Course (CIN A-012-0077) or equivalent instructor training program.

The Commanding Officer of the resident FRS has the responsibility to define the required content, conduct reviews, forward required changes and approve the content for all ground school events.

The Commanding Officer of the FRS has waiver authority over any event within Ground School.

ACAD-0100	1.0	*	B,T	CLSRM	Ground School Intro In-Brief
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Goal. The CCUI understands the expectations during Ground School and has the requisite knowledge of the course and where all the necessary references can be accessed to complete the Core Skill Introduction Phase.

Requirements

1. Discuss:
  - a. Overall Course Design for Ground School and the Core Skill Introduction Phase.
  - b. Student Guide materials
    - (1) Class Schedule.
    - (2) Systems reference material.
    - (3) ACAD handouts.
    - (4) Simulator and Flight Events Student Guides.
  - c. List, Location, and access to all appropriate references that will be required through the Core Skill Introduction Phase.
  - d. Expectations of CCUI during Ground School to include work schedule, ACAD preparation, and event prerequisites.
  - e. Squadron and MATSS processes, particularly scheduling.
2. Demonstrate:
  - a. Computer based training access. All students will log-on to the network and access the first ADL.
  - b. Basic operation of the ADL.

Performance Standard. Students are introduced to expectations during ground school.

ACAD-0101	11.5	*	B,T	CBT	Academic Block One
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Goal. The CCUI demonstrates understanding of the listed modules of instruction by successful completion of a computer-based test on the following modules.

Requirements

1. Modules:
  - a. V-22 familiarization and aircraft missions.
  - b. Manuals and Publications.



- c. Safety and ORM.
- d. Aerodynamics.
- e. Airframe.
- f. Introduction to ingress/egress systems.

Performance Standard. Successful completion of computer-based test on all modules. Passing score is 75%.

Prerequisite. ACAD-0100

LAB-0200	1.0	*	B,T	A	1	MV-22
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Flightline Fire Extinguisher Lab

Goal. Familiarize CCUI with operation and inspection of flightline fire bottles.

Requirements

1. Discuss:
  - a. Preflight procedures and operation.
2. Introduce:
  - a. Hand and arm signals for aircraft fire.
  - b. Preflight, positioning, and operation of levers and pins.
  - c. Hazardous materials, e.g. HALON .

Performance Standard. Demonstrate fire bottle preflight inspection and operating procedures.

Prerequisite. ACAD-0100

LAB-0201	1.0	*	B,T	C/A		CPTT
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Ingress/Egress Lab

Goal. Familiarize CCUI with squadron procedures for flight. Complete required V-22 Egress.

Requirements

1. Discuss:
  - a. Flight equipment checkout.
2. Introduce:
  - a. V-22 Egress.

Performance Standard. Execute the V-22 egress procedures without reference or coaching.

Prerequisite. ACAD-0100

LAB-0202	5.0	*	B,T	S	1	FFS/FTD
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Intro to APU and CMS Start-up Lab

Goal. Introduce CCUI to APU and CMS start-up procedures.

Requirements

1. Introduce:
  - a. Pre-entry/Safety.

- b. Cockpit Pre-Entry.
- c. Cockpit Pre-Start.
- d. All Start.

Performance Standard. Student is introduced to APU and CMS start-up procedures.

Prerequisite. ACAD-0100

ACAD-0102	15.0	*	B,T			CBT
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#### Academic Block Two

Goal. The CCUI demonstrates understanding of the listed modules of instruction by successful completion of a computer-based test on the following modules.

- 1. Modules:
  - a. Electrical systems.
  - b. Lighting systems.
  - c. Avionics systems.
  - d. Environmental control system.
  - e. Cockpit management system.

Performance Standard. Successful completion of computer-based test on all modules. Passing score is 75%.

Prerequisite. ACAD-0101

LAB-0203	5.0	*	B,T	S	1	FFS/FTD
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#### APU and CMS Start-up Lab

Goal. CCUI is to practice APU and CMS start-up procedures.

#### Requirements

- 1. Practice:
  - a. Pre-Entry/Safety.
  - b. Cockpit Pre-Entry.
  - c. Cockpit Pre-Start.
  - d. All Start.

Performance Standard. Student practices and attains proficiency with APU and CMS start-up procedures.

Prerequisite. ACAD-0101

ACAD-0103	13.5	*	B,T			CBT
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#### Academic Block Three

Goal. The CCUI demonstrates understanding of the listed modules of instruction by successful completion of a computer-based test on the following modules.

#### Requirements

- 1. Modules:
  - a. Control and display, Advance Mission Computers.

- b. ICS and communication systems.
- c. GPS, INS, and DIGIMAP systems.

Performance Standard. Successful completion of computer-based test on all modules. Passing score is 75%.

Prerequisite. ACAD-0102

LAB-0204	5.0	*	B,T	S	1	FFS/FTD
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#### Control and Display Lab

Goal. Introduce CCUI to use of controls, displays, and CMS.

##### Requirements

- 1. Introduce:
  - a. Multifunction Displays.
  - b. Control Display Unit.
  - c. Keyboard Panels.
  - d. Radio Frequency Indicator Selector.
  - e. Circuit Breakers.

Performance Standard. Student is introduced to use of controls, displays, and CMS.

Prerequisite. ACAD-0102

LAB-0205	5.0	*	B,T	S	1	FFS/FTD
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#### Communication and Navigation Lab

Goal. Demonstrate to CCUI to use of communications, INS, and GPS.

##### Requirements

- 1. Introduce:
  - a. Intercommunication System (ICS).
  - b. AN/ARC 210 UHF/VHF Communication System.
  - c. Satellite Communication System (SATCOM).
  - d. Identification Friend of Foe (IFF) System.
  - e. Global Positioning System (GPS).
  - f. Lightweight Inertial Navigation System (LWINS).
  - g. Digital Map System (DMS).

Performance Standard. Student is introduced to the use of communication and navigation equipment.

Prerequisite. ACAD-0102

ACAD-0104	9.0	*	B,T			CBT
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#### Academic Block Four

Goal. The CCUI demonstrates understanding of the listed modules of instruction by successful completion of a computer-based test on the following modules.

##### Requirements

- 1. Modules:
  - a. RADALT, TACAN.

- b. Radio navigation equipment.
- c. VOR/ILS, FLIR.
- d. Integrated Electronic Warfare Suite.

Performance Standard. Successful completion of computer-based test on all modules. Passing score is 75%.

Prerequisite. ACAD-0103

LAB-0206	4.0	*	B,T	S/A	1	FFS/FTD
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#### Navigation and IEWS Lab

Goal. Introduce CCUI to use of radio navigation equipment and Integrated Electronic Warfare Suite (IEWS).

#### Requirements

- 1. Introduce:
  - a. Radar Altimeter.
  - b. Tactical Air Navigation System (TACAN).
  - c. FM Homing System.
  - d. VHF/UHF Automatic Direction Finder (ADF) System.
  - e. Very High Frequency Omnidirectional Range (VOR), Instrument Landing System (ILS), Marker Beacon (MB).
  - f. Forward Looking Infrared (FLIR) System.
  - g. Integrated Electronic Warfare Suite.

Performance Standard. Student is introduced to use of radio navigation equipment and Integrated Electronic Warfare Suite (IEWS).

Prerequisite. ACAD-0103

ACAD-0105	16.0	*	B,T	CBT
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#### Academic Block Five

Goal. The CCUI demonstrates understanding of the listed modules of instruction by successful completion of a computer-based test on the following modules.

#### Requirements

- 1. Modules:
  - a. O2/N2 system.
  - b. IPS.
  - c. Engine.
  - d. APU.
  - e. Fire detection and suppression systems.
  - f. Hoist and winch systems.
  - g. Weight and Balance.

Performance Standard. Successful completion of computer-based test on all modules. Passing score is 75%.

Prerequisite. ACAD-0104

LAB-0207	5.0	*	B, T	A	1	MV-22
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## Engine Familiarization Lab

Goal. Familiarize the CCUI with V-22 engine systems.

## Requirements

1. Introduce:
  - a. Torquemeter Assembly.
  - b. Accessory Drive Gearbox Assembly.
  - c. Gas Generator Assembly.
  - d. Power Turbine Assembly.
  - e. Lubrication System.
  - f. Bleed Air Systems.
  - g. Fuel System.
  - h. Ignition and Control System.
  - i. Exhaust System.
  - j. Coanda Deflector System.

Performance Standard. Student is introduced to the MV-22 engine systems.

Prerequisite. ACAD-0104

LAB-0208	2.0	*	B, T	A	1	MV-22
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APU and Fire Protection System Lab

Goal. Familiarize the CCUI with the APU and fire protection systems.

## Requirements

1. Introduction:
  - a. APU Systems
    - (1) Engine System.
    - (2) Exhaust System.
    - (3) Engine Indicating System.
    - (4) Engine Control System.
    - (5) Engine Fuel and Control System.
    - (6) Ignition/Starting System.
    - (7) Oil System.
  - b. APU Inspection and Operational Check.
  - c. Nacelle Fire Detection and Suppression System.
  - d. Wing Fire Protection System (WFPS).

Performance Standard. The student is introduced the MV-22 APU and fire protection systems.

Prerequisite. ACAD-0104

LAB-0209      4.0      \*      B,T      S      1 FFS/FTD

## Weight and Balance Lab

Goal. Introduce aircraft weight and balance calculations.

Requirements

1. Introduce:
  - a. Weight and Balance on CMS.
  - b. Cargo Zones.

Performance Standard. Student is introduced to aircraft weight and balance calculations.

Prerequisite. ACAD-0104

LAB-0210	3.0	*	B,T	C/A	CPTT
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Cargo Loading Lab

Goal. Introduce cargo loading procedures.

Requirements

1. Introduce:
  - a. Cargo Loading/Handling Fundamentals.
  - b. Cargo Loading/Handling Provisions.
  - c. Cargo Restraint Criteria.
  - d. Cabin Preparation/Cargo Load.

Performance Standard. Student is introduced to MV-22 cargo loading procedures.

Prerequisite. ACAD-0104

ACAD-0106	12.0	*	B,T	CBT
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Academic Block Six

Goal. The CCUI demonstrates understanding of the listed modules of instruction by successful completion of a computer-based test on the following modules.

1. Modules:
  - a. Drive system.
  - b. VSLED and engine monitoring system.
  - c. Flight control system.
  - d. Hydraulic systems.
  - e. Utility systems.

Performance Standard. Successful completion of computer-based test on all modules. Passing score is 75%.

Prerequisite. ACAD-0105

LAB-0211	3.0	*	B,T	A	1 MV-22
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Proprotor System Lab

Goal. Familiarize the CCUI with V-22 proprotor system.

Requirements

1. Introduce:
  - a. Spinner Assembly.

- b. Fairing Assembly.
- c. Blade Assembly.
- d. Pendulum Damper Assembly.
- e. Proprotor Hub Assembly.
- f. Rotating Controls.

Performance Standard. Student is introduced to the MV-22 proprotor system.

Prerequisite. ACAD-0105

LAB-0212	6.0	*	B,T	S	1	FFS/FTD
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Hydraulics, engine start, and EAPS Lab

Goal. Introduce use of hydraulic systems and engine start procedures.

Requirements

- 1. Introduce:
  - a. Hydraulic Systems.
  - b. Hydraulic System Inspection and Operational Check.
  - c. Engine Start Systems.
  - d. Engine Air Particle Separator (EAPS) System.

Performance Standard. Student is introduced to the MV-22 hydraulic systems and engine start procedures.

Prerequisite. ACAD-0105

ACAD-0107	12.5	*	B,T			CBT
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Academic Block Seven

Goal. The CCUI demonstrates understanding of the listed modules of instruction by successful completion of a computer-based test on the following modules.

- 1. Modules:
  - a. Landing gear system.
  - b. Fuel system.
  - c. Aircraft servicing.
  - d. Rotor brake system.
  - e. BFWS system.

Performance Standard. Successful completion of computer-based test on all modules. Passing score is 75%.

Prerequisite. ACAD-0106

LAB-0213	2.0	*	B,T	A	1	MV-22
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Landing gear lab

Goal. Familiarize CCUI with components and operation of the landing gear.

Requirements

- 1. Introduce:

- a. Main Landing Gear.
- b. Nose Landing Gear.
- c. Wheels and Brakes and Emergency Extension.

Performance Standard. Student is introduced with the components and operations of the MV-22 landing gear.

Prerequisite. ACAD-0106

LAB-0214	2.0	*	B,T	A	1	MV-22
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Servicing Lab

Goal. Familiarize CCUI with aircraft servicing procedures.

Requirements

- 1. Introduce:
  - a. Gravity Refuel/Defuel Panel (GRDP) Operation.
  - b. Component Servicing.
    - (1) Engine.
    - (2) APU.
    - (3) SDC.
    - (4) PRGB.
    - (5) TAGB.
    - (6) MWGB.
    - (7) ELS Reservoir.
    - (8) VFG.
    - (9) Hydraulic System Servicing.
    - (10) Tire, Landing Gear, and Accumulator Servicing.

Performance Standard. Student is introduced to MV-22 aircraft servicing procedures.

Prerequisite. ACAD-0106

LAB-0215	11.0	*	B,T	S	1	FFS/FTD
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INTRO to BFWS Lab

Goal. Familiarize CCUI with operation of the APU and BFWS systems.

Requirements

- 1. Introduce:
  - a. Blade Fold/Wing Stow (BFWS) Major Components.
  - b. Blade Fold/Wing Stow (BFWS) Operation.

Performance Standard. Student is introduced to MV-22 BFWS system.

Prerequisite. ACAD-0106

LAB-0216	6.0	*	B,T	A/S	1	MV-22
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BFWS Lab

Goal. Familiarize CCUI with components and operation of the APU and BFWS system.



Requirements

1. Practice:

- a. Blade Fold/Wing Stow (BFWS) Major Components.
- b. Blade Fold/Wing Stow (BFWS) Operation.

Performance Standard. Student practices to attain proficiency with APU and BFWS operations.

Prerequisite. ACAD-0106

ACAD-0108	22.0	*	B,T			CBT
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Academic Block Eight

Goal. The CCUI demonstrates understanding of the listed modules of instruction by successful completion of a computer-based test on the following modules.

Requirements

1. Modules:

- a. Plane captain responsibilities.
- b. Performance of daily and turnaround inspections.
- c. Fuel sampling.

Performance Standard. Successful completion of computer-based test on all modules. Passing score is 75%.

Prerequisite. ACAD-0107

LAB-0217	40.0	*	B,T	A	1	MV-22
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Introduction to Plane Captain responsibilities

Goal. Familiarize CCUI with procedures for daily and turnaround inspections and with responsibilities associated with the designation of Plane Captain.

Requirements

1. Introduce:

- a. Duties and responsibilities of a Plane Captain.
- b. Daily inspection procedures.
- c. Turnaround inspection procedures.

Performance Standard. Student is introduced to Plane Captain responsibilities.

Prerequisite. ACAD-0107

ACAD-0109	17.0	*	B,T			CBT
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Academic Block Nine

Goal. The CCUI demonstrates understanding of the listed modules of instruction by successful completion of a computer-based test on the following modules.

Requirements

1. Modules:

- a. Crew Chief ground procedures.

- b. Crew Chief emergency procedures.
- c. ALSS equipment.
- d. Crew Chief in-flight duties.

Performance Standard. Successful completion of computer-based test on all modules. Passing score is 75%.

Prerequisite. ACAD-0108

LAB-0218	5.0	*	B,T	A	1	MV-22
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Start-up/taxi/shut-down Lab

Goal. Familiarize CCUI with flightline procedures for aircraft start-up, shut-down, and taxi.

Requirements

- 1. Introduce:
  - a. Crew communications.
  - b. Proper hand and arm signals.
  - c. Start-up duties.
  - d. Shutdown duties.

Performance Standard. Student is introduced to MV-22 start-up, taxi, and shut-down procedures.

Prerequisite. ACAD-0108

LAB-0219	2.0	*	B,T	A	1	MV-22
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Mooring Lab

Goal. Familiarize CCUI with aircraft tiedown and securing procedures.

Requirements

- 1. Discuss:
  - a. Weather Conditions.
- 2. Introduce:
  - a. Aircraft Mooring Procedures.
  - b. Proper Aircraft Mooring.

Performance Standard. Student is introduced to MV-22 tiedown and securing procedures.

Prerequisite. ACAD-0108

LAB-0220	4.0	*	B,T			CLSRM
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ALSS equipment Lab

Goal. Familiarize CCUI with ALSS equipment.

Requirements

- 1. Introduce:
  - a. ALSS Equipment.
  - b. ALSS Equipment Inspections.
    - (1) Survival Vest Inspection.

- (2) LPU-34/P Inspection.
- (3) SRU-40/P Helicopter Aircrew Breathing Device (HABD) Pre-Flight/Post Flight.
- (4) HGU-84/8P Flight Helmet Inspection Procedures.
- (5) MBU-23 (V) 8/P Oxygen Mask.
- (6) CRU-103/P Regulator.

Performance Standard. Student is introduced to ALSS equipment and inspection criteria.

Prerequisite. ACAD-108

LAB-0221	4.0	*	B,T	C/A	CPTT
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Emergency procedures Lab

Goal. Familiarize CCUI with aircraft emergency equipment, survival equipment, and its use.

Requirements

1. Discuss:
  - a. Aviate, Navigate, Communicate.
  - b. Terminology and Emergency Procedures.
  - c. Landing Criteria.
  - d. Memory Items.
  - e. Crew chief Emergency Equipment.
2. Introduce:
  - a. Crew chief Ground Emergency Procedures.
    - (1) Aircraft Fire.
    - (2) Wheel Brake Overheat/Fire.
  - b. Crew chief In-Flight Emergency Procedures
    - (1) Fuselage Fire In-Flight.
    - (2) Smoke and Fume Elimination.
  - c. Crew chief Landing Emergency Procedures.
    - (1) Emergency Landing.

Performance Standard. Student is introduced to aircraft emergency equipment and emergency procedures.

Prerequisite. ACAD-0108

LAB-0222	2.0	*	B,T	A	1	MV-22
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Mission preparation/Briefing Lab

Goal. Familiarize CCUI with procedures for flight preparation.

Requirements

1. Introduce:
  - a. Pre-Flight procedures.
    - (1) Gear Checkout.

- (a) Tools.
- (b) Flight Gear.
- (2) Cabin Preparation.
- (3) Time Management.
- (4) Pre-flight Checklists.
- (5) ODO Brief.

b. Passenger Briefing Guide.

Performance Standard. Student is introduced to flight preparation procedures.

Prerequisite. ACAD-0108

ACAD-0110    4.0    \*    B,T    CLSRM

Crew Resource Management (CRM) Initial

Goal. The CCUI understands the Risk and Resource Management (RRM) model and how the icons, processes, and seven principles apply to Crew Resource Management.

Requirements

- 1. Discuss:
  - a. Seven principles.
  - b. RRM model.
    - (1) Icons and processes.
    - (2) Available resources.
    - (3) Decision model.

Performance Standard. Student receives initial CRM training.

Instructor. Crew Resource Management Instructor (CRMI).

ACAD-0111    8.0    \*    B,T    CLSRM

Night Imaging and Threat Evaluation (NITE) Lab

Goal. The CCUI is introduced to the night environment, utilization of NVD's, and light discipline.

Requirement. Per NITE lab syllabus.

Performance Standard. Per NITE lab syllabus.

Instructor. AMSO/AMSC.

3.10    CORE SKILL INTRODUCTION PHASE

3.10.1    General. The purpose is to develop a Core Skill Introduction phase complete crew chief. At the completion of this phase the CCUI will be a NATOPS qualified crew chief and rate the 6176 MOS as specified in RQD-6030. All cockpit trainer, simulator, and flight events require an ATF.

3.10.1.1    Stages. The following stages are included in the Core Skill Introduction Phase of training.

Par No.	Stage Name
3.10.2	Familiarization (FAM)
3.10.3	Instrument (INST)
3.10.4	Confined Area Landing (CAL)
3.10.5	Formation (FORM)
3.10.6	Low Altitude Training (LAT)
3.10.7	Night Systems (NS)
3.10.8	CARGO
3.10.9	Requirements, Qualifications, Designations (RQD)

ROC will be per the T&R Program Manual.

An FRSCCI is required on all 1000 phase events.

### 3.10.2 Familiarization (FAM)

3.10.2.1 Purpose. To introduce the crew chief to the initial flight stage of training and the requirements associated with it. Focus of Effort (FOE): aircraft preparation, aircrew callouts, and NATOPS Chapters: 2, 4, 7, 11, & 12.

3.10.2.2 General. Aircrew may fly these events in conjunction with the pilot syllabus. Aircrew shall complete all day FAM stage flights prior to flying any subsequent flights.

Crew requirements. P/P/CC or CCI/CCUI. A CCI shall instruct the CCUI during all simulator flights.

Prerequisite. Aircrew must complete their physical, Naval Aviation Water Survival Training Program (NAWSTP), and Naval Aviation Physiology Training Program (NAPTP) prior to beginning flight training.

ACAD-1010 1.0 \* B,T CLSRM

Goal. The CCUI should have an introductory knowledge of the training syllabus for the familiarization stage and gain familiarity with the expectations and performance standards.

#### Requirements

##### 1. Discuss:

##### a. Introduction.

- (1) Purpose/FOE of the syllabus.
- (2) Syllabus outline and flow.
- (3) Applicable publications.
- (4) CCUI performance expectations.

##### b. Squadron scheduling.

- (1) Squadron distribution of flight schedule.

Performance Standard. Student is introduced to FAM stage of training.

Prerequisite. Completion of MV-22 crew chief ground school.

ESFAM-1032 2.0 \* B,T S 1 FFS/FTD FRSCCI

Goal. Introduce the crew chief to positioning and responsibilities during pre-start checks, weight and balance computations, frequency changes, engine start, and taxi.

#### Requirements

##### 1. Discuss:

- a. CMS weight and balance operations.
  - b. Crew chief responsibilities during pre-start.
  - c. Crew chief responsibilities during engine start.
  - d. Crew resource management.
2. Introduce:
- a. Conduct cockpit pre-entry through All-Start checklist using CMS.
  - b. Weight and balance scenarios.
  - c. Crew positions and hand-and-arm signals and ICS and crew coordination call-outs during:
    - (1) All-Start checklist.
    - (2) Engine start.
    - (3) Taxi.
    - (4) Frequency changes on CMS.

Performance Standards

- 1. Use the CMS to successfully complete 3 weight and balance scenarios.
- 2. Use NATOPS PCL to conduct pre-start checks in CMS.
- 3. Input 2 frequency changes using the CMS.

Prerequisite. ACAD-1010.

ESFAM-1033	2.0	*	B,T	S	1	FFS/FTD FRSCCI
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Goal. Introduce crew chief responsibilities and call outs during FAM maneuvers in a day environment.

Requirements

- 1. Discuss:
  - a. Standard operating procedures and local command procedures for airfield facilities, pattern description and radio/ICS calls.
  - b. Crew chief call outs.
  - c. Crew day and crew rest.
- 2. Introduce:
  - a. Crew chief calls and positions during:
    - (1) Takeoff.
      - (a) Vertical.
      - (b) STO.
      - (c) RTO.
    - (2) Pattern work and approaches.
  - b. ICS procedures.
  - c. Stat checks.

Performance Standards

- 1. Respond to ICS command prompts in a timely manner.

2. Recite all crew chief emergency procedures verbatim.

Prerequisite. ESFAM-1032

FAM-1043	2.0	*	B,T	A	1	MV-22 FRSCCI
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Goal. Introduce crew chief responsibilities and call outs during aircraft start-up and FAM maneuvers in a day environment.

Requirements

1. Discuss:
  - a. Firefighting equipment operation.
  - b. Hand and arm signals for Turn-up & Taxi, aircraft fires, and hot brakes.
  - c. Aircraft fires on the ground, abnormal starts, and emergency shutdown procedures.
  - d. Cabin configuration.
  - e. Standard traffic calls (clock code, high, level, low, factor or no-factor).
2. Demonstrate:
  - a. Proper pre-start, start, taxi, air taxi, pre takeoff, after takeoff, landing, and shutdown procedures IAW NATOPS Pocket Check List (PCL).
3. Introduce:
  - a. Pre-flight and post-flight inspections.
  - b. Systems troubleshooting through use of the Cockpit Management System (CMS).
  - c. Aircraft start-up and shutdown.
  - d. Taxi procedures.
  - e. Lookout doctrine and areas of responsibility.
  - f. Hover work.
  - g. Patterns/approaches in CONV mode.
  - h. Landing profiles.
  - i. Distance estimation.
  - j. Upper crew door operation/limitations.
  - k. ICS operation/procedures.
  - l. Fueling operations.
4. Practice:
  - a. Crew chief calls and positions introduced in ESFAM-1033.
  - b. ICS procedures.
  - c. Standard terminology.
5. Expose:
  - a. APLN flight.
6. Emergencies:

- a. Electrical system failure(s).
- b. Ground emergencies.

Performance Standards

- 1. Perform crew chief duties and required calls during pre-start, start, taxi, air taxi, pre takeoff, after takeoff, landing, and shutdown IAW applicable publications.
- 2. Be able to state indications, execute/recite memorized items and exercise proper crew coordination during simulated emergency procedures.
- 3. Position fire bottle and self to conduct an aircraft start-up.

Prerequisite. SFAM-1033

FAM-1044	1.5	*	B,T	A	1	MV-22 FRSCCI
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Goal. Review crew chief duties during FAM maneuvers in a day environment. Introduce transition to airplane mode and conversion mode maneuvers.

Requirements

- 1. Discuss:
  - a. Time management and procedures as they apply to aircraft preparation and crew chief readiness for:
    - (1) Flight brief.
    - (2) Pre-flight/hotseat.
  - b. Aircraft limitations pertaining to STOs and ROLs.
  - c. Cabin preparation for airplane mode.
  - d. Safety precautions and procedures for servicing and troubleshooting while rotors are turning.
  - e. Ramp operations and limitations during ground and flight operations.
  - f. Crew Resource Management.
- 2. Introduce:
  - a. Cabin preparation for APLN mode/upper crew door operation.
  - b. Transition/conversion.
- 3. Practice:
  - a. Preflight and post flight inspections.
  - b. Aircraft startup/shutdown procedures.
  - c. Taxi procedures.
  - d. Lookout doctrine and areas of responsibility.
  - e. ICS procedures.
  - f. Standard terminology.
- 4. Expose:
  - a. Max gross weight takeoff and landing.
  - b. Steep approach.



- c. No hover landing.
- 5. Emergencies:
  - a. Hydraulic System failures.

Performance Standards

1. Perform crew chief duties and required calls during pre-start, start, taxi, pre takeoff, after takeoff, landing, and shutdown IAW applicable publications.
2. Be able to state indications, execute/recite memorized items and exercise proper crew coordination during simulated emergency procedures.
3. Conduct aircraft preflight or post-flight inspection.
4. Operate ramp and ramp door from all control stations.
5. Proper management and manipulation of upper crew door.

Prerequisite. FAM-1043

FAM-1045	1.5	*	B,T	A	1	MV-22 FRSCCI
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Goal. Introduce airplane mode maneuvers.

Requirements

1. Discuss:
  - a. Lookout doctrine during APLN mode.
  - b. Standard rate turns in APLN mode.
  - c. Airsickness.
2. Introduce:
  - a. Use of oxygen mask.
3. Practice:
  - a. Pre-flight/post-flight inspection requirements.
  - b. Aircraft startup/shutdown procedures.
  - c. Lookout doctrine and areas of responsibility.
  - d. Cabin preparation for airplane mode/upper crew door operation.
  - e. ICS procedures.
  - f. Standard terminology.
  - g. Crew Resource Management.
4. Emergencies:
  - a. Cabin Fire in Flight.

Performance Standards

1. Perform crew chief duties and required calls during pre-start, start, taxi, air taxi, pre takeoff, after takeoff, landing, and shutdown IAW applicable publications.
2. Be able to state indications, execute/recite memorized items and exercise proper crew coordination during simulated emergency procedures.

3. Conduct a timely and thorough preflight inspection/hotseat and ensure proper cabin configuration prior to flight.
4. Provide pilots with clear and concise traffic/clearance calls using proper ICS terminology.
5. Perform crew duties in APLN mode with use of oxygen mask.
6. Proper management and manipulation of the upper crew door.

Prerequisite. FAM-1044

FAM-1046	1.5	*	B	A	1	MV-22 FRSCCI
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Goal. Introduce airplane mode maneuvers (continued from FAM1045).

Requirements

1. Discuss:
  - a. Safety regulations and required flight/safety equipment for passengers, combat troops, and litter patients over land and water.
  - b. Passenger briefing.
  - c. Location and purpose of AOA and FFR indicators on MFD.
2. Introduce:
  - a. Various takeoff and landing profiles.
    - (1) STO.
    - (2) RTO.
    - (3) ROL.
2. Practice:
  - a. Weight and balance entries utilizing CMS.
  - b. ICS procedures.
  - c. Standard terminology.
  - d. Crew Resource Management.
3. Emergencies:
  - a. Drive System malfunctions.
  - b. Gearbox failure (Warning).
  - c. ICDS failure (Warning).
  - d. Feathering/Flapping High Hot.
  - e. Rotor Load High.
  - f. PRGB/TAGB/MWGB Hot.

Performance Standards

1. Perform crew chief duties and required calls during pre-start, start, taxi, pre takeoff, after takeoff, landing, and shutdown IAW applicable publications.
2. Be able to state indications, execute/recite memorized items and exercise proper crew coordination during simulated emergency procedures.
3. Perform a passenger brief with CCI.

4. Perform proper weight and balance entries via CMS.

Prerequisite. FAM-1045

FAM-1047	1.5	*	B,T	A	1	MV-22 FRSCCI
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Goal. Introduce slow flight airplane mode maneuvers, high AOB turns, and power on/off stalls.

Requirement. CCUI to act in the capacity of the crew chief.

1. Discuss:
  - a. Lookout responsibilities.
  - b. Crew resource management.
  - c. Aircraft stall characteristics, practice stall limitations, and crew chief positions during practice stalls.
  - d. Single Engine Profile.
2. Introduce:
  - a. Cabin preparation for practice stalls.
3. Practice:
  - a. Various takeoff and landing profiles.
  - b. ICS procedures.
  - c. Standard terminology.
4. Expose:
  - a. Slow flight in airplane mode.
  - b. High AOB turns in airplane mode (>45 degrees AOB).
  - c. Practice stalls.
5. Emergencies:
  - a. Single Engine Failure in Hover.
  - b. Single Engine Failure in Flight.
  - c. Avionics cautions.
  - d. Rotor Brake on Caution.

Performance Standards

1. Perform crew chief duties and required calls during pre-start, start, taxi, pre takeoff, after takeoff, landing, fueling and shutdown IAW applicable publications.
2. Be able to state indications, execute/recite memorized items and exercise proper crew coordination during simulated emergency procedures.

Prerequisite. FAM-1046

FAM-1048	1.5	*	B	A	1	MV-22 FRSCCI
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Goal. Review previously introduced FAM procedures and flight control emergency procedures.

Requirement. Review FAM procedures/crew chief emergency procedures.

1. Introduce:

- a. ELP.
- 2. Review:
  - a. Various takeoff and landing profiles.
  - b. CONV and APLN patterns.
  - c. ICS procedures.
  - d. Standard terminology.
- 3. Emergencies:
  - a. Dual Engine failure.
  - b. Fuel System Cautions.

Performance Standards. All previously listed performance standards from FAM-1043 through FAM-1047.

Prerequisite. FAM-1047

FAM-1049	1.5	*	B,T	A	1	MV-22 FRSCCI
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Goal. FAM stage progress check.

Requirement. Review all normal and emergency procedures in stage.  
Demonstrate knowledge of aircraft systems.

- 1. Evaluate:
  - a. Pre-flight and post-flight inspections.
  - b. CMS power up.
  - c. Aircraft start-up and shutdown procedures.
  - d. Taxi.
  - e. Takeoff landing profiles.
  - f. CONV and APLN patterns.
  - g. Fueling.
  - h. Lookout doctrine and areas of responsibilities.
- 2. Emergencies:
  - a. Any major system EP.

Performance Standards

- 1. Perform all crew chief duties from engine start-up to shutdown in accordance with MDG, NATOPS, and SOPs.
- 2. Complete a verbal or written systems knowledge exam.

Prerequisite. FAM-1048

FAM-1051	1.0	*	B	N*	A	1	MV-22 FRSCCI
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Goal. Introduce night unaided FAM maneuvers. May be flown in conjunction with pilot Instrument flight.

Requirements

- 1. Discuss:
  - a. Crew day/crew rest.
  - b. MV-22 lighting systems (internal and external).

- c. Airfield lighting.
- d. CRM.
- e. Light discipline.
- 2. Demonstrate:
  - a. Use of cabin lighting, ICS control panel lighting, and Emergency Egress Lighting System (EELS).
- 3. Practice:
  - a. Preflight.
  - b. Starting.
  - c. Taxi.
  - d. FLIR operation.
  - e. Fueling.
  - f. Shutdown.
  - g. Post-flight procedures.
- 4. Emergencies:
  - a. Cabin Fire in Flight.
  - b. Smoke and Fume Elimination.

Performance Standards

- 1. Maintain a high level of situational awareness.
- 2. Use cabin lighting or calls for external lighting to aid in specific tasks.
- 3. Provide accurate and timely distance estimation calls during landing.

Prerequisite. FAM-1049

3.10.3 Instrument Flight (INST)

3.10.3.1 Purpose. To expose the CCUI to the instrument environment, increase their overall knowledge of the CMS and reinforce the importance of CRM. FOE: use of CMS and aircrew coordination.

3.10.3.2 General. Initial Instrument flights will be flown with a CCI. INST-1234 may be flown in conjunction with any pilot instrument flight. If flown in the simulator at least one pilot or CSI is required. All manipulation of the CMS will be done by, or performed under the direction of, the pilot or CSI.

Crew Requirement. P/P/CC or CCI/CCUI

ACAD-1210	1.0	*	B,T	CLSRM
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Goal. To introduce the CCUI to the training syllabus for the Instrument phase.

Requirements

- 1. Discuss:
  - a. Introduction
    - (1) Purpose of the syllabus.
    - (2) Syllabus events.

- (3) Applicable publications.
- (4) CCUI performance expectations.
- b. Aircraft navigation equipment and systems
  - (1) Navigation equipment.
    - (a) VOR.
    - (b) TACAN.
    - (c) ENAV.
    - (d) INAV - GPS/INS.
  - (2) Minimum aircraft equipment requirements.
- c. Crew integration during instrument and navigation flight
  - (1) In-flight publications.
  - (2) Use of FDP.
  - (3) Fuel management.

Performance Standard. Student is introduced to the Instrument stage training syllabus.

Prerequisite. FAM-1049

INST-1234	2.0	*	B,T	(N*)	A/S	1	MV-22 FRSCCI
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Goal. Introduce crew chief duties during instrument flight. All manipulation of the CMS will be done by, or performed under the direction of, the pilot or CSI.

Requirements

- 1. Discuss:
  - a. Navigation systems to include INAV, ENAV, TACAN, and the flight director panel.
  - b. CMS/DMS features and navigation information.
  - c. Lookout doctrine, monitoring radios.
  - d. Spatial disorientation/vertigo.
  - e. CRM as it pertains to crew chief CMS inputs.
- 2. Demonstrate:
  - a. Flight director panel inputs.
  - b. IFF transponder code changes.
  - c. TACAN frequency changes.
  - d. Use of publications to include approach plates and IFR sectionals.

Performance Standards

- 1. CCUI maintains situational awareness on radio traffic and ATC compliance.
- 2. CCUI assists pilots with lookout doctrine.
- 3. CCUI familiar with CMS/moving map features.

Prerequisites. FAM-1051(if flown at night), ACAD-1210

### 3.10.4 Confined Area Landings

3.10.4.1 Purpose. To develop proficiency in performing single aircraft takeoffs and landings in confined areas in day VMC. FOE: CAL patterns, unimproved surface landings, scan, and aircrew callouts.

Crew Requirement. P/P/CC or CCI/CCUI.

ACAD-1310	1.0	*	B,T			CLSRM
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Goal. Be able to comprehend and understand the concepts of CALS and tactical approaches to an unimproved surface. Be able to understand the relationship of the CMS and aircraft unique systems and setup interrelated to the CAL environment.

#### Requirements

1. Discuss:
  - a. Introduction
    - (1) Syllabus description.
    - (2) Performance standards, CAL pattern CONV/APLN.
      - (a) Tactical Approaches.
      - (b) Hover/No-Hover Landings.
      - (c) CAL Departures.
      - (d) LZ Selection.
      - (e) Use of Interim Power.
      - (f) Use of FLIR.
      - (g) INS/GPS.
      - (h) CRM (Terminology during CAL).
      - (i) Augmented Hover CPLD.
      - (j) Reduced Visibility Landings (RVLs).

Performance Standard. Student is introduced to Confined Area Landings and Tactical Approaches.

Prerequisite. FAM-1049

CAL-1332	2.0	*	B,T	A	1	MV-22 FRSCCI
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Goal. Introduce CALs at various sites.

#### Requirements

1. Discuss:
  - a. Standard terminology and Crew positions and responsibilities during CALs.
  - b. Lookout doctrine.
  - c. Proprotor, Nacelle, and lower fuselage to obstacle clearance.
  - d. Uneven/sloped terrain.
  - e. LZ suitability.
  - f. Normal vs. Steep glide slopes.
  - g. Brown out/White out procedures.

- h. Interim Power.
- i. Tactical straight-in approach.
- j. 80 jump takeoff.
- k. CONV landing pattern.
- 2. Introduce:
  - a. LZ selection and evaluation.
  - b. Distance estimation.
  - c. Wave-off.
  - d. Direct pilots to avoid obstacles.
  - e. Drift correction.
- 3. Emergencies:
  - a. PRGB/TAGB/MWGB HOT.

Performance Standards

- 1. Establish suitability of LZ through communication with pilots.
- 2. Recognize and communicate any excessive closure rates and lateral or rearward drift during landings. Communicate obstacles and hazards in LZ.
- 3. Perform CC duties during approaches, landings and departures to a confined area (minimum 4 or until proficient).

Prerequisite. ACAD-1310.

3.10.5 Formation (FORM)

3.10.5.1 Purpose. To develop proficiency in cruise formation, rendezvous procedures and execution of formation maneuvers. FOE: V-22 formation fundamentals in CONV and APLN flight.

3.10.5.2 General. CCUI observes and assists the CCI for the initial 0.5 hour of the flight, then for the remainder of the flight acts in the capacity of crew chief under the supervision of a designated CCI.

Crew Requirements. P/P/CC/AO OR CCI/CCUI

ACAD-1410	1.0	*	B,T	CLSRM
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Goal. To introduce the CCUI to the training syllabus for the Formation phase. The following will be discussed: FORM syllabus, performance standards, CONV and APLN Cruise positions and conduct of FORM flights.

Requirements

- 1. Discuss:
  - a. Introduction
    - (1) Purpose of Formation.
    - (2) Syllabus description.
    - (3) Required readings.
    - (4) Performance standards.
  - b. Cruise Formation.



- c. AFCS saturation due to wake interference.
- d. Sequence of Flight.
- e. Aircrew Responsibilities and Callouts.

Performance Standard. Student is introduced to the FORM stage of training.

Prerequisite. FAM-1049

FORM-1432	2.0	*	T	A	2	MV-22 FRSCCI
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Goal. Introduce cruise formation in the aircraft.

Requirements

1. Discuss:
  - a. Cruise positions.
  - b. Closure rate and crew comfort levels.
  - c. Standard terminology and crew positions during formation flight.
  - d. Aircrew responsibilities during formation flights.
  - e. IIMC fan break.
  - f. Over-run/under-run.
  - g. Roll-off and wake turbulence(burble).
2. Introduce:
  - a. Formation lookout doctrine.
  - b. Crew responsibilities and positions.
  - c. Running/carrier rendezvous.
  - d. Lead changes.
  - e. Formation landings.

Performance Standards

1. Provide pilot with accurate and timely information on the position of wingman using standard terminology.
2. Perform CC duties during formation flight with a minimum of 3 landings as lead to an improved surface or a CAL site.
3. Recognize and communicate and excessive closure rates and any drift during landing evolutions.

Prerequisites. CAL-1332, ACAD-1410.

3.10.6 Low Altitude Tactics (LAT)

3.10.6.1 Purpose. To develop proficiency in LAT maneuvers with emphasis on the importance of crew coordination, comfort level, and common terminology. FOE: LAT maneuvers, lookout doctrine, and crew comfort level.

3.10.6.2 General

Maneuver descriptions may be found in the MV-22 Air Naval Tactics, Techniques, and Procedures (NTTP) manual and the MV-22 Flight training Manual.

Currency and altitudes are established and listed in the T&R Program Manual.

The entire flight crew shall brief together for each flight.

Crew Requirement. P/P/CC/AO or CCLATI/CCUI

ACAD-1510    1.0    \*    B,T    CLSRM CCLATI

Goal. To prepare the CCUI for the LAT stage of the curriculum.

Requirement.

1. Discuss:
  - a. Purpose of LAT.
  - b. Syllabus description
    - (1) CCUI expectations.
  - c. Required readings.
  - d. Performance standards.
2. Introduce:
  - a. LAT Philosophy, definitions, and Rules of Conduct.
  - b. LAT Training Considerations.
  - c. LAT Techniques and procedures.

Performance Standard. Student is introduced to the LAT stage of training.

Prerequisite. FAM-1049

LAT-1531    1.5    \*    B,T    A    1 MV-22    FRSCCI/CCLATI

Goal. Introduce LAT maneuvers and crew chief duties in the LAT environment.

Requirement

1. Discuss:
  - a. Standard terminology.
  - b. LAT rules of conduct.
  - c. Physiological considerations.
    - (1) Airsickness.
    - (2) Crew comfort level.
  - d. CRM.
  - e. Lookout doctrine and obstacle clearance.
  - f. Hazards (birds, wires, towers, etc.).
  - g. Cockpit scan.
  - h. Required aircraft equipment.
  - i. Bunt maneuver.
  - j. Roll maneuver.
  - k. Level quick stop.
  - l. Zoom climb maneuver.
  - m. LAT dive recovery.
2. Introduce:
  - a. APLN Mode Maneuvers.

- b. Converting Turn Maneuver.
- 3. Expose:
  - a. Inertia Maneuver.
  - b. Max angle of climb maneuver.
  - c. Climb to dive maneuver.

Performance Standards

- 1. Use of standard terminology.
- 2. Maintain good lookout doctrine, situational awareness, and clear aircraft of obstacles during all maneuvers.
- 3. Demonstrate good situational awareness during all phases of flight.

Prerequisite. CAL-1332, ACAD-1510

LAT-1532	1.5	*	B,T	A	1	MV-22	FRSCCI/CCLATI
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Goal. Introduce navigation in the LAT environment (airplane mode).

Requirements

- 1. Discuss:
  - a. Aircrew duties during LAT navigation.
  - b. Lookout doctrine.
  - c. FLIR, DIGMAP, and INAV operations.
  - d. Fuel management considerations.
  - e. Navigation system failures.
  - f. Bird strikes.
  - g. Terrain identification during LAT.
  - h. Navigation techniques.
- 2. Introduce:
  - a. Conduct of a LAT route.
- 3. Review:
  - a. Standard terminology.
  - b. Maneuvers from LAT-1531 as required.

Performance Standards

- 1. Use of standard terminology.
- 2. Maintain good lookout doctrine, situational awareness, and clear aircraft of obstacles during all maneuvers.
- 3. Maintain geographical orientation throughout the navigation route.
- 4. Demonstrate understanding of information provided by the CMS.

Prerequisite. LAT 1531

3.10.7 Night Systems (NS) High Light Level (HLL)

3.10.7.1 Purpose. To provide initial exposure to operations while using night vision goggles under light levels greater than .0022 lux (HLL) as predicted by the Solar/Lunar Almanac Program (SLAP) module. FOE: NVGs and NVG scan/distance estimation.

3.10.7.2 General. All aircraft events require a Crew Chief Night Systems Instructor or Night Systems Familiarization Instructor (CCNSI or CCNSFI) for initial sign-off of student.

Crew Requirement. P/P/CC/AO, CCNSI/CCUI, or CCNSFI/CCUI.

ACAD-1610	1.5	*	B,T				CLSRM NSI/NSFI
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Goal. To prepare the CCUI for the NS stage of the curriculum.

Requirement.

1. Discuss:
  - a. Purpose of NS.
  - b. Syllabus description.
    - (1) CCUI expectations.
  - c. Required readings.
  - d. Performance standards.
2. Introduce:
  - a. NVG Composition.
  - b. NVG Setup and Focusing procedures.
  - c. Light level calendar/SLAP data.

Performance Standard. Student is introduced to NS stage of training.

Prerequisite. FAM-1049

NS-1631	1.5	*	B	NS	A	1	MV-22 NSI/NSFI
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Goal. Introduce HLL NVD FAM maneuvers.

Requirements

1. Discuss:
  - a. NVG Briefing Guide.
  - b. NVG adjustment procedures.
  - c. Aircraft lighting for NVG flight.
  - d. Misperceptions and Illusions.
  - e. Sensor Integration (FLIR/ NVG).
  - f. NVG field of view (FOV) vs. normal FOV.
  - g. Light level calendar/SLAP data.
  - h. MAWTS-1 Night Vision Device (NVD) manual.
2. Introduce:
  - a. Use of NVDs at varying locations under HLL conditions.
  - b. Takeoff and landing profiles.
  - c. CONV and APLN patterns.
3. Practice:
  - a. Use of cabin lighting, ICS control panel lighting, and Emergency Egress Lighting System (EELS).
4. Review:

- a. Pre-flight and post-flight procedures.
- b. Aircraft start-up and shutdown procedures.
- c. Taxi procedures.
- d. Lookout doctrine and areas of responsibility.

Performance Standards

1. Demonstrate the proper procedures for NVG adjustment and preflight.
2. Demonstrate effective NVD scan and callouts.

Prerequisite. FAM 1051, ACAD-1610, ACAD-0111 (NITE LAB)

NS-1633	1.5	*	B,T	NS	A	1	MV-22	NSI/NSFI
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Goal. Introduce night CALs at various CAL sites utilizing NVDs (HLL).

Requirements

1. Discuss:
  - a. NVD briefing guide.
  - b. Use of external lights during CALs.
  - c. Visual illusions during CALs.
  - d. Closure rate during landings.
  - e. Standard calls.
  - f. Night scan/fixation tendencies.
  - g. Distance estimation/relative motion at night.
2. Introduce:
  - a. LZ selection and evaluation.
  - b. Distance estimation using NVDs.
  - c. Waveoff.
  - d. Direct pilots to avoid obstacles.
  - e. Drift correction.
3. Practice:
  - a. Use of NVDs at varying locations under HLL conditions.
4. Review: CAL procedures.

Performance Standards

1. Recognize and communicate any excessive closure rates and lateral or rearward drift during landings. Communicate obstacles and hazards in CAL sites.
2. Demonstrate proficiency in NVD CALs.
3. Perform CC duties during approaches, landings and departures to a confined area (minimum 4 or until proficient).

Prerequisites. CAL-1332, NS-1631

NS-1635	2.0	*	B,T	NS	A	2	MV-22	NSI/NSFI
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Goal. Introduce night formation utilizing NVDs (HLL).

Requirement

1. Discuss:
  - a. NVD briefing guide.
  - b. Aircraft lighting.
  - c. Standard calls.
  - d. Night scan/fixation tendencies.
  - e. Distance estimation/relative motion at night.
  - f. Night formation hazards.
  - g. Moon position in reference to lead aircraft.
  - h. CRM.
2. Review:
  - a. Formation procedures and section landings.
  - b. Use of NVDs at varying locations under HLL conditions.

Performance Standards

1. Provide pilot with accurate and timely information on the position of wingman using standard terminology.
2. Perform CC duties during formation flight with a minimum of 3 landings as lead to an improved surface or a CAL site.
3. Recognize and communicate any excessive closure rates and any drift during landing evolutions.

Prerequisites. FORM-1432, NS-1633

3.10.8 Cargo Operations

2.10.8.1 Purpose. To develop proficiency with cargo operations. FOE: Aircraft setup for different missions, use of aircraft cargo handling equipment, and aircrew coordination during internal and external cargo operations.

3.10.8.2 General. The cargo operations phase will consist of academic instruction, labs conducted in the Cabin Parts Task Trainer (CPTT), and simulator events.

Crew Requirement. P/P/CCI/CCUI. CCI must be EXT-2632 complete in order to conduct SCARGO-1731.

ACAD-1710 1.0 \* B,T CLSRM

Goal. To prepare the CCUI for the Cargo Operations stage of the curriculum.

Requirements

1. Discuss:
  - a. Introduction
    - (1) Cargo handling operations.
    - (2) Syllabus description.
    - (3) Required readings.
    - (4) Performance standards.
  - b. Aircraft cargo handling systems.

- c. Cargo Loading Manual, weight and balance, and restraint.
- d. Equipment preflight and operational checks.
- e. Aircrew/ground crew communications/coordination during cargo operations.

Performance Standard. Student is introduced to CARGO stage of training.

Prerequisite. FAM-1049

ACAD-1711	2.0	*	B,T	C/A	CLSRM
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#### Mission Configurations

Goal. To prepare the CCUI for various mission requirements and aircraft change of role.

#### Requirements

- 1. Introduce:
  - a. Alternate aircraft configurations for roles required in METL.
  - b. Mission equipment for externals, AIE, Airdrop, RGR/MATs, and MEDEVAC.

Performance Standard. Student is introduced to mission configurations and aircraft change of role.

Prerequisite. ACAD-1710

LAB-1720	2.0	*	B,T	C/A	CPTT	FRSCCI
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#### Internal Cargo Operations

Goal. To prepare the CCUI for operation of cargo systems used in internal cargo operations.

#### Requirement

- 1. Demonstrate:
  - a. Use of cargo loading systems.
  - b. Use of Cargo Loading Manual and restraint procedures.

Performance Standard. Student is introduced to internal cargo operations.

Prerequisite. ACAD-1710

SCARGO-1730	1.5	*	B,T	C/A	CPTT	FRSCCI
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Goal. Introduce internal cargo loading mission requirements and procedures.

#### Requirements

- 1. Discuss:
  - a. Cargo Loading Manual.
  - b. Cabin set-up for different mission profiles.
  - c. Cargo roller rails, guide rails, rail extenders.
  - d. Cargo winch and pulley operations.
  - e. Tie down fittings and Restraint.
  - f. Shoring and floor limitations.
  - g. Approach with load and fuselage clearance procedures.

- h. Hand and arm signals.
- i. HWOOG operations.
- j. Cargo jettison procedures, emergency procedures.
- 2. Demonstrate/Introduce:
  - a. Proper load planning.
  - b. Loading/unloading procedures.
  - c. Proper restraint procedures.
  - d. Weight and Balance computations.

Performance Standards

- 1. Demonstrate knowledge of basic internal cargo procedures.
- 2. Successfully load and restrain simulated loads.

Prerequisite. LAB-1720

3.10.9 Core Skill Introduction Check (REV & RQD)

3.10.9.1 Purpose. To review all areas of instruction and demonstrate proficiency and knowledge of all maneuvers to certify the CCUI as a Core Skill Introduction complete crew chief. FOE: CC check flight.

3.10.9.2 General

A qualified crew chief NATOPS Evaluator / Instructor (CCNE/CCNI/CCANI) shall evaluate the REQ-6030.

The CCUI will demonstrate proficiency in all events within the Core Skill Introduction phase. Upon completion of REQ-6030, the CCUI will be designated a crew chief. REQ-6030 meets the requirements for the 6176 MOS and will serve as the initial NATOPS evaluation.

Crew Requirement. P/P/CC or CCI/CCUI or CCNE,CCNI,CCANI/CCUI

ACAD-6010	3.0	365	B,T,R,M	E	CCNE/CCNI/CCANI
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Open Book NATOPS Examination

Goal. The Open Book Examination shall consist of, but not be limited to the question bank. The purpose of the open book examination portion of the written examination is to evaluate the airman's knowledge of the appropriate publications and the aircraft.

Performance Standard. Achieve a minimum grade of qualified on the Open Book examination.

ACAD-6011	1.0	365	B,T,R,M	E	CCNE/CCNI/CCANI
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Closed Book NATOPS Examination

Goal. The Closed Book Examination shall be limited to the question bank. The purpose of the closed book examination portion of the written examination is to evaluate the airman's knowledge of the concerning normal/emergency procedures and aircraft limitations.

Performance Standard. Achieve a minimum grade of qualified on the Closed Book examination.

Prerequisite. ACAD-6010



ESREV-1830 1.0 \* B E S/A 1 FFS/FTD FRSCCI

Goal. Review emergency procedures, CMS functions, systems knowledge and limitations.

Requirement. Respond to emergencies given to CCUI during period of instruction.

Performance Standards

1. CCUI must verbally respond to simulated emergencies and use systems knowledge to effectively troubleshoot warnings, cautions, and advisories.
2. Proper use of NATOPS pocket checklist.

Prerequisites. Core Skill Intro Complete

ESREV-1831 2.0 \* B (N) S/A 1 FFS/FTD FRSCCI

Goal. Review previous flight maneuvers, day and night.

Requirements

1. Review: The CCUI will be prepared to describe and identify maneuvers from the following stages of training.
  - a. Familiarization.
  - b. Instruments.
  - c. Confined Area Landings.
  - d. Low Altitude Tactics.
  - e. Formation.
  - f. Night Systems.

Performance Standard. Demonstrate proper procedures and execution of all previously introduced maneuvers.

Prerequisites. ESREV-1830

REV-1832 1.5 \* B,T A 1 MV-22 FRSCCI

Goal. Review Core Skill Introduction phase maneuvers.

Requirement. Demonstrate systems knowledge of the MV-22.

1. Review: The CCUI will be prepared to describe and identify maneuvers from the following stages of training.
  - a. Stages of training
    - (1) Familiarization.
    - (2) Instruments.
    - (3) Confined Area Landings.
    - (4) Formation.
    - (5) Night systems.
  - b. Systems knowledge of the MV-22B.

Performance Standard. Act in the capacity of crew chief to be evaluated by a CCI on any maneuver, procedure, or terminology previously introduced during Core Skill Introduction phase of training.

Prerequisite. ESREV-1831

ACAD-6012 3.0 365 B,T,R,M E CLSRM CCNE/CCNI/CCANI

Oral NATOPS Examination

Goal. The Oral shall consist of, but not be limited to the question bank. The evaluator may draw upon their experience to propose questions of a direct and positive manner and in no way be opinionated to evaluate the airman's knowledge of the concerning normal/emergency procedures, aircraft limitations, and performance.

Performance Standard. Achieve a minimum grade of qualified on the Oral examination.

Prerequisite. ACAD-6011

RQD-6030 1.5 365 B,T,R,M E A 1 MV-22 CNE/CCNI/CCANI

Goal. To certify the CCUI as a tiltrotor crew chief.

Requirement. Demonstrate systems knowledge of the MV-22, comply with all NATOPS and maintenance SOP's, and respond to any emergencies given by the CCI.

Performance Standards

1. Brief and demonstrate proficiency of aircraft emergency procedures per the MV-22 NATOPS Flight Manual.
2. Act in the capacity of the crew chief to be evaluated by a CCNE/CCNI/CCANI on any maneuver, procedure, or terminology

previously introduced during Core Skill Introduction phase of training.

Prerequisite. REV-1832, ACAD-6012

3.11 CORE SKILL PHASE

3.11.1 Purpose. This phase of training is designed to enable aircrew to obtain proficiency in core skills. Core skills are designed to provide the fundamental, environmental, or conditional capabilities to perform the basic functions of the VMM. These core skills will allow crews to progress to the more complex mission skills.

3.11.2 General

3.11.2.1 Stages. The following stages are included in the Core Skill Phase of training.

Par No.	Stage Name
3.11.3	Familiarization (FAM)
3.11.4	Confined Area Landing (CAL)
3.11.5	Formation (FORM)
3.11.6	Low Altitude Training (LAT)
3.11.7	Night Systems (NS) High Light Level (HLL)
3.11.8	Night Systems (NS) Low Light Level (LLL)
3.11.9	Tail Gunnery (TG)
3.11.10	Aerial Delivery (AD)
3.11.11	Mountain Area Training (MAT)
3.11.12	Ground Threat Reaction (GTR)
3.11.13	Carrier Qualification (CQ)

3.11.3 Familiarization (FAM)

3.11.3.1 Purpose

To prepare the aerial observer student for the flight portion of the core skill phase. Emphasis is placed on flight line safety equipment, aircraft emergency equipment, and flight line procedures.

Additionally, this stage introduces mission auxiliary tank installation and mission utilization to both the crew chief and aerial observer. The only events in this stage that apply to crew chiefs are the ACAD-2012 and LAB-2020. All other events are for AOs only.

General. The CCUI must be NATOPS qualified as a crew chief prior to beginning this stage of training.

ACAD-2010    4.0    \*    A    CLSRM

Crew Resource Management (CRM) Initial

Goal. The AOUI understands the Risk and Resource Management (RRM) model and how the icons, processes, and seven critical skills apply to Crew Resource Management.

Requirements

1. Discuss:
  - a. Seven critical skills.
  - b. RRM model
    - (1) Icons and processes.
    - (2) Available resources.
    - (3) Decision model.

Performance Standard. Student is provided initial CRM training IAW Naval Safety Center curriculum.

Instructor. CRMI or CRMF

ACAD-2011    8.0    \*    A    CLSRM

Night Imaging and Threat Evaluation (NITE) Lab

Goal. The AOUI is introduced to the night environment, utilization of NVD's, and light discipline.

Requirement. Per NITE lab syllabus

Performance Standard. Per NITE lab syllabus

Instructor. AMSO/AMSC

ACAD-2012    1.0    \*    B,T,A    CLSRM

MV-22 Air-to-Air Refueling

Goal. The CCUI/AOUI has a familiarity with air-to-air refueling procedures in the MV-22.

Requirement. Utilize MAWTS-1 courseware

Performance Standard. Student is introduced to aerial refueling procedures.

Instructor. BICC

Required Reading. NATOPS Ch 4, 12, MAWTS-1 NVD Manual Ch 18

LAB-2020      2.0      \*      B,T,A      A      1      MV-22

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Mission Auxiliary Tank Lab

Goal. The CCUI/AOUI has an introductory knowledge of the installation and set-up of the MV-22 MATs.

Requirement. IAW IETMS

Performance Standard. Student is introduced to installation procedures for Mission Auxiliary Tanks.

Instructor. BICC

Required Reading. NTTP Ch 6, 9

LAB-2021      1.0      \*      A      A      1      MV-22

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Flightline Fire Extinguisher Lab

Goal. Familiarize AOUI with operation and inspection of flightline fire bottles.

Requirement.

1. Discuss:
  - a. Preflight procedures and operation.
2. Introduce:
  - a. Hand and arm signals for aircraft fire.
  - b. Preflight, positioning, and operation of levers and pins.
  - c. Hazardous materials, i.e. HALON.

Performance Standard. Demonstrate fire bottle preflight inspection and operating procedures.

Instructor. BICC

LAB-2022      1.0      \*      A      A      1      MV-22

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Ingress/Egress Lab

Goal. Familiarize AOUI with squadron procedures for flight. Complete required V-22 Egress.

Requirements

1. Discuss:
  - a. Flight equipment checkout.
2. Introduce:
  - a. V-22 Egress.

Performance Standard. Execute the V-22 egress procedures without reference or coaching.

Instructor. NI/ANI

LAB-2023      1.0      \*      A      A      1      MV-22

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Start-up/taxi/shut-down Lab

Goal. Familiarize AOUI with flightline procedures for aircraft start-up, shut-down, and taxi.

Requirement

1. Introduce:
  - a. CRM.
  - b. Standard terminology.
  - c. Safety considerations.
  - d. Hand and arm signals.

Performance Standard. Student is introduced to aircraft start-up, shut-down, and taxi.

Instructor. BICC

LAB-2024	2.0	*	A	A	1	MV-22
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Mooring Lab

Goal. Familiarize AOUI with aircraft tiedown and securing procedures.

Requirements

1. Discuss:
  - a. Weather considerations.
2. Introduce:
  - a. Aircraft Mooring Procedures.
  - b. Proper Aircraft Mooring.

Performance Standard. Student is introduced to MV-22 tiedown and securing procedures.

Instructor. BICC

Required Reading. NATOPS Ch 3

LAB-2025	2.0	*	A			CLSRM
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ALSS equipment Lab

Goal. Familiarize AOUI with ALSS equipment.

Requirements

1. Introduce:
  - a. ALSS Equipment.
  - b. ALSS Equipment Inspections
    - (1) Survival Vest Inspection.
    - (2) LPU-34/P Inspection.
    - (3) SRU-40/P Helicopter Aircrew Breathing Device (HABD) Pre-Flight/Post Flight.
    - (4) HGU-84/8P Flight Helmet Inspection Procedures.
    - (5) MBU-23 (V) 8/P Oxygen Mask.
    - (6) CRU-103/P Regulator.

Performance Standard. Student is introduced to ALSS equipment and inspection criteria.

Instructor. BICC

LAB-2026    2.0    \*    A    A    1    MV-22

Emergency procedures Lab

Goal. Familiarize AOUI with aircraft emergency equipment and its use.

Requirements

1. Discuss:
  - a. Aviate, Navigate, Communicate.
  - b. Terminology and Emergency Procedures.
  - c. Landing Criteria.
  - d. Memory Items.
  - e. Crew chief Emergency Equipment.
2. Introduce:
  - a. Crew chief Ground Emergency Procedures
    - (1) Aircraft Fire.
    - (2) Wheel Brake Overheat/Fire.
  - b. Crew chief In-Flight Emergency Procedures
    - (1) Fuselage Fire In-Flight.
    - (2) Smoke and Fume Elimination.
  - c. Crew chief Landing Emergency Procedures
    - (1) Emergency Landing.

Performance Standard. Student is introduced to aircraft emergency equipment and emergency procedures.

Instructor. NI/ANI

Required Reading. NATOPS Ch 4, 12

FAM-2032    1.0    \*    A    A    1    MV-22

Goal. Introduce crew member responsibilities and calls during aircraft start-up and FAM maneuvers in a day environment.

Requirements

1. Discuss:
  - a. Firefighting equipment operation.
  - b. Hand and arm signals for Turn-up & Taxi, aircraft fires, and hot brakes.
  - c. Aircraft fires on the ground, abnormal starts, and emergency shutdown procedures.
  - d. Cabin configuration.
  - e. Standard traffic calls (clock code, high, level, low, factor or no-factor).
2. Demonstrate:
  - a. Proper pre-start, start, taxi, pre takeoff, after takeoff, landing, and shutdown procedures IAW NATOPS Pocket Check List (PCL).

3. Introduce:

- a. Systems troubleshooting through the use of the Cockpit Management System (CMS).
- b. Aircraft start-up and shutdown.
- c. Taxi procedures.
- d. Lookout doctrine and areas of responsibility.
- e. Hover work.
- f. Air taxi.
- g. Vertical landing from the hover.
- h. Normal approach and landing pattern.
- i. Standard traffic calls.
- j. Squadron SOPs.
- k. IMC/VMC/IFR/VFR.

3. Emergencies:

- a. Electrical system failure(s)
- b. Ground emergencies

Performance Standards

1. Perform crew member duties and required calls during pre-start, start, taxi, pre takeoff, after takeoff, landing, and shutdown IAW applicable publications.
2. State indications, execute/recite memorized items and exercise proper crew coordination during simulated emergency procedures.

Instructor. BICC

Prerequisite. ACAD 2010, 2011, LAB-2021, 2022, 2023, 2025, 2026 (AO).

Required Reading. NATOPS Ch. 2,3,4,12

3.11.4 Confined Area Landings (CAL)

3.11.4.1 Purpose. To develop proficiency in single aircraft through division takeoffs and landings and tactical approaches to confined or unprepared areas.

3.11.4.2 General. All maneuver descriptions are in the MV-22 NTTP Manual.

Crew Requirements. P/P/CC, (P/P/CC/AO for CAL-2133)

CAL-2132	2.0	365	B,T,A	A	1	MV-22
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Goal. Introduce medium and low altitude tactical approaches, landings, and departures to a confined area.

Requirements

1. Discuss:
  - a. Crew chief responsibilities during single ship CALs.
  - b. CRM.
  - c. Obstacle clearance.
  - d. Waveoff procedures.
  - e. Crew comfort levels.

- f. Types of tactical approaches.
- g. Initial terminal guidance (ITG).
- h. Glide slope.
- 2. Review:
  - a. Cockpit management system (CMS).
  - b. Fuel burn considerations.
  - c. Proper tie down procedures.
  - d. Aircraft weight and balance.
  - e. CG limitations.
  - f. Procedures and safety precautions for transporting passengers, internal cargo, and/or tactical vehicles.
  - g. Emergency procedures.
- 3. Introduce:
  - a. Tactical approaches, landings and departures to a confined area (minimum 5 for initial sorties).
- 4. Expose:
  - a. Discuss an LZ diagram.
  - b. Explain Final Approach Course(FAC), or ingress heading.
  - c. Explain L-Hour and Time on Target(TOT).
  - d. METT-TSL.

Performance Standards

- 1. Perform obstacle clearance calls during approach, landing, and takeoff.
- 2. Evaluate suitability of LZ terrain and communicate information to pilots.
- 3. Perform drift correction, accurate and timely distance estimation calls to the pilot prior to aircraft touchdown.

Instructor. BICC

Prerequisite. RQD-6030(CC), FAM-2032(AO)

Required Reading. NTP Ch.1 pg 1-3, Ch.3 pg 1-19,40-53

External Syllabus Support. Suitable landing site with 7nm radius of protected airspace to 1000' AGL.

CAL-2133	1.5	240	B,T,A,R,M	A	1	MV-22
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Goal. Introduce day Reduced Visibility Landing procedures.

Requirement.

- 1. Discuss:
  - a. Landing zone evaluation and selection
    - (1) Soil composition.
    - (2) Elevation and density altitude/pressure altitude.
    - (3) Micro terrain, obstacles, and aircraft clearances.



- (4) Wind effects.
  - b. Standard approach procedures to RVLs.
  - c. RVL procedures.
  - d. Cabin set-up and CRM during RVLs.
  - e. Wave-off procedures for RVLs.
  - f. Takeoff procedures.
  - g. RVL scale.
  - h. Brown out considerations.
  - i. Nacelle dust abatement.
  - j. Aircraft signature during RVLs.
2. Introduce:
- a. RVL procedures (minimum of 5 for initial sorties).
  - b. RVLs with various levels of obscuration.
  - c. Takeoffs with various levels of obscuration.
  - d. No-hover/Hover coupled landing.
  - e. RVL Scale.

Performance Standard. Demonstrate the proper procedures for RVLs IAW the MV-22 NTP Manual.

Instructor. BICC

Prerequisite. CAL-2132

Required Reading. NATOPS Ch 7.28.7, 7.29, NTP Ch 3 pg 20-39

External Syllabus Support. Suitable landing site with 7nm radius of protected airspace to 1000' AGL.

CAL-2135	2.0	365	B,T,A	A	2	MV-22
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Goal. Introduce section medium and low altitude tactical approaches, landings, and departures to a confined area.

Requirements

1. Discuss:
- a. Crew chief responsibilities during sections CALs.
  - b. CRM.
  - c. Distance Estimation.
  - d. Closure rates.
  - e. Comfort levels.
  - f. Waveoffs.
  - g. Aircraft emergencies/systems failures.
  - h. Lookout doctrine.
  - i. Wingman considerations.
  - j. Hasty approach.
  - k. Reverse echelon landings.

1. Cruise form principles.
- m. Air-to-air TACAN DME.
2. Introduce:
  - a. Section tactical approaches, takeoffs and landings (minimum 3 as lead for initial sorties).
3. Review:
  - a. CAL-2132.
4. Expose:
  - a. Objective area diagrams.
  - b. Initial point(IP), Holding area(HA), and Battle position(BP).
  - c. Rules of engagement.
  - d. Wind considerations with high gross weight.
  - e. Air Assault Support Landing Table(AASLT).
  - f. Assault Support Serial Assignment Table(ASSAT).
  - g. Discuss Air-Defense Artillery(ADA).

Performance Standards

1. Provide pilots with accurate and timely information on the position of wingman.
2. Distance estimation calls to wingman are performed to a reasonable margin of error in terms of DME.
3. Provide obstacle clearance calls for the section during approach, landing, and takeoff.
4. Inform pilots of wingman's position prior to landing to ensure both aircraft have adequate clearance to land.

Instructor. BICC

Prerequisite. CAL-2132

Required Reading. NTP Ch.1 pg 6-14, Ch. 5

External Syllabus Support. Suitable landing site with 7nm radius of protected airspace to 15,000' AGL.

CAL-2136	1.5	365	B,T,A,R,M	A	3	MV-22
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Goal. Introduce division medium and low altitude tactical approaches, landings, and departures to a confined area.

Requirements

1. Discuss:
  - a. CRM.
  - b. Crew comfort level.
  - c. Standard terminology.
  - d. Combat cruise with 3 or more aircraft.
2. Introduce:

- a. Division tactical approaches, landings, and takeoffs from a confined area (minimum 3 as lead for initial sorties).
  - b. Division terminal area procedures.
3. Expose:
- a. Sectors of fire.
  - b. Mutual support.
  - c. Contingency operations.
  - d. Pickup zone (PZ) operations.

Performance Standard.

1. Provide timely and accurate information to pilots with regard to wingmen positions in flight, prior to, and after landing. Distance estimation calls to wingman are performed to a reasonable margin of error in terms of DME.
2. Provide obstacle clearance calls during approach, landing, and takeoff.
3. Evaluate suitability of LZ terrain and communicate information to pilots.
4. Perform drift correction, accurate and timely distance estimation calls to the pilot prior to aircraft touchdown.

Instructor. BICC

Prerequisite. CAL-2135

External Syllabus Support. Suitable landing site with 7nm radius of protected airspace to 1000' AGL.

Required Reading. NTTP Ch. 8

3.11.5 Formation (FORM)

3.11.5.1 Purpose. To introduce tactical formations, lost contact procedures, tactical maneuvering, and formation instrument procedures.

3.11.5.2 General. All maneuver descriptions are in the MV-22 NTTP Manual. It is expected that FORM-2183 will be flown in conjunction with CAL-2136.

Crew Requirements. P/P/CC/AO

ACAD-2160	1.0	*	B,T,A	CLSRM
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TACFORM for Enlisted Aircrew

Goal. The CCUI/AOUI is introduced to basic tactical formation maneuvers.

Requirement. Utilize MAWTS-1 courseware

Performance Standard. Student is introduced to MV-22 TACFORM maneuvers.

Instructor. BICC

Prerequisite. RQD-6030 ~ CC.

Required Reading. NATOPS Ch 9.1-9.1.14, NTTP Ch 4

FORM-2182	1.5	365	B,T,A,R,M	A	2	MV-22
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Goal. Introduce tactical formations, lost contact procedures, and tactical maneuvering.

Requirement.

1. Discuss:
  - a. CRM.
  - b. Crew comfort level.
  - c. Standard terminology.
  - d. Lookout doctrine.
  - e. Inter/intra-plane coordination.
  - f. Lead/wingman responsibilities.
  - g. Bullseye calls.
2. Introduce:
  - a. All tactical formation maneuvers in the NTTP.
  - b. Combat spread and combat cruise.
  - c. Tactical lead changes.
  - d. IIMC break up and rendezvous.
  - e. Simulated lost contact with wingman with subsequent rejoin enroute and at a point.
3. Review:
  - a. Cruise formation principles.
4. Expose:
  - a. EMCON procedures.
  - b. Types of escort operations.
  - c. CMS tactical considerations(I.E. threat ring).
  - d. Split section operations.

Performance Standards

1. Demonstrate procedural knowledge of tactical formation maneuvers IAW MV-22 NTTP manual.
2. Recognize proper tactical formations IAW MV-22 NTTP manual.
3. Distance estimation calls to wingman are performed to a reasonable margin of error in terms of DME.

Instructor. BICC

Prerequisites. CAL-2132, ACAD-2160

Required Reading. Review NATOPS Ch 9.1-9.1.14, NTTP Ch 4

FORM-2183	1.5	*	B,T,A	A	3	MV-22
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Goal. Introduce division formations.

Requirements

1. Discuss:

- a. CRM as it pertains to communication.
  - b. Crew comfort level.
  - c. Standard terminology.
  - d. Tactical formation maneuvering.
  - e. Inadvertent IMC.
2. Introduce:
- a. Division formations found in the MV-22 NTP manual.
  - b. Division formation maneuvers along a route using one of the division formations found in the MV-22 NTP manual.
3. Expose:
- a. Threat levels.

Performance Standards

1. Maintain proper lookout doctrine during division formation maneuvers.
2. Distance estimation calls to wingman are performed to a reasonable margin of error in terms of DME.
3. Maintain situational awareness during division formation maneuvers.

Instructor. BICC

Prerequisite. FORM-2182, CAL-2135

3.11.6 Low Altitude Tactics (LAT)

3.11.6.1 Purpose. To develop proficiency in day LAT operations.

3.11.6.2 General

All maneuver descriptions are in the MV-22 NTP Manual.

Non-proficient aircrew requires the supervision of a LAT Instructor.

The CCUI/AOUI is considered LAT qualified upon completion of this stage with a written qualification letter signed by the unit commanding officer.

LAT altitude restrictions and currency requirements are listed in the T&R Program Manual.

Events should be flown in areas with significant vertical relief.

Crew Requirements. P/P/CC/AO

ACAD-2210 1.0 \* B,T,A, CLSRM

LAT For Enlisted Aircrew

Goal. The CCUI/AOUI has an introductory knowledge of LAT terms and definitions.

Requirement. Utilize MAWTS-1 courseware.

Performance Standard. Student is introduced to MV-22 low altitude tactics.

Instructor. LATI

Required Reading. NTP Ch 4, 5, NAVMC 3500.14 Ch. 3

Prerequisite. ACAD-2160

ACAD-2211 1.0 \* B,T,A CLSRM

Tactical Aircrew Considerations and Responsibilities

Goal. The CCUI/AOUI has a familiarity with responsibilities specific to a tactical environment.

Requirement. Utilize MAWTS-1 courseware.

Performance Standard. Student is introduced to aircrew responsibilities in a tactical environment.

Instructor. WTI

Prerequisite. ACAD-2160

LAB-2220 0.5 \* B,T,A,R CLSRM

LAT Maneuver Walk Through

Goal. The CCUI/AOUI is able to walk through all LAT maneuvers prior to executing them in the aircraft.

Requirement. Conduct IAW NTTP Ch. 4

Performance Standard. Demonstrate all LAT maneuvers prior to executing them in the aircraft.

Instructor. LATI

Prerequisite. ACAD-2210, ACAD-2211

LAT-2231 2.0 365 B,T,A A 1 MV-22

Goal. Review LAT maneuvers and aircraft/obstacle clearance and introduce low level and contour flight while flying a LAT navigation route.

Requirements

1. Discuss:
  - a. Rules of Conduct (ROC).
  - b. Aircraft clearance.
  - c. CRM.
  - d. Crew comfort levels.
  - e. Lookout doctrine.
  - f. Standard terminology.
  - g. ICS procedures.
  - h. Climb to cope.
  - i. Physiological considerations.
  - j. L-hour.
  - k. Dive Recovery rules.
  - l. MSA/ESA.
  - m. Cabin Situational Awareness Device (CSAD).
2. Introduce:
  - a. Low level and contour flight.
  - b. LAT maneuvers.
  - c. Low altitude emergencies.

- d. Wake turbulence (burbble).
  - e. Height Above Terrain (HAT).
  - f. Route cards.
3. Expose:
- a. Surface-to-Air missiles (SAMs).
  - b. Go/No Go criteria.
  - c. Fire control, Emissions, Navigation, Communication, Expendables (FENCE) checks.
  - d. CSAD.

Performance Standards

- 1. Maintain situational awareness during each maneuver with regard to aircraft orientation to the terrain.
- 2. Provide timely feedback to the pilots for terrain avoidance and obstacle clearance.
- 3. Execute all LAT maneuvers IAW the MV-22 NTP Manual.
- 4. Demonstrate proper CRM principles in the LAT regime.
- 5. Comply with ROC IAW T&R Program Manual and other governing directives.
- 6. Assist pilot with navigational assistance, route card, and fuel burn considerations.

Instructor. LATI

Prerequisite. CAL-2132, LAB-2220

Required Reading. Review NTP Ch. 4

External Syllabus Support. Approved route/range space with vertical relief.

LAT-2233	2.0	365	B,T,A,R,M	A	2	MV-22
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Goal. Introduce section LAT flight.

Requirements

- 1. Discuss:
  - a. Crew comfort levels.
  - b. CRM.
  - c. ROC.
  - d. Lookout doctrine.
  - e. Standard terminology.
  - f. ICS procedures.
  - g. Wingman considerations.
  - h. Combat cruise vs. Combat spread.
  - i. Vertical maneuvers.
  - j. Route Card.
  - k. Fuel considerations.

2. Review:
  - a. Climb to Cope.
  - b. L-Hour.
  - c. Dive recovery rules.
  - d. Physiological considerations.
  - e. MSA/ESA.
3. Expose:
  - a. Man Portable Air Defense Systems (MANPADS).

Performance Standards

1. Provide pilots with timely information concerning terrain clearance and obstacle avoidance for the section.
2. Demonstrate awareness of and comply with all LAT ROC and SOPs.
3. Maintain geographical orientation throughout the navigation route.
4. Maintain situational and terrain awareness.
5. Demonstrate proper CRM principles in the LAT regime.
6. Demonstrate ability to utilize route card for navigational assistance.
7. Provide pilots with timely information concerning wingman position during LAT maneuvers.

Instructor. LATI

Prerequisites. FORM-2182, LAT-2231

Required Reading. Review NTTP Ch. 5

External Syllabus Support. Approved route/range space with vertical relief.

3.11.7 Night Systems (NS) High Light Level (HLL)

3.11.7.1 Purpose. To develop proficiency while using night vision devices under light levels greater than or equal to .0022 lux as predicted by the SLAP application. Certify the aircrew Night Systems Qualified (NSQ HLL).

3.11.7.2 General

All maneuver descriptions are in the MV-22 NTTP Manual.

An NSI is required for all unqualified aircrew, and when a qualified aircrew loses proficiency in a NS LAT syllabus flight IAW the T&R Program Manual.

Successful completion of this stage constitutes NSQ HLL. A qualification letter signed by the commanding officer stating the crew member is NSQ HLL is to be placed in the crew member's NATOPS jacket prior to carrying troops using NVDs.

Crew Requirements. P/P/CC/AO

ACAD-2310    2.0    \*    B,T,A    CLSRM

Night Vision Training

Goal. The CCUI/AOUI has an introductory knowledge of the Night Vision



Goggles, Night Environment, Human factors, and NVG Weapons employment procedures.

Requirement. Utilize MAWTS-1 Courseware

Performance Standard. Student is introduced to night vision devices.

Instructor. NSI

Required reading. MAWTS-1 NVD Manual

Prerequisites. ACAD-2210

ACAD-2311	1.0	*	B,T,A				CLSRM
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MV-22 FLIR for Enlisted Aircrew

Goal. The CCUI/AOUI/AOUI has an introductory knowledge of the MV-22 FLIR.

Requirement. Utilize MAWTS-1 courseware

Instructor. NSI

Required reading. MV-22 NATOPS Chapter 16.8, NVD Manual CH. 4

Prerequisites. ACAD-2310

NS HLL-2331	2.0	365	B,T,A	NS	A	1	MV-22
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Goal. Review FAM maneuvers and single aircraft NVD CALs in HLL. Introduce tactical approaches using NVDs in HLL.

Requirements

1. Discuss:
  - a. Aircrew duties during NVD CAL operations.
  - b. Crew comfort level.
  - c. Depth perception.
  - d. Distance estimation.
  - e. Drift correction.
  - f. NVG failure.
  - g. Obstacle clearance.
  - h. Brown out/White out.
  - i. CRM/
  - j. Aircraft lighting.
  - k. Lighting conditions.
  - l. Scanning techniques.
  - m. Automatic gain control systems.
  - n. FLIR utilization.
2. Introduce:
  - a. NVD tactical approaches, landings, and departures to a confined area in HLL (minimum of 5 for initial sorties).
3. Review:
  - a. Cabin configuration.

- b. NVG set-up procedures.
  - c. Night environment considerations.
  - d. Human factors considerations.
  - e. NVD and FLIR theory.
  - f. ITG.
4. Expose:
- a. Light discipline.

Performance Standards

- 1. Execute proper procedures for NVD CALs IAW the MV-22 NTP Manual and the MAWTS-1 NVD Manual.
- 2. Demonstrate proper NVD scanning techniques.
- 3. Provide timely and accurate information to the pilots with regard to terrain clearance, LZ topography, aircraft drift, and distance estimation calls prior to landing.

Instructor. NSI

Prerequisites. CAL-2132, ACAD-2310

Required Reading. NATOPS Ch 2.3.9, 2.12, NVD Manual Ch. 2,3,7,14, 3-22.5-ASTACSOP Page 21

External Syllabus Support. Suitable landing site with 7nm radius of protected airspace to 1000' AGL.

NS HLL-2332 2.0 365 B,T,A,R NS A 2 MV-22

Goal. Introduce formation flight, section CALs, and tactical approaches using NVDs in HLL.

Requirements

- 1. Discuss:
  - a. Aircraft lighting during NVD formation.
  - b. CRM.
  - c. Loss of visual contact with wingman.
  - d. FLIR functions.
  - e. Closure rates.
- 2. Introduce:
  - a. NVD formation flight.
  - b. NVD section CALs in HLL (minimum 3 as lead for initial sorties).
  - c. NVD section tactical approaches, departures, takeoffs and landings in HLL.
- 3. Review:
  - a. Sensor integration.
  - b. Atmospheric considerations.
  - c. Monocular cues.
  - d. NVD Emergencies.

Performance Standards

1. Maintain an aggressive NVD scan and provide the pilots with timely information on LZ topography and aircraft drift.
2. Maintain awareness of wingman's position and provide timely information to the pilots.
3. Distance estimation calls prior to landing.

Instructor. NSI

Prerequisites. CAL-2135, FORM-2182, NS-2331

External Syllabus Support. Suitable landing site with 7nm radius of protected airspace to 1000' AGL.

Required Reading. NVD Manual Ch. 5, 15.8

NS HLL-2334	2.0	365	B,T,A	NS	A	1	MV-22
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Goal. Introduce aircraft maneuver performance, characteristics, and navigation in the LAT environment using NVDs.

Requirements

1. Discuss:
  - a. NVD briefing guide.
  - b. Crew chief duties in the LAT environment.
  - c. Standard terminology.
  - d. Altitude awareness.
  - e. Spatial orientation.
  - f. Obstacle/hazard avoidance.
  - g. Crew comfort level.
  - h. Route card navigational assistance in a night environment.
2. Introduce:
  - a. Tactical maneuvers while flying a LAT route in HLL conditions.
3. Review:
  - a. Fuel considerations.
  - b. ESA/MSA.
  - c. Combat cruise vs. Combat spread.
  - d. Vertical maneuvers.

Performance Standards

1. Maintain geographical awareness along the LAT route.
2. Provide pilots with timely information on obstacle avoidance and terrain clearance.
3. Navigational assistance.

Instructor. NSI

Prerequisites. LAT-2233, NS-2331, ACAD-2311

Required Reading. NVD Manual Ch. 6,15.2

External Syllabus Support. Approved route/range space with vertical relief.

NS HLL-2335 2.5 240 B,T,A,R,M NS A 2 MV-22

Goal. Introduce section NVD LAT and review section CALs utilizing NVDs under HLL conditions.

Requirements

1. Discuss:
  - a. Crew chief/observer duties in the LAT environment.
  - b. Standard terminology used during formation flight in the LAT environment.
  - c. Altitude awareness.
  - d. Section considerations and wingman awareness.
2. Introduce:
  - a. Tactical formations in various LAT profiles while utilizing NVDs.
3. Review:
  - a. NS-2334.
  - b. Night illumination sources.
  - c. Aircraft lighting considerations for multi-aircraft operations.

Performance Standards

1. Provide pilots with timely information on wingman position, terrain clearance, and obstacle avoidance.
2. Maintain geographical awareness along the route.
3. Demonstrate knowledge of vertical maneuvers in the LAT environment.
4. Demonstrate proper NVD focusing and set-up procedures.

Instructor. NSI

Prerequisites. NS-2332, NS-2334

Required Reading. NVD Manual Ch. 15.1, 15.3

External Syllabus Support. Approved route/range space with vertical relief.

NS HLL-2336 1.5 \* B,T,A,R NS A 3 MV-22

Goal. Introduce division formations and division CALs using NVDs under HLL conditions.

Requirements

1. Discuss:
  - a. CRM.
  - b. Crew comfort levels.
  - c. Moon illumination/shadow effects on terrain.
  - d. Obstacle clearance.
  - e. Inadvertent IMC.

- f. Distance estimation and depth perception.
- g. Wave offs.
- 2. Introduce:
  - a. NVD HLL division tactical approaches, departures, takeoffs, and landings (minimum of 3 CALs as lead).
- 3. Review:
  - a. Division formations.

Performance Standards

- 1. Provide feedback to pilots about the integrity of the flight.
- 2. Maintain awareness of both wingmen and provide adequate landing area information to the pilots during NVD HLL CALs.
- 3. Provide pilots with timely information with regard to aircraft drift and LZ topography.

Instructor. NSI

Prerequisites. CAL-2136, FORM-2183, NS-2332

Required Reading. NVD Manual Ch. 8,9

External Syllabus Support. Suitable landing site with 7nm radius of protected airspace to 1000' AGL.

3.11.8 Night Systems (NS) Low Light Level (LLL)

3.11.8.1 Purpose. To develop proficiency while using night vision devices under light levels less than .0022 lux LLL as predicted by the SLAP application.

3.11.8.2 General

All maneuver descriptions are in the MV-22 NTP Manual.

An NSI is required for all unqualified aircrew, and when a qualified aircrew loses proficiency in a NS LAT syllabus flight IAW the T&R Program Manual.

Successful completion of this stage constitutes NSQ LLL. A qualification letter signed by the unit commanding officer stating the crew member is NSQ LLL is to be placed in the crew member's NATOPS jacket prior to carrying troops using NVDs in LLL conditions.

Crew Requirements. P/P/CC/AO

NS LLL-2381	2.0	365	B,A,T	NS	A	1	MV-22
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Goal. Introduce FAM maneuvers, single aircraft CALs, and tactical approaches using NVDs in LLL.

Requirements

- 1. Discuss:
  - a. CRM.
  - b. Distance estimation and depth perception.
  - c. Reduced visibility landings.
  - d. Aircraft clearance and obstacle avoidance.
  - e. LLL CAL considerations.

- f. Cultural lighting considerations.
- g. Shadowing, moon angle, azimuth.
- 2. Introduce:
  - a. NVD tactical approaches, landings, and departures to a confined area in LLL (minimum 5 for initial sorties).
- 3. Review:
  - a. Drift correction.
  - b. NVD scan in terminal area.
  - c. NVG failure.
  - d. Lighting conditions.
  - e. Automatic gain control systems.

Performance Standards

- 1. Execute proper procedures for NVD LLL CALs IAW the MV-22 NTTP Manual and the MAWTS-1 NVD Manual.
- 2. Demonstrate proper NVD scanning techniques IAW the MAWTS-1 NVD Manual.
- 3. Provide pilots with timely information with regard to obstacle clearance, aircraft drift and distance estimation prior to landing.

Instructor. NSI

Prerequisites. NS-2335, 2336

Required Reading. NTRP Ch. 3, Review NVD Manual Ch. 2,3,7,14

External Syllabus Support. Suitable landing site with 7nm radius of protected airspace to 1000' AGL.

NS LLL-2382 2.0 365 B,T,A,R NS A 2 MV-22

Goal. Introduce night tactical formation maneuvering and section CALs using NVDs in LLL.

Requirements

- 1. Discuss:
  - a. Crew duties during NVD formation operations.
  - b. Aircraft lighting during NVD formation in LLL.
  - c. Night tactical formation maneuvering.
- 2. Introduce:
  - a. NVD LLL section tactical approaches, departures, takeoffs, and landings.
  - b. Conduct NVD section CALs (minimum of 3 as lead for initial sorties).
- 3. Review:
  - a. Loss of visual contact with wingman.
  - b. FLIR functions.
  - c. Closure rates.
  - d. NVD Emergencies.

Performance Standards

1. Demonstrate an aggressive NVD scan and provide the pilots with timely information on LZ topography, aircraft drift, and distance estimation prior to landing.
2. Ensure obstacle clearance during ingress and egress to confined areas.
3. Maintain awareness of wingman position and provide adequate information to pilots.

Instructor. NSI

Prerequisite. NS-2381 (B,T,A), NS-2336 (R)

Required Reading. NTRP Ch. 4, Review NVD Manual Ch. 5

External Syllabus Support. Suitable landing site with 7nm radius of protected airspace to 1000' AGL.

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NS LLL-2384	2.5	240	B,T,A,R,M	NS	A	2 MV-22
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Goal. Introduce NVD section LAT and review section CALs using NVDs under LLL conditions.

Requirements

1. Discuss:
  - a. Crew chief/observer duties in the LAT environment.
  - b. Standard terminology used during formation flight in the LAT environment.
  - c. Altitude awareness.
  - d. Section considerations and wingman awareness.
  - e. Route card in a tactical environment.
2. Introduce:
  - a. Tactical formations while flying a LAT route under LLL conditions.
3. Review:
  - a. Night illumination sources.
  - b. Aircraft lighting considerations while utilizing NVDs.
  - c. The night environment.
  - d. Speed rush baseline/optical flow.

Performance Standards

1. Provide pilots with timely information on wingman position, terrain clearance, and obstacle avoidance.
2. Maintain geographical awareness along the route.

Instructor. NSI

Prerequisites. NS-2382

Required Reading. NTRP App. F, Review NVD Manual Ch. 6

External Syllabus Support. Approved route/range space with vertical relief.

NS LLL-2385 2.5 240 B,T,A,R,M NS A 3 MV-22

Goal. Introduce division formations and division CALs using NVDs under LLL conditions.

Requirement.

1. Discuss:
  - a. CRM.
  - b. Crew comfort levels.
  - c. Moon illumination/shadow effects on terrain.
  - d. Obstacle clearance.
  - e. Inadvertent IMC.
  - f. Distance estimation and depth perception.
  - g. Wave offs.
2. Introduce:
  - a. NVD LLL division tactical approaches, departures, takeoffs, and landings.
3. Review:
  - a. Division formations.

Performance Standards

1. Provide feedback to pilots about the integrity of the flight.
2. Maintain awareness of both wingmen and provide adequate landing area information to the pilots during NVD LLL CALs.
3. Provide pilots with timely information with regard to LZ topography, aircraft drift, and distance estimation prior to landing.
4. Conduct a minimum of 3 CALs as lead for initial sorties.

Instructor. NSI

Prerequisites. NS-2336, 2382

Required Reading. Review NVD Manual Ch. 8,9

External Syllabus Support. Suitable landing site with 7nm radius of protected airspace to 1000' AGL.

3.11.9 Tail Gunnery (TG)

3.11.9.1 Purpose. To develop the ability to employ the MV-22 Ramp Mounted Weapon System (RMWS), deliver accurate air-to-ground fire and provide defensive fire on targets of opportunity.

3.11.9.2 General

The aircraft weapons system lectures must be conducted by a designated MAWTS-1 crew chief instructor, squadron WTI, or TGI.

A TGI is required for non-proficient aircrew. A TGI complete with TG-5434 is required for all GAU-16 lectures/labs/flights.

At the completion of this stage, the aircrew will demonstrate knowledge of weapons systems and ordnance delivery with the RMWS.



These sorties are ordnance driven. Ordnance expenditure requirements shall be adhered to in order for the CCUI/AOUI to obtain a TG qualification. Flights should be scheduled to maximize range time so that ordnance expenditure requirements can be met.

Successful completion of ACAD-2510/11,13,14, LAB-2520, and TG-2530,32,33,35 or successful completion of ACAD-2510/12,13,14, LAB-2521, and TG-2531,32,34,35 constitutes TGQ. A crew member may be qualified as TGQ with either weapon system. A qualification letter signed by the unit commanding officer stating the crew chief/aerial observer is TGQ is to be placed in the crew member's NATOPS jacket prior to conducting any tail gunnery flight without a designated TGI.

For all MV-22 crew members who are currently qualified as TGQ with either the M240 or GAU-16, completion of the appropriate syllabus events for the alternate weapon system is required in order to be qualified on both weapon systems.

Crew Requirements. P/P/CC/AO

ACAD-2510	1.0	*	B,T,A	CLSRM
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Fundamentals of Aerial Gunnery

Goal. The CCUI/AOUI has a familiarity with the basic fundamentals of aerial gunnery.

Requirement. Utilize MAWTS-1 courseware.

Performance Standard. Student is introduced to the fundamentals for proper aerial gunnery.

Instructor. TGI

Required reading. MV-22 NTP Chapter 7

Prerequisites. ACAD-2210

ACAD-2511	0.5	*	B,T,A	CLSRM
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M240 Machine Gun

Goal. The CCUI/AOUI has a familiarity with the components, characteristics, and operation of the M240 machine gun.

Requirement. Utilize MAWTS-1 courseware.

Performance Standard. Student is introduced to the M240 machine gun.

Instructor. TGI

Required reading. NAVAIR 11-95-M240D1-1.

Prerequisites. ACAD-2510

ACAD-2512	0.5	*	B,T,A	CLSRM
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GAU-16/A

Goal. The CCUI/AOUI will be familiar with the components, characteristics, and operation of the GAU-16/A machine gun.

Requirement. Utilize MAWTS-1 courseware

Performance Standard. Student is introduced to the GAU-16/A machine gun.

Instructor. TGI

Required reading. NAVAIR 11-95-13

Prerequisites. ACAD-2510

ACAD-2513    0.5    \*    B,T,A    CLSRM

Laser Aiming Devices

Goal. The CCUI/AOUI has a familiarity with laser aiming devices and their utilization.

Requirement. Utilize MAWTS-1 courseware

Performance Standard. Student is introduced to approved laser aiming devices and laser eye protection.

Instructor. TGI

Required reading. MV-22 NTRP Chapter 2 and Appendix D, 1-95IZLID-1 WP 3,7

Prerequisites. ACAD-2511

ACAD-2514    0.5    \*    B,T,A    CLSRM

Laser Bore Sighting

Goal. The CCUI/AOUI has a familiarity with laser bore sighting procedures.

Requirements

1. Discuss:
  - a. Administrative Laser Safety Officers (ALSO).
  - b. Safety considerations
    - (1) Laser Eye Protection (LEP).
    - (2) Specular reflection.
    - (3) Diffuse reflection.

Performance Standard. Student is introduced to laser bore sighting procedures and safety considerations.

Instructor. TGI

Required reading. 11-95 IZLID-1 Ch 6,7,14,15,16

Prerequisites. ACAD-2513

LAB-2520    0.5    \*    B,T,A,R    CLSRM

M240D Breakdown and Cleaning Procedures

Goal. The CCUI/AOUI will be familiar with the breakdown, inspection, function check, and cleaning procedures of the M240D machine gun.

Requirements

1. Discuss:
  - a. Nomenclature.
  - b. Inspection procedures.
  - c. Weapon emergencies.
  - d. Cleaning procedures.
2. Introduce:
  - a. Cycle of operation.
  - b. Weapons checklist.

- c. Immediate action procedures.
- d. RMWS inspection and mounting procedures.

Performance Standards

- 1. Demonstrate knowledge of nomenclature, cycle of operation, and inspection procedures for the M240 machine gun.
- 2. Demonstrate RMWS inspection procedures and operation.
- 3. Demonstrate immediate action procedures.

Instructor. TGI

Required Reading. NAVAIR 11-95-M240D1-1

Prerequisite. ACAD-2511

LAB-2521	0.5	*	B,T,A,R	CLSRM
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GAU-16/A Breakdown and Cleaning Procedures

Goal. The CCUI/AOUI will be familiar with the breakdown, inspection, function check, and cleaning procedures of the GAU-16/A machine gun.

Requirements

- 1. Discuss:
  - a. Nomenclature.
  - b. Inspection procedures.
  - c. Weapon emergencies.
  - d. Cleaning procedures.
- 2. Introduce:
  - a. Cycle of operation.
  - b. Weapons checklist.
  - c. Immediate action procedures.
  - d. RMWS inspection and mounting procedures.

Performance Standards

- 1. Demonstrate knowledge of nomenclature, cycle of operation, and inspection procedures for the GAU-16/A machine gun.
- 2. Demonstrate RMWS inspection procedures and operation.
- 3. Demonstrate immediate action procedures.

Instructor. TGI

Required Reading. NAVAIR 11-95-13

Prerequisite. ACAD-2512

TG-2530	1.5	365	B,T,A	A	1	MV-22
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Goal. To introduce ramp mounted weapons system employment with a M240D in a day single aircraft environment.

Requirements

- 1. Discuss:
  - a. CRM.

- b. ICS procedures.
  - c. Safety.
  - d. Weapons conditions.
  - e. Weapons commands.
  - f. Weapons malfunctions/stoppages/emergencies.
  - g. Crew served weapons checklist.
  - h. Aiming techniques (Port/Starboard effect).
  - i. Muzzle awareness.
  - j. Weapons preparation/nomenclature.
  - k. Target identification.
  - l. Cabin Configuration.
  - m. Fields of fire/Sectors of fire.
2. Introduce:
- a. Preparation of weapons and ramp mount.
  - b. Firing on pre-briefed targets with crew served weapons.
  - c. TSAR.
  - d. Weapons parameters and limitations.
  - e. Ammunition preparation and reloading.
  - f. Barrel Change procedures.

Performance Standards

- 1. Demonstrate knowledge of the three weapons control procedures.
- 2. Demonstrate the ability to conduct day tail gunnery in a single aircraft environment.
- 3. Demonstrate proper utilization of all weapons commands.
- 4. Demonstrate appropriate emergency weapons procedures.
- 5. Verbally demonstrate knowledge of weapons parameters.
- 6. Demonstrate use of the crew served weapons checklist.
- 7. Maintain positive control and muzzle awareness at all times during live fire evolution.

Instructor. TGI

Prerequisites. LAT-2233, LAB-2520

Required Reading. NTP Ch 7, Classified NTP Ch 3, M240 manual, NTRP Ch 1

Ordnance. 600 rounds per gunner of appropriate ammunition.

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

TG-2531	1.5	365	B,T,A	A	1	MV-22
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Goal. To introduce Ramp mounted weapons system employment with a GAU-16/A in a day single aircraft environment.

Requirements

1. Discuss:
  - a. CRM.
  - b. ICS procedures.
  - c. Safety.
  - d. Weapons conditions.
  - e. Weapons commands.
  - f. Weapons malfunctions/stoppages/emergencies.
  - g. Crew served weapons checklist.
  - h. Aiming techniques.
  - i. Muzzle awareness.
  - j. Weapons preparation/nomenclature.
  - k. Target identification.
  - l. Cabin configuration.
  - m. Fields of fire/Sectors of fire.
2. Introduce:
  - a. Preparation of weapons and ramp mount.
  - b. Firing on pre-briefed targets with crew served weapons.
  - c. Weapons parameters and limitations.
  - d. Ammunition preparation and reloading.

Performance Standards

1. Demonstrate knowledge of the three weapons control procedures.
2. Demonstrate the ability to conduct day tail gunnery in a single aircraft environment.
3. Demonstrate proper utilization of all weapons commands.
4. Demonstrate appropriate emergency weapons procedures.
5. Verbally demonstrate knowledge of weapons parameters.
6. Demonstrate use of the crew served weapons checklist.
7. Maintain positive control and muzzle awareness at all times during live fire evolution.

Instructor. TGI

Prerequisites. LAT-2233, LAB-2521

Required Reading. NTTP Ch 7, Classified NTTP Ch 3, 11-95-13, NTRP Ch 1

Ordnance. 600 rounds per gunner of appropriate ammunition

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

TG-2532	1.5	365	B,T,A,R,M	A	2	MV-22
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Goal. To introduce Ramp Mounted Weapons System employment with a M240D or GAU-16/A in a day multi-aircraft environment.

Requirements

1. Discuss:
  - a. CRM.
  - b. ICS procedures.
  - c. Safety.
  - d. Weapons malfunctions/stoppages/emergencies.
  - e. Muzzle awareness in a multi-aircraft environment.
  - f. Weapons preparation/nomenclature.
  - g. Weapons effects on targets.
2. Introduce:
  - a. Firing techniques in a multi-aircraft environment.
  - b. Fields of fire/Sectors of fire.
  - c. Target acquisition.
  - d. Target hand-off between aircraft.
  - e. Section tail gunnery operations.
  - f. Surface danger zone (SDZ).
3. Review: TG-2530, TG-2531 if flown with the GAU-16.

Performance Standards

1. Demonstrate the ability to engage pre-briefed targets in a multi-aircraft environment.
2. Demonstrate use of fire control procedures to suppress targets.
3. Demonstrate proper utilization of all weapons commands.
4. Maintain positive control and muzzle awareness at all times during live fire evolutions.

Instructor. TGI

Prerequisites. TG-2530 ~ (M-240), TG-2531 ~ (GAU-16)

Required Reading. NAVAIR 11-95-13, NAVAIR 11-95-M240D-1-1

Ordnance. 600 rounds per gunner of appropriate ammunition

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

TG-2533	1.5	365	B,T,A	NS	A	1	MV-22
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Goal. To introduce single aircraft Ramp Mounted Weapons System employment with a M240D at night utilizing a laser aiming device, if available, under HLL or LLL conditions.

Requirements

1. Discuss:
  - a. CRM.
  - b. ICS procedures.
  - c. Safety considerations.
  - d. Weapons malfunctions/stoppages/emergencies.

- e. Muzzle awareness.
  - f. Weapons preparation/nomenclature.
  - g. Weapons effects on NVDs.
  - h. Laser aiming devices/procedures.
  - i. Laser eye protection.
2. Introduce:
- a. Firing techniques utilizing NVDs.
  - b. Laser utilization.
  - c. Target acquisition utilizing NVDs.
  - d. Single aircraft aerial gunnery operations at night.
3. Review: TG-2530

Performance Standards

1. Demonstrate the ability to engage pre-briefed targets at night utilizing NVDs.
2. Demonstrate use of fire control procedures to suppress targets while utilizing NVDs.
3. Demonstrate proper utilization of weapons commands.
4. Demonstrate use of Laser aiming devices for target acquisition and engagement.
5. Maintain positive control and muzzle awareness at all times during live fire evolutions.

Instructor. TGI

Prerequisites. ACAD-2514, TG-2530, NS-2335, NS-2384 ~ LLL

Required Reading. MAWTS-1 NVD Manual Ch 15.9, 11-95IZLID-1

Ordnance. 600 rounds per gunner of appropriate ammunition.

External Syllabus Support. Appropriate TG and Laser approved range, moving land target (MLT) if available.

TG-2534	1.5	365	B,T,A	NS	A	1	MV-22
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Goal. To introduce single aircraft Ramp Mounted Weapons System employment with a GAU-16/A at night utilizing a laser aiming device if available under HLL or LLL conditions.

Requirements

1. Discuss:
  - a. CRM.
  - b. ICS procedures.
  - c. Safety considerations.
  - d. Weapons malfunctions/stoppages/emergencies.
  - e. Muzzle awareness.
  - f. Weapons preparation/nomenclature.
  - g. Weapons effects on NVDs.

- h. Laser aiming devices/procedures.
- i. Laser eye protection.
- 2. Introduce:
  - a. Firing techniques in a single aircraft environment utilizing NVDs.
  - b. Laser utilization.
  - c. Target acquisition utilizing NVDs.
  - d. Single aircraft aerial gunnery operations at night.
- 3. Review: TG-2531

Performance Standards

- 1. Demonstrate the ability to engage pre-briefed targets at night utilizing NVDs.
- 2. Demonstrate use of fire control procedures to suppress targets while utilizing NVDs.
- 3. Demonstrate proper utilization of weapons commands.
- 4. Demonstrate use of Laser aiming devices for target acquisition and engagement.
- 5. Maintain positive control and muzzle awareness at all times during live fire evolutions at night.

Instructor. TGI

Prerequisites. ACAD-2514, TG-2531, NS-2335, NS-2384 ~ LLL

Ordinance. 600 rounds per gunner of appropriate ammunition.

External Syllabus Support. Appropriate TG and Laser approved range, moving land target (MLT) if available.

TG-2535	1.5	240	B,T,A,R,M	NS	A	2	MV-22
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Goal. To introduce multi-aircraft ramp mounted weapons system employment with a M240D or GAU-16/A at night utilizing a laser aiming device if available under HLL or LLL conditions.

Requirements

- 1. Discuss:
  - a. CRM.
  - b. ICS procedures.
  - c. Safety considerations.
  - d. Weapons malfunctions/stoppages/emergencies.
  - e. Muzzle awareness in a multi-aircraft environment.
  - f. Weapons preparation/nomenclature.
  - g. Weapons effects on NVDs.
  - h. Laser aiming devices/procedures.
- 2. Introduce:
  - a. Firing techniques in a multi-aircraft environment utilizing NVDs.



- b. Laser utilization in a multi-aircraft environment.
- c. Target acquisition utilizing NVDs.
- d. Multi-aircraft aerial gunnery operations at night.

3. Review: TG-2533, TG-2534 if flown with the GAU-16/A.

Performance Standards

- 1. Demonstrate the ability to engage pre-briefed targets in a multi-aircraft environment while utilizing NVDs.
- 2. Demonstrate use of fire control procedures to suppress targets while utilizing NVDs.
- 3. Demonstrate use of Laser aiming devices for target acquisition and engagement in a multi-aircraft environment.
- 4. Maintain positive control and muzzle awareness at all times during multi-aircraft live fire evolutions at night.

Instructor. TGI

Prerequisites. TG-2532, TG-2533 ~ M-240, TG-2534 ~ GAU-16/A

Ordnance. 600 rounds per gunner of appropriate ammunition.

External Syllabus Support. Appropriate TG and Laser approved range, moving land target (MLT) if available.

3.11.10 Air Delivery (AD)

3.11.10.1 Purpose. To develop proficiency in the air delivery of cargo.

3.11.10.2 General

All air delivery operations shall utilize AD platoon support.

All maneuver descriptions are in the MV-22 NTP Manual.

Initial AD-2630 should be conducted during the day. Aircrew shall be NSQ for the appropriate light level if conducting AD-2630 with NVDs.

Crew Requirement. P/P/CC/AO

ACAD-2610	1.5	*	B,T,A	CLSRM
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EA MV-22 Air Delivery

Goal. The CCUI/AOUI has an introductory knowledge of procedures to execute air delivery and PARAOPS from the MV-22.

Requirement. Utilize MAWTS-1 courseware.

Performance Standard. Student is introduced to MV-22 Air delivery procedures and appropriate checklists.

Instructor. BICC

Required Reading. NTP Ch 10, NATOPS Ch 4.23,9.7.2

Prerequisite. ACAD-2210

AD-2631	1.5	365	B,T,A,R,M	(NS)	A	1	MV-22
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Goal. Introduce air delivery of cargo procedures.

Requirements

- 1. Discuss:
  - a. CRM.

- b. Voice communication/standard terminology.
- c. Tactical considerations for air delivery of cargo.
- d. Proper rigging and preflight of equipment to be inserted.
- e. Air delivery checklist/briefing guide.

2. Introduce:

- a. Insertion of cargo by air delivery.
- b. Cabin configuration for air delivery.
- c. Container Delivery System (CDS).
- d. Container Release System (CRS).
- e. Container rigging procedures.
- f. Load inspection procedures.

Performance Standards

- 1. Execute airdrop procedures IAW the MV-22 NTP Manual.
- 2. Demonstrate proper crew coordination during airdrop operations.
- 3. Demonstrate proper cabin configuration for air delivery of cargo.
- 4. Demonstrate proper loading and rigging procedures for CDS bundles.

Instructor. BICC, (NSI if conducted at night)

Prerequisites. ACAD-2610, LAT-2233, NS-2334 ~ HLL, 2384 ~ LLL

External Syllabus Support. Aerial Delivery Platoon, CDS bundles.

3.11.11 Mountain Area Training (MAT)

3.11.11.1 Purpose. To develop proficiency in day and NVD mountainous terrain operations. Landings should be conducted at zones above 3,000'MSL.

Crew Requirement. P/P/CC/AO

MAT-2732	1.5	365	B,T,A	A	1	MV-22
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Goal. Introduce operations and landings in mountainous terrain.

Requirements

- 1. Discuss:
  - a. Mountainous area operations.
  - b. Pinnacle landings.
  - c. Slope landings.
  - d. Landings and operations in valleys and canyons.
  - e. Crosswind landings.
  - f. Orographic turbulence.
  - g. Aircraft performance considerations.
- 2. Introduce:
  - a. Landings at high altitude.
  - b. Aircraft performance at high altitude.
- 3. Review: CAL-2132

Performance Standards

1. Execute proper MAT procedures IAW the MV-22 NTTP Manual.
2. Execute up-slope/down-slope and cross-slope landings.
3. Provide pilots with timely and accurate information about LZ topography, aircraft drift, and distance estimation prior to landing.

Instructor. BICC

Required Reading. NATOPS Ch 22, 23, 30, 31, NTTP Ch.3.3.6

Prerequisites. CAL-2132

MAT-2733	1.5	365	B,T,A,R,M	NS	A	1	MV-22
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Goal. Introduce NS operations and landings in mountainous terrain.

Requirements

1. Discuss:
  - a. Any previously discussed MAT item.
2. Introduce:
  - a. NVD mountainous terrain operations.
  - b. NVD CALs in mountainous areas.
3. Review: NS-2331, MAT-2732

Performance Standards

1. Execute proper NVD MAT procedures IAW the MV-22 NTTP Manual.
2. Execute up-slope/down-slope and cross-slope NVD landings.
3. Provide pilots with timely and accurate information about LZ topography, aircraft drift, and distance estimation prior to landing.

Instructor. BICC

Prerequisites. MAT-2732, NSQ for the appropriate light level.

3.11.12 Ground Threat Reaction (GTR)

3.11.12.1 Purpose. To develop proficiency in the use of Electronic Warfare Principles, Aircraft Survivability Equipment (ASE), and threat reactions versus enemy surface-to-air threats.

3.11.12.2 General

All maneuver descriptions are in the MV-22 NTTP Manual.

A WTI is required for all initial sorties in each POI. Aircrew who have completed their initial GTR sorties and have lost proficiency in that sortie may regain proficiency by flying with a LATI who is proficient in that sortie.

The flight lead shall be GTR-2832 proficient and specifically brief all applicable GTR training rules per the MV-22 NTTP Manual and T&R Program Manual.

GTR 2832 shall be conducted against a threat emitter; e.g. SA-6, ZSU-23-4, etc. and requires an electronic warfare range.

All initial sorties are to be completed during the day. Subsequent execution of sorties that the CCUI/AOUI is proficient in may be done at night.

Crew Requirements. P/P/CC/AO

ACAD-2810 1.0 \* B,T,A CLSRM

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EA ASE

Goal. The CCUI/AOUI has a familiarity with the Aircraft Survivability Equipment (ASE).

Requirement. Utilize MAWTS-1 courseware.

Performance Standard. Student is introduced to Aircraft Survivability Equipment and theory of operation.

Instructor. WTI

Required reading. MV-22 NTRP Ch 5, App B, C, and G

Prerequisites. ACAD-2210

ACAD-2811 1.0 \* B,T,A CLSRM

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EA Basic Principles of Electronic Warfare

Goal. The CCUI/AOUI has a familiarity with the basic principles of Electronic Warfare.

Requirement. Utilize MAWTS-1 courseware.

Performance Standard. Student is introduced to the concepts associated with Electronic Warfare.

Instructor. WTI

Required reading. MV-22 NTRP App F

Prerequisites. ACAD-2810

ACAD-2812 1.0 \* B,T,A CLSRM

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ADA Threat to Assault Support(S)

Goal. The CCUI/AOUI has a familiarity with the various ADA threats to assault support aircraft.

Requirement. Utilize MAWTS-1 courseware.

Performance Standard. Student is introduced to ADA threats to assault support.

Instructor. WTI

Required reading. AFTTP 3-1 Ch. 4

Prerequisites. ACAD-2810

ACAD-2813 1.0 \* B,T,A CLSRM

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IR SAM Threat to Assault Support(S)

Goal. The CCUI/AOUI has a familiarity with the threat of IR SAMS to assault support.

Requirement. Utilize MAWTS-1 courseware.

Performance Standard. Student is introduced to SAM threats to assault support.

Instructor. WTI

Required Reading. AFTTP 3-1 Ch. 5

Prerequisites. ACAD-2810

ACAD-2814 1.0 \* B,T,A CLSRM

RADAR SAM Threat to Assault Support(S)

Goal. The CCUI/AOUI has a familiarity with the threat of RADAR SAMS to assault support.

Requirement. Utilize MAWTS-1 courseware.

Performance Standard. Student is introduced to RADAR threats to assault support.

Instructor. WTI

Required Reading. AFTTP 3-1 Ch. 5

Prerequisites. ACAD-2810

ACAD-2815 1.0 \* B,T,A,R CLSRM

MV-22 Ground Threat Reaction(S)

Goal. The CCUI/AOUI has a familiarity with the reaction maneuvers executed by the MV-22 as a result of a ground threats.

Requirement. Utilize MAWTS-1 courseware.

Performance Standard. Student is introduced to Ground Threat Reaction theory and maneuvers.

Instructor. WTI

Required Reading. NATOPS Ch 18, NTPP Appendix A, Classified NTPP Ch 2

Prerequisites. ACAD-2810, ACAD-2811, ACAD-2812, ACAD-2813, ACAD-2814

LAB-2820 0.5 \* B,T,A CLSRM

MV-22 Ground Threat Reaction Walk Through

Goal. The CCUI/AOUI has a solid understanding of all GTR maneuvers prior to in-flight execution.

Required Reading. NTPP GTR Program Guide Appendix A

Prerequisites. ACAD-2815

GTR-2832 1.5 365 B,T,A,R,M (NS) A 2 MV-22

Goal. Introduce procedures to counter an IR and RADAR surface-to-air threat.

Requirements

1. Discuss:
  - a. CRM.
  - b. Operation of ASE.
  - c. Set-up of ASE to defend against a ground threat.
  - d. Threat reaction and post engagement reaction.
  - e. Lookout doctrine.
  - f. GTR line numbers.
  - g. GTR training rules.
2. Introduce:
  - a. Maneuvering against an IR and ADA threat.

- b. Maneuvering against a RADAR threat.
- c. Threat avoidance maneuvers and/or tactics to defeat threat systems.
- d. Use of expendables to defeat threat systems.
- e. Defensive weapons considerations.

3. Review: FORM-2182

Performance Standards

- 1. Execute GTR vs a ground threat IAW the MV-22 NTP manual.
- 2. Call for maneuvers in response to a threat IAW the MV-22 NTP Manual.
- 3. Employ all ASE IAW the MV-22 NTP Manual and NTRP.
- 4. Demonstrate knowledge of IR and Radar SAMs and countermeasures.
- 5. Maintain situational awareness of wingman position and provide information to pilots in a timely manner.

Instructor. WTI

Prerequisites. FORM-2182, LAT-2233, LAB-2820

Ordinance. 50 chaff and 40 flares

External Syllabus Support. EW emitter, chaff and flare capable range, ground fire indication.

3.11.13 Carrier Qualification (CQ)

3.11.13.1 Purpose. To qualify the CCUI/AOUI in flight operations from a carrier deck or ship platform under day and NVD conditions.

3.11.13.2 General

Refer to LHA/LHD/MCS NATOPS Manuals for carrier operations. Refer to NWP-42 for air capable ship operations.

CQ-2935 shall be flown under HLL conditions for initial qualifications. An NSI is required for unqualified aircrew on NVD CQ flights.

IAW NATOPS and NAVMC 3500.14, a crew member is CQ upon completion of CQ-2935. A qualification letter signed by the commanding officer stating the crew member is CQ shall be placed in the crew member's NATOPS jacket.

Crew Requirement. P/P/CC (AO required for NVD CQ)

CQ-2931	1.0	365	B,T,A,R	A	1	MV-22
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Goal. Introduce day CQ patterns and procedures in a Field Carrier Landing Practice (FCLP) scenario.

Requirements

- 1. Discuss:
  - a. CRM.
  - b. Crewmember duties during CQs.
  - c. Shipboard specific ICS procedures.
  - d. Hand and Arm signals for shipboard operations.
  - e. Flight deck operations.

- f. Wave offs
- g. Shipboard lighting
- h. Ship traffic patterns
- 2. Introduce:
  - a. Carrier operation
    - (1) Airplane and conversion mode arrivals.
    - (2) Charlie pattern for LHA/LHD and LPD/LSD (minimum 5 for initial sorties).
    - (3) Communication procedures.
    - (4) Aircraft lighting.
    - (5) LSE signals and procedures.
    - (6) Departure procedures.
  - b. Self-taxi procedures.
  - c. STOs.
  - d. Pitch-up with side-slip characteristics.
  - e. Steady heading approach.
  - f. 45° slide approach.
  - g. Stern Approach.

Performance Standards

- 1. Properly execute the CQ pattern IAW LHA/LHD NATOPS.
- 2. Demonstrate knowledge of ship landing deck configuration.
- 3. Demonstrate proper clearance calls prior to landing.
- 4. Correction calls over the spot are accurate, clear, and timely.

Instructor. BICC

Prerequisites. CAL-2132

Required Reading. MV-22 NATOPS Ch 8, LHA/LHD NATOPS Ch 2, 3, 4, 5, 6, App A, NTP Ch. 13

External Syllabus Support. FCLP site

CQ-2932	1.5	365	B,T,A,R	A	1	MV-22
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Goal. Day qualification flight.

Requirements

- 1. Discuss:
  - a. CRM.
  - b. Crewmember duties during CQs.
  - c. Shipboard specific ICS procedures.
  - d. Hand and Arm signals for shipboard operations.
  - e. Flight deck operations.
  - f. Wave offs.
  - g. Nacelle modulation procedures.

2. Introduce:

a. Carrier operation

- (1) Airplane and conversion mode arrivals.
- (2) Shipboard airspace and patterns for LHA/LHD and LPD/LSD.
- (3) Communication procedures.
- (4) Aircraft and Shipboard lighting.
- (5) LSE signals and procedures
- (6) Departure procedures.

b. Self-taxi procedures.

c. STOs.

d. Pitch-up with side-slip characteristics.

e. Steady heading approach.

f. 45° slide approach.

g. Stern approach.

Performance Standards

1. Properly execute the CQ landing pattern IAW LHA/LHD NATOPS (minimum 5 for initial sorties).
2. Demonstrate knowledge of ship landing deck configuration.
3. Demonstrate proper clearance calls prior to landing.
4. Correction calls over the spot are accurate, clear, and timely.

Instructor. BICC

Prerequisites. CQ-2931

External Syllabus Support. Landing platform afloat

CQ-2934	1.0	365	B,T,A,R	NS	A	1	MV-22
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Goal. Introduce night aided CQ patterns and procedures in a FCLP scenario.

Requirements

1. Discuss:

- a. NVD CQ patterns.
  - b. Crewmember duties during NVD CQs.
  - c. Aircraft lighting.
  - d. Ditching.
3. CRM.

2. Introduce:

a. Carrier operations using NVDs

- (1) Night takeoff/landing patterns.
- (2) Communication procedures.
- (3) Lighting procedures for night CQ operations.
- (4) LSE signals and procedures.



- b. Self-taxi procedures.
- c. STOs.
- d. Pitch-up with side-slip characteristics.

Review: CQ-2931

Performance Standards

- 1. Perform standard CQ landing procedures utilizing NVDs. (minimum 5 for initial sorties).
- 2. Maintain an aggressive NVD scan to acquire hazards and recognize improper landing profiles.
- 3. Correction calls over the spot are accurate, clear, and timely.

Instructor. NSI

Prerequisites. NS-2331, NS-2381 ~ LLL, CQ-2931

Required Reading. MAWTS-1 NVD Manual Ch 15.7

External Syllabus Support. FCLP site

CQ-2935	1.5	365	B,T,A,R,M	NS	A	1	MV-22
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Goal. NVD qualification flight.

Requirements

- 1. Discuss:
  - a. NVD CQ patterns.
  - b. Crewmember duties during NVD CQs.
  - c. Aircraft lighting.
  - d. Ditching.
  - e. CRM.
  - f. Ship lighting.
  - g. LSE signals at night.
  - h. Low contrast environment utilizing NVDs..
- 2. Introduce:
  - a. Carrier operations using NVDs
    - (1) Night takeoff/landing patterns.
    - (2) Communication procedures.
    - (3) Lighting procedures for night CQ operations.
    - (4) LSE signals and procedures.
  - b. Self-taxi procedures.
  - c. STOs.
  - d. Pitch-up with side-slip characteristics.
- 3. Review: CQ-2934

Performance Standards

- 1. Perform standard CQ landing procedures while utilizing NVDs (minimum 5 for initial sorties).

2. Maintain an aggressive NVD scan to acquire hazards and recognize improper landing profiles.
3. Correction calls over the spot are accurate, clear, and timely.

Instructor. NSI

Prerequisites. NSQ HLL, CQ-2932, CQ-2934

External Syllabus Support. Landing platform afloat

### 3.12 MISSION SKILL PHASE

3.12.1 Purpose. This phase of training is designed to enable aircrew to obtain proficiency in mission skills. Mission skills are designed to fulfill the requirements of the VMM's Mission Essential Task List (METL) as defined by the associated Marine Corps Task (MCT).

#### 3.12.2 General

Events in this stage of training should be based on tactical scenarios designed to focus on the specific items delineated in the different training codes and will be developed by the squadron WTI. To the greatest extent possible the scenarios should incorporate the employment of escort aircraft (fixed or rotary wing), ASE (ALE-47, APR-39, etc.) and use of the defensive weapon systems. On certain events integration with other ACE assets is required.

Discuss items for each event in this stage are designed to be the focus of scenario-based training for planning and execution, not necessarily for discussion during individual crew briefs. However, this does not preclude these items from being discussed during crew briefs.

Proficiency in SHORE-3030 and SEA-3130 events is attained once all listed ACAD and Requirements events are complete. A manual entry is required in M-SHARP for SHORE-3030 and SEA-3130.

Aircrew shall complete all initial flight events in this phase of training in accordance with the requirements in the individual event header. Aircrew who have completed a CAT or TRAP flight event in this phase of training may maintain or regain proficiency in that same event by flying that event with a minimum of a section under (NS) conditions. AD and AE may maintain or regain proficiency in that same event by flying that event with a minimum of a single aircraft under (NS) conditions.

Lectures listed in each stage must be completed in order to successfully complete the stage. However, they can be taught at any time and are not necessarily prerequisites for the flight events in the stage.

3.12.2.1 Stages. The following stages are included in the Mission Skill Phase of training.

Par No.	Stage Name
3.12.3	Expeditionary Shore-Based Aviation Operations (SHORE)
3.12.4	Expeditionary Sea-Based Aviation Operations (SEA)
3.12.5	Combat Assault Transport (CAT)
3.12.6	Air Evacuation (AE)
3.12.7	Tactical Recovery of Personnel and Aircraft (TRAP)
3.12.8	Aerial Delivery (AD)

#### 3.12.3 Operate from Expeditionary Shore Based Sites (SHORE)

3.12.3.1 Purpose. This stage of training is designed to fulfill the requirement set in MCT 1.3.3.3.2, Conduct Aviation Operations From Expeditionary Shore-Based Sites.

Crew Requirement. P/P/CC/AO

SHORE-3030 0.0 365 B,T,A,R,M

Goal. Introduce an assault support mission in a medium threat environment with integrated fires in the objective area from an expeditionary shore-based site.

Requirement. Proficiency in SHORE-3030 is attained once NSQ, and achieving simultaneous proficiency in TG-2535, and MAT-2733. A manual entry is required in M-SHARP for SHORE-3030.

Performance Standard. Successful completion of NSQ, TG-2535, and MAT-2733.

Required Reading. NTTP Ch 8, 14, NATOPS Ch 7

Prerequisites. NSQ, TG-2535, MAT-2733

(Note: These prerequisites apply even though this code is manually entered based upon completion of NS-2384 and CAT-3231).

ACAD-3012 1.0 B,T,A CLSRM

EA ACEOI

Goal. The Aircrew will have a familiarity with effectively using an ACEOI.

Requirement. Utilize MAWTS-1 Courseware.

Performance Standards. Aircrew are introduced to the ACEOI.

Instructor. WTI

Prerequisites. ACAD-2510

3.12.4 Operate from Expeditionary Sea Based Sites (SEA)

3.12.4.1 Purpose. This stage of training is designed to fulfill the requirement set in MCT 1.3.3.3.1, Conduct Aviation Operations From Expeditionary Sea-Based Sites.

General. This flight is intended to be flown in conjunction with the CQ-2935.

Crew Requirement. P/P/CC/AO

SEA-3130 0.0 365 B,T,A,R,M

Goal. Conduct assault support in a low threat environment from an expeditionary sea-based site.

Requirement. Proficiency in SEA-3030 is attained once NSQ, CQ, and achieving simultaneous proficiency in TG-2535, and MAT-2733. A manual entry is required in M-SHARP for SEA-3130.

Performance Standard. Successful completion of NSQ, CQ, TG-2535, and MAT-2733

Required Reading. NTTP Ch 8, 13, NATOPS Ch 8

Prerequisites. NSQ, CQ, TG-2535, MAT-2733. (Note: These prerequisites apply even though this code is manually entered based upon completion of CQ-2935 and CAT-3231).

3.12.5 Combat Assault Transport (CAT)

3.12.5.1 Purpose. To introduce day and night assault support tactical mission

planning, briefing and execution. This stage of training is designed to fulfill the requirement set in MCT 1.3.4.1, Conduct Combat Assault Transport.

Crew Requirement. P/P/CC/AO

ACAD-3216 1.0 \* B,T,A CLSRM

Military Operations in Urban Terrain (S-Rel to USA, ACGU)

Goal. The CCUI/AOUI has a familiarity with responsibilities associated with a mission in a MOUT environment.

Requirement. Utilize MAWTS-1 courseware.

Performance Standard. Student is introduced to operations in a MOUT environment.

Instructor. WTI

Prerequisite. ACAD-2510

ACAD-3217 1.0 \* B,T,A CLSRM

Six Functions of Marine Aviation

Goal. The CCUI/AOUI has a familiarity with the different functions of Marine Corps aviation.

Requirement. Utilize MAWTS-1 courseware.

Performance Standard. Student is introduced to the 6 functions of Marine aviation.

Instructor. WTI

Prerequisite. ACAD-2510

CAT-3230 2.5 365 B,T,A,R,M (NS) A 2 MV-22

Goal. Introduce an Air Assault mission in a low threat environment using a minimum of a section.

Requirements

1. Discuss:
  - a. Use of SERE information.
  - b. ROE.
  - c. Objective area actions.
  - d. Objective area planning.
  - e. Contingency plans.
  - f. Escort operations.
  - g. Route considerations.
  - h. GCE Scheme of maneuver.
  - i. Threat considerations.
  - j. Fire Support Coordination Measures.
  - k. ACEOI.
  - l. PZ and LZ operations.
  - m. Execution Checklists.
  - n. Aircraft Survivability Equipment.

- o. Cabin configuration
  - p. Sectors of fire/Fields of fire.
2. Introduce:
- a. Execution of a low threat assault support mission using a section.
  - b. Execution checklists.
  - c. Escort operations.

Performance Standards

1. Maintain situational awareness with respect to the friendly and enemy situation and mission progress.
2. Properly employ all ASE IAW the MV-22 NTTP Manual.
3. Execute proper weapons employment procedures IAW the MV-22 NTTP Manual.
4. Demonstrate weapons employment procedures in a low threat tactical environment.

Instructor. LATI

Required Reading. NTTP Ch 8

Prerequisites. NSQ, TG-2535, MAT-2731, GTR-2832, ACAD-3217

Ordinance. 600 rds of appropriate ammunition, 40 chaff and 50 flares.

External Syllabus Support. Aerial gunnery, and expendable capable range, EW emitter, RW/FW Escort aircraft, and approved LZ

CAT-3233	4.0	180	B,T,A,R,M	(NS)	A	2	MV-22
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Goal. Introduce an Air Assault mission incorporating escorts, troops, and fire support agencies.

Requirements

1. Discuss:
  - a. ROE.
  - b. Objective area actions.
  - c. Objective area planning.
  - d. Contingency plans.
  - e. Escort operations.
  - f. Route considerations.
  - g. GCE Scheme of maneuver.
  - h. Threat considerations.
  - i. Fire Support Coordination Measures.
  - j. ACEOI.
  - k. PZ and LZ operations.
  - l. Execution Checklists.
  - m. Aircraft Survivability Equipment.
  - n. Cabin configuration.

- o. Sectors of fire/Fields of fire.
- 2. Introduce:
  - a. Escort operations.
  - b. Integrated objective areas.

Performance Standards

- 1. Maintain situational awareness with respect to the friendly and enemy situation and mission progress.
- 2. Properly employ all ASE IAW the MV-22 NTP Manual.
- 3. Execute proper weapons employment procedures IAW the MV-22 NTP Manual.
- 4. Demonstrate weapons employment procedures in a tactical environment.

Instructor. LATI

Required Reading. NTP Ch 8

Prerequisites. CAT-3230, AE-3330

Ordinance. 600 rds of appropriate ammunition, 40 chaff and 50 flares.

External Syllabus Support. Aerial gunnery, and expendable capable range, EW emitter, and approved LZ

3.12.6 Air Evacuation (AE)

3.12.6.1 Purpose. To introduce tactical mission planning, briefing and execution specific to air evacuation. This stage of training is designed to fulfill the requirement set in MCT 6.2.2 Conduct Air Evacuation.

Crew Requirement. P/P/CC/AO

ACAD-3310	1.0	*	B,T,A	CLSRM
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CASEVAC

Goal. The Aircrew has a familiarity with responsibilities associated with a casualty evacuation mission.

Requirement. Utilize MAWTS-1 courseware.

Performance Standard. Student is introduced to CASEVAC operations and responsibilities.

Instructor. WTI

Prerequisite. ACAD-3217

Required Reading. MV-22 TPG Pg 34, 76.

ACAD-3311	1.0	*	B,T,A	CLSRM
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NEO Execution

Goal. The CCUI/AOUI has a familiarity with responsibilities associated with a NEO mission.

Requirement. Utilize MAWTS-1 courseware.

Performance Standard. Student is introduced to the execution and responsibilities during a NEO mission.

Instructor. WTI

Prerequisite. ACAD-3217

AE-3330      2.0    365    B,T,A,R,M    (NS)      A      2      MV-22

Goal. Introduce air evacuation mission.

Requirement.

1. Discuss:
  - a. Alert postures/stand-by timelines.
  - b. Objective area analysis/planning.
  - c. Fire support coordination measures.
  - d. Tactical airspace considerations.
  - e. Escort considerations.
  - f. FARP planning.
  - g. Contingency planning.
  - h. Cabin configuration.
  - i. Medical considerations.
  - j. Levels of care.
  - k. Casualty priorities.
  - l. CASEVAC 9 line.
  - m. Non-Combatant Evacuation operations.
  - n. Litter and stanchion operations.
2. Introduce:
  - a. Execution of a medium threat air evacuation mission.
  - b. CASEVAC 9 line.

Performance Standards

1. Maintain situational awareness with respect to the friendly and enemy situation and mission progress.
2. Properly employ all ASE IAW the MV-22 NTP Manual.
3. Execute proper weapons employment procedures IAW the MV-22 NTP Manual.
4. Demonstrate knowledge of air evacuation mission equipment.
5. Demonstrate knowledge of CASEVAC and NEO mission procedures.

Instructor. LATI

Prerequisites. CAT-3230

Ordnance. 600 rds appropriate ammunition, 40 chaff and 50 flares

External Syllabus Support. Aerial gunnery and expendable capable range, approved LZ.

### 3.12.7 Tactical Recovery of Aircraft and Personnel (TRAP)

3.12.7.1 Purpose. To introduce tactical mission planning, briefing, and execution specific to TRAP. This stage of training is designed to fulfill the requirement set in MCT 6.2.1.1 Conduct Aviation Support of Tactical Recovery of Aircraft and Personnel (TRAP).

Crew Requirement. P/P/CC/AO

ACAD-3410 1.0 \* B,T,A CLSRM

Personnel Recovery

Goal. The CCUI/AOUI has a familiarity with responsibilities associated with a TRAP mission.

Requirement. Utilize MAWTS-1 courseware.

Performance Standard. Student is introduced to all responsibilities during a TRAP mission.

Instructor. WTI

Required Reading. ASTACSOP Pg 47-59

Prerequisite. ACAD-3217

TRAP-3430 2.0 365 B,T,A,R,M (NS) A 2 MV-22

Goal. Introduce a tactical recovery of aircraft or personnel mission.

Requirement.

1. Discuss:
  - a. TRAP mission analysis.
  - b. Threat analysis.
  - c. Alert postures.
  - d. Use of tactical SOPs.
  - e. Use of standardized TRAP template.
  - f. Enlisted Aircrew responsibilities.
  - g. Use of Mission kits (Medevac, Hoist, etc.).
  - h. Use of ASE.
  - i. CRM.
  - j. Assault Support Tac SOP.
  - k. Quick reaction force.
  - l. Go/No go criteria.
  - m. TRAP COAs.
2. Introduce:
  - a. Execution of a TRAP mission.
  - b. Trap Template.
  - c. ISOPREP data.
  - d. Types of Trap.
  - e. authentication.

Performance Standards

1. Maintain situational awareness with respect to the friendly and enemy situation and mission progress.
2. Configure the cabin for TRAP mission.
3. Properly execute assigned mission utilizing appropriate COA.



Instructor. LATI

Prerequisites. CAT-3230, ACAD-3410

Ordnance. 600 rds appropriate ammunition, 40 chaff and 50 flares

External Syllabus Support. Aerial gunnery and expendable capable range, aircraft to perform RMC, RESCORT/RESCAP, approved LZ

### 3.12.8 Air Delivery (AD)

3.12.8.1 Purpose. This stage of training is designed to fulfill the requirement set in MCT 4.3.4 Conduct Air Delivery.

3.12.8.2 General. All air delivery operations shall utilize AD support.

Crew Requirement. P/P/CC/AO

AD-3530      0.0      365      B,T,A,R,M

Goal. Introduce an aerial delivery mission in a medium threat environment using a minimum of a section with integrated fires in the objective area.

Requirement. Proficiency in AD-3530 is attained via simultaneous proficiency in AD-2631 and CAT-3230. A manual entry is required in M-SHARP for AD-3530.

Required Reading. NTTP Ch 11, NATOPS Ch 9.7-9.10

Prerequisites. CAT-3230 and AD-2631 (Note: These prerequisites apply even though this code is manually entered based upon completion of AD-2631 and CAT-3230).

### 3.13 CORE PLUS SKILL PHASE

3.13.1 Purpose. To establish training for Core Plus Skill events. (theater specific, low-probability of occurrence)

3.13.2 General.

Admin Notes:

ROC will be per T&R Program manual.

Crew chiefs/aerial observers may fly night flights using NVDs in this phase under HLL or LLL conditions provided they are NSQ for that light level.

Prior to training in this phase a Crew chief/aerial observer should be complete with core skill training.

3.13.2.1 Stages. The following stages are included in the Core Plus Skill Phase of training.

Par No.	Stage Name
3.13.3	Aerial Delivery (AD)
3.13.4	Expeditionary Sea-Based Aviation Operations (AI/E)
3.13.5	Rapid Insertion/Extraction Mission (RI/E)
3.13.6	Aviation Delivered Ground Refueling (ADGR)
3.13.7	Aviation Delivered Battlefield Illumination (BI)
3.13.8	Airborne Command and Control (C2)
3.13.9	Defensive Weapon System (DWS)
3.13.10	Chemical, Biological, Radiological, and Nuclear (CBRN)
3.13.11	Reduced Visibility Landings (RVL)
3.13.12	Carrier Qualification (CQ)
3.13.13	Defensive Combat Measures (DCM)

3.13.3 Air Delivery (AD)

3.13.3.1 Purpose. To develop proficiency in personnel parachute operations (PARAOPS) and day/NVD external load operations from confined areas.

3.13.3.2 General

All maneuver descriptions are in the NTP.

An NSI is required for initial NVD external events.

Crew Requirements. P/P/CC/AO for aircraft events.

AD-4030	1.5	365	B,T,A,R,M	(NS)	A	1	MV-22
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Goal. Introduce PARAOPS procedures.

Requirements

1. Discuss:
  - a. CRM during PARAOPS (aircrew/jumpmaster responsibilities).
  - b. Tactical considerations for air delivery of troops.
  - c. MV-22 TPG air delivery briefing guide.
  - d. Voice communication/standard terminology during PARAOPS.
  - e. Cargo handling manual.
  - f. CRM during PARAOPS.
2. Introduce:
  - a. Inspection of anchor cable.
  - b. Air delivery checklist.

Performance Standards

1. Execute PARAOPS procedures IAW the MV-22 NTP.
2. Demonstrate proper crew coordination during PARAOPS operations.

Prerequisites. CAL-2132, ACAD-2610

External Syllabus Support. Certified Drop Zone, Jumpmaster, qualified troops.

AD-4031	1.0	365	B,T,A,R		A	1	MV-22
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Goal. Introduce single point external load hook-ups and drop-offs to a confined area.

Requirements

1. Discuss:
  - a. Crew responsibilities and communications during external operations.
  - b. Aircraft hook system. Pendant preflight and checks.
  - c. Standard terminology.
  - d. Cargo hook-up procedures.
  - e. HWOOG operation.
  - f. HST composition, functions, and signals.
  - g. HST safety brief.

- h. Single point operations.
  - i. Reduced visibility conditions.
  - j. Terrain/obstacle clearance.
  - k. Inadvertent IMC procedures.
  - l. Aircraft emergencies with external load.
  - m. Tactical considerations during external lift operations.
  - n. Aerodynamic characteristics of external loads.
  - o. Light and heavy external load considerations.
  - p. Load jettison procedures.
2. Introduce:
- a. Aircraft hook system. Pendant preflight and checks
  - b. External load hook-ups and drop-offs to a confined area (minimum of 5 for initial sorties).
  - c. Waveoff with external load.
  - d. External load and rigging inspection.

Performance Standards

- 1. Demonstrate Proper aircraft hook system and pendant preflight checks IAW Crew Chief Pocket Checklist (NFM-800).
- 2. Execute proper external procedures IAW the MV-22 NTP Manual.
- 3. Demonstrate proper ICS terminology during external operations.
- 4. Place the load within 10 meters of desired location.

Instructor. BICC

Prerequisites. CAL-2132

Required Reading. NTP Ch 9, NATOPS Ch 4.12, 9.4

External Syllabus Support. External load, HST, approved LZ with 7nm of protected airspace to 1,000' AGL

AD-4032	1.5	365	B,T,A,R	A	1	MV-22
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Goal. Introduce dual point external load hook-ups and drop-offs to a confined area.

Requirements

- 1. Discuss:
  - a. CRM.
  - b. Aircraft hook system. Pendant preflight and checks.
  - c. Standard terminology.
  - d. Cargo hook-up procedures for dual point.
  - e. HWOOG operation.
  - f. HST composition, functions, and signals.
  - g. HST safety brief.
  - h. Dual point operations.

- i. Reduced visibility conditions.
  - j. Terrain/obstacle clearance.
  - l. Inadvertent IMC procedures.
  - m. Aircraft emergencies with external load.
  - n. Tactical considerations during external lift operations.
  - o. Aerodynamic characteristics of dual point external loads.
  - p. Light and heavy external load considerations.
  - q. Auto-jettison functionality.
  - r. 70/30-30/70.
2. Introduce:
- a. Dual point external load hook-ups and drop-offs to a confined area (minimum of 5 for initial sorties).
  - b. Waveoff with external load.
  - c. Auto-jettison utilization.

Performance Standards

- 1. Execute proper external procedures IAW the MV-22 NTP Manual.
- 2. Demonstrate proper ICS terminology during dual point external operations.
- 3. Place the load within 10 meters of desired location.

Instructor. BICC

Prerequisites. AD-4031

External Syllabus Support. External load, HST, approved LZ with 7nm of protected airspace to 1,000' AGL

AD-4033	1.5	365	B,T,A,R	NS	A	1 MV-22
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Goal. Introduce single point external cargo operations at night using NVDs.

Requirements

- 1. Discuss:
  - a. All previously introduced EXT stage items.
  - b. NVD briefing guide.
  - c. Aircraft and landing zone lighting.
  - d. Aircraft emergencies with external load.
- 2. Introduce:
  - a. Identifying the zone and load using NVDs.
  - b. External load hook-ups and drop-offs to a confined area (minimum of 5 for initial sorties).
  - c. Use of aircraft lighting (search light, belly light).
- 4. Review: AD-2631

Performance Standards

- 1. Execute proper NVD external procedures IAW the MV-22 NTP Manual.

2. Demonstrate proper ICS terminology during external operations.
3. Place load within 10 meters of desired location.

Instructor. NSI

Required Reading. MAWTS-1 NVD Manual Ch 15.4

Prerequisites. NS-2331, NS-2381 (if LLL), AD-4031

External Syllabus Support. External load, HST, approved LZ with 7nm of protected airspace to 1,000' AGL.

AD-4034	1.5	365	B,T,A,R,M	NS	A	1	MV-22
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Goal. Introduce dual point external cargo operations at night using NVDs.

Requirements

1. Discuss:
  - a. All previously introduced EXT stage items.
  - b. NVD briefing guide.
  - c. Aircraft and landing zone lighting.
  - d. Aircraft emergencies with external load.
2. Introduce:
  - a. Dual point external operations using NVDs.
  - b. External load hook-ups and drops to a confined area (minimum of 5 for initial sorties).
  - c. Use of aircraft lighting (search light, belly light).

Review: AD-4032

Performance Standards

1. Execute proper NVD external procedures IAW the MV-22 NTP Manual.
2. Demonstrate proper ICS terminology during external operations.
3. Place load within 10 meters of desired location.

Instructor. NSI

Prerequisites. AD-4032, AD-4033

External Syllabus Support. External load, HST, approved LZ with 7nm of protected airspace to 1,000' AGL.

3.13.4 Alternate Insertion/Extraction Techniques (AIE)

3.13.4.1 Purpose. To develop proficiency in tiltrotor alternate insertion and extraction techniques and procedures.

3.13.4.2 General. Initial AIE-4130 through AIE-4133 shall be conducted during the day. Subsequent execution of AIE-4130 through AIE-4132 may be conducted at night. Crew chiefs shall be NSQ for the appropriate light level if conducting AIE-4130 through AIE-4133 using NVDs. AIE-4133 shall not be conducted at night.

Crew Requirement. P/P/CC/AO

ACAD-4111 0.5 \* B,T,A CLSRM

EA MV-22 Alternate Insertion/Extraction

Goal. The CCUI/AOUI has an introductory knowledge of procedures to execute Fastrope, Rappel, SPIE, and Helocast operations from the MV-22.

Requirement. Utilize MAWTS-1 Courseware

Performance Standard. Student is introduced to procedures for AIE techniques.

Instructor. BICC

Required Reading. NTTP Ch. 11

Prerequisite. ACAD-2210

ACAD-4112 0.5 \* B,T,A CLSRM

EA MV-22 Hoist Operations

Goal. The CCUI/AOUI has an introductory knowledge of procedures to execute Hoist from the MV-22.

Requirement. Utilize MAWTS-1 Courseware

Performance Standard. Student is introduced to Hoist procedures.

Instructor. BICC

Required Reading. NTTP Ch. 11

Prerequisite. ACAD-2210

AIE-4130 1.5 365 B,T,A,R,M (NS) A 1 MV-22

Goal. Introduce insertion procedures via fast rope and rappel.

Requirements

1. Discuss:
  - a. HIGE/HOGE requirements.
  - b. Crew chief duties.
  - c. HRST brief.
  - d. Voice communication/standard terminology.
  - e. ICS failure/hand and arm signals.
  - f. Wing SOP.
  - g. Obstacle clearance/wave-off.
  - h. Emergency procedures.
  - i. CG limitations.
  - j. MV-22 interim authority to operate (IATO).
  - k. LZ considerations (Brown/White out).
2. Introduce:
  - a. Preflight of fast rope/rappel rigging.
  - b. Troop insertion via fast rope/rappelling.

Performance Standards

1. Maintain proper lookout for hover operations when deploying troops.

2. Execute proper AIE procedures IAW the MV-22 NTP Manual.
3. Maintain obstacle clearance.

Instructor. BICC

Prerequisites. EXT-4031, EXT-4033 (if flown at night), ACAD-4111

External Syllabus Support. HRST Master, qualified Marines.

AIE-4131	1.5	365	B,T,A,R,M	(NS)	A	1	MV-22
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Goal. Introduce insertion/extraction procedures via hoisting.

Requirements

1. Discuss:
  - a. HIGE/HOGE requirements.
  - b. CRM.
  - c. Voice communication/standard terminology.
  - d. ICS failures/hand and arm signals.
  - e. Wing SOP.
  - f. Obstacle clearance.
  - g. Emergency procedures.
2. Introduce:
  - a. Inspection of Hoist cable.
  - b. Troop insertion/extraction via Hoisting procedures.

Performance Standards

1. Maintain proper lookout for extended hover when extracting/inserting troops.
2. Execute proper SPIE procedures IAW the MV-22 NTP Manual.
3. Maintain obstacle clearance.

Instructor. BICC

Prerequisites. EXT-4031, EXT-4033 (if flown at night), ACAD-4112

AIE-4132	1.5	365	B,T,A,R,M	(NS)	A	1	MV-22
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Goal. Introduce conduct of SPIE operations.

Requirements

1. Discuss:
  - a. HIGE/HOGE requirements.
  - b. CRM. Pilots, crew chief, HRST Master and HRST Safety Observer brief.
  - c. Voice communication/standard terminology.
  - d. ICS failures/hand and arm signals.
  - e. Wing SOP.
  - f. Obstacle clearance.
  - g. Emergency procedures.
2. Introduce:

- a. Inspection of SPIE Rig.
- b. Troop insertion/extraction via SPIE Rig.

Performance Standards

1. Maintain proper lookout for extended hover when extracting/inserting troops.
2. Execute proper SPIE procedures IAW the MV-22 NTTP Manual.
3. Maintain obstacle clearance.

Instructor. BICC

Prerequisites. EXT-4031, EXT-4033 (if flown at night), ACAD-4111

External Syllabus Support. HRST master, qualified troops.

AIE-4133	1.5	365	B,T,A,R,M	A	1	MV-22
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Goal. Introduce aerial insertion of troops and equipment via helo cast and/or soft duck (deflated rubber boat) and introduce SAR operations.

Requirements

1. Discuss:
  - a. CRM while performing helo cast or soft duck.
  - b. Proper rigging and preflight of equipment to be inserted via helo cast and soft duck.
  - c. Low altitude aircraft emergencies over water.
  - d. Ditching/water landing.
  - e. Salt encrustation/compressor stall.
  - f. Helo cast/soft duck aerial delivery altitudes and airspeeds.
  - g. Voice communications/standard terminology.
  - h. Flight Director search patterns.
  - i. Cargo handling manual.
2. Introduce:
  - a. Insertion of troops and equipment by helo cast or soft duck.
  - b. Preflight of aircraft, troops and equipment for helo cast or soft duck.
  - c. SAR patterns and over-water hoisting operations.

Performance Standards

1. Execute helo cast or soft duck procedures IAW the MV-22 NTTP Manual.
2. Demonstrate proper crew coordination during helo cast or soft duck operations.

Instructor. BICC

Prerequisite. CAL-2132, AD-4031 (if flown at night), ACAD-4111

3.13.5 Rapid Insertion/Extraction Mission (RI/E)

3.13.5.1 Purpose. To demonstrate proficiency in tiltrotor rapid insertion and extraction techniques and procedures. This stage of training is designed to



fulfill the requirement set in MCT 1.3.4.1.1 Conduct Airborne Rapid Insertions / Extraction.

3.13.5.2 General. Initial RIE-4180 may be conducted day or night. Aircrew shall be complete in the appropriate AIE skill prior to conducting RIE-4180 and NSQ for the appropriate light level if conducting RIE-4180 using NVDs.

Crew Requirement. P/P/CC/AO

RIE-4180	2.5	365	B,T,A,R,M	(NS)	A	1	MV-22
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Goal. Demonstrate the ability to execute rapid insertion / extraction operations in a tactical environment.

Requirements

1. Discuss:
  - a. CRM during AIE.
  - b. Tactical considerations for applicable AIE mission.
2. Review: Appropriate AIE skill.

Performance Standards

1. Execute AIE procedures IAW the MV-22 NTP.
2. Demonstrate proper crew coordination during AIE operations.
3. Complete the assigned mission.

Instructor. BICC

Prerequisite. Appropriate AIE skill proficient

External Syllabus Support. Jumpmaster/Castmaster/HRST Master, qualified troops

3.13.6 Aviation Delivered Ground Refueling (ADGR)

3.13.6.1 Purpose. To introduce day and night rapid ground refueling and FARP procedures.

Crew Requirement. P/P/CC/AO

ACAD-4210	1.0	*	B,T,A				CLSRM
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EA MV-22 Aviation Delivered Ground Refueling

Goal. The CCUI/AOUI has an introductory knowledge of the MV-22 Aviation Delivered Ground Refueling equipment and FARP setup.

Requirement. Utilize MAWTS-1 courseware

Performance Standard. Student is introduced to ADGR equipment set-up and mission execution

Instructor. BICC

Required Reading. NATOPS Ch 4.15, 9.11, NTP Ch. 12

Prerequisites. ACAD-2210

LAB-4220	2.0	*	B,T,A		A	1	MV-22
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Aviation Delivered Ground Refueling Lab

Goal. The CCUI/AOUI has an introductory knowledge of the setup of an MV-22 RGR site.

Requirement. Set up a FARP utilizing at least one MAT and a FARE kit.

Performance Standard. Student demonstrates practical knowledge of ADGR set-up procedures.

Instructor. BICC

Required Reading. NTTP Ch 12, ASTACSOP Pg 57-64

Prerequisite. ACAD-4210

ADGR-4230	0.5	365	B,T,A,R	(NS)	A	1	MV-22
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Goal. Introduce an ADGR mission.

Requirements

1. Discuss:
  - a. RGR site evaluation and selection.
  - b. Fuel planning.
  - c. RGR site security considerations.
2. Introduce: Tactical planning, briefing, and execution of an RGR mission during day or night. The CCUI/AOUI will assist in the set up of the ADGR site.

Performance Standards

1. Maintain situational awareness with respect to the friendly and enemy situation and mission progress.
2. Demonstrate proper knowledge and set up of the ADGR mission kit.
3. Safely conduct refueling operations in the ADGR site.
4. Provide fuel and/or ordnance to receivers.
5. Demonstrate proper knowledge of NVD tactical considerations IAW the MV-22 NTTP Manual and MAWTS-1 NVD Manual as applicable for the mission.

Prerequisites. CAL-2132, NS-2331 (If HLL), NS-2381(If LLL), LAB-4220

External Syllabus Support. Approved site for refueling operations, receiver.

3.13.7 Aviation Delivered Battlefield Illumination (BI)

3.13.7.1 Purpose. To introduce, qualify, attain and/or maintain proficiency in Aircraft Parachute Flare (APF) delivery for Battlefield Illumination (BI).

3.13.7.2 General

Initial codes will be instructed by a BI proficient and qualified CC QASO.

A CC Quality Assurance Safety Officer (QASO) is required for all battlefield illumination flights.

At the completion of this stage, the aircrew shall be qualified to act as a BI team member/team leader.

Crew Requirements. P/P/QASO/CC/AO.

ACAD-4310	1.0	*	B,T,A				CLSRM
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EA Battlefield Illumination

Goal. The CCUI/AOUI has a familiarity with battlefield illumination procedures.

Requirement. Utilize MAWTS-1 courseware

Performance standards. Student is introduced to Battlefield Illumination equipment and mission execution.

Instructor. QASO

Required reading. NTPP 3-22.3-MV-22, Appendix C, NTRP 3-22.4-MV-22B, Chapter 9.

Prerequisites. ACAD-2310

BI-4330	1.5	365	B,T,A,R,M	NS	A	1	MV-22B
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Goal. Introduce, qualify, or maintain proficiency in battlefield illumination as a Team Member/Team Leader.

Requirements

1. Discuss:
  - a. CRM.
  - b. ICS procedures.
  - c. APF characteristics.
  - d. APF malfunctions.
  - e. Cabin configuration.
  - f. APF emergency procedures.
2. Introduce:
  - a. APF Inspection and loading.
  - b. Cabin configuration for BI.
  - c. Safety Procedures.
  - d. APF delivery(minimum 6 LUU-2 or LUU-19 APFs).

Performance Standards

1. Demonstrate the ability to inspect APFs.
2. Demonstrate proper crew coordination procedures for BI.
3. Demonstrate understanding of emergency procedures for APFs.
4. Demonstrate proper procedures for setting APF timers.

Instructor. QASO

Prerequisite. ACAD-4310, NS-2384, NS-2385 GTR-2832

Ordinance. 6 LUU-2 and/or LUU-19 Series APFs.

3.13.8 Airborne Command and Control (C2)

3.13.8.1 Purpose. To develop the ability to provide an Airborne Command and Control vehicle, communications and situational awareness to command elements.

3.13.8.2 General. Event to be flown in conjunction with a Mission Skills event. Upon the completion of the AC2 event the pilot will be considered capable of performing that particular mission profile.

Crew Requirements. P/P/CC/AO

ACAD-4410    0.5    \*    B,T,R    CLSRM

MV-22 Airborne Command and Control

Goal. The PUI will have a familiarity with the aircraft capabilities, communications and situational awareness components/access points and their operation in support of AC2 missions.

Requirement. Utilize MAWTS-1 courseware

Performance Standards. Student is introduced to MV-22 Command and Control equipment and procedures.

Instructor. BICC

Prerequisite. ACAD-2310

LAB-4420    1.0    \*    B,T    A    1    MV-22

Airborne Command and Control Lab

Goal. The CCUI/AOUI will have an introductory knowledge of the cabin set-up of an MV-22 for AC2 missions.

Requirement. Prepare the aircraft cabin for MV-22 command and control missions.

Performance Standard. To introduce the student to set-up, preparation, and understanding of MV-22 command and control procedures.

Instructor. BICC

Prerequisite. ACAD-4410

AC2-4430    0.0    730    B,T,R,M    (NS)    A    1    MV-22

Goal. Tactically employ the MV-22 in a command and control mission.

Requirements

1. Discuss:
  - a. Aircrew coordination.
  - b. Cabin setup.
  - c. Radio setup (organic and carry-on).
  - d. Other situational awareness/communications capabilities (chat, full motion video, DWS targeting FLIR).
  - e. Radio responsibilities during a command and control mission.
  - f. MCA planning, selection, and routing.
  - g. Aircraft maximum endurance profiles/configurations.
2. Introduce:
  - a. Aircraft systems setup.
  - b. Aircraft employment.

Performance Standards. Effectively utilize all aircraft systems ISO the mission requirements.

Prerequisites. LAB-4420, NSQ appropriate light level, DWSQ if utilizing DWS sensor

External Syllabus Support. Supported aviation or ground unit.

### 3.13.9 Defensive Weapon System (DWS)

3.13.9.1 Purpose. To develop the ability to control the employment of the MV-22B Defensive Weapon System (DWS), deliver accurate air-to-ground fire employing the crew served weapons and provide defensive fire on targets of opportunity.

#### 3.13.9.2 General

The aircraft weapons system lectures must be conducted by a designated MAWTS-1 crew chief instructor, squadron WTI, or DWSI.

A DWSI is required for unqualified aircrew.

At the completion of this stage, the aircrew will demonstrate knowledge of the DWS and ordnance delivery with the system.

These sorties are ordnance driven. Ordnance expenditure requirements shall be adhered to in order for the crew member to obtain a DWS qualification. Flights should be scheduled to maximize range time so that ordnance expenditure requirements can be met.

Successful completion of this stage constitutes DWSQ. A qualification letter signed by the commanding officer stating the crew member is DWSQ is to be placed in the crew member's NATOPS jacket prior to conducting any defensive weapon system flight without a designated DWSI.

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

ACAD-4510	1.0	*	B,T,A	CLSRM
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#### GAU-17/A

Goal. The CCUI/AOUI has a familiarity with the GAU-17/A minigun and how to properly utilize it.

Requirement. Utilize MAWTS-1 courseware.

Performance Standard. Student is introduced to the GAU-17/A minigun.

Instructor. DWSI

Required reading. NAVAIR 11-95GAU-17-1

Prerequisites. ACAD-2510.

ACAD-4511	1.0	*	B,T,A	CLSRM
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#### EA MV-22 DWS

Goal. The CCUI/AOUI has a familiarity with the components, characteristics, and operation of the Interim Defensive Weapon System.

Requirement. Utilize MAWTS-1 courseware.

Instructor. DWSI

Required reading. 3.22-3 MV-22 NTP Ch. 7

Prerequisites. ACAD-4510.

LAB-4520	0.5	*	B,T,A	A
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#### IDWS weapon installation and ammo can loading procedures

Goal. The CCUI/AOUI has a familiarity with installing the GAU-17/A on the turret and with ammo can loading procedures.

Requirement. Utilize MAWTS-1 courseware.

Performance Standard. Student is introduced to DWS weapon

installation and ammunition can loading, and understand how to manually retract the weapon system.

Instructor. DWSI

Required reading. 3-22.3 MV-22 NTP Ch. 7

Prerequisites. ACAD-4511

External syllabus support. MV-22 configured with DWS system, Aircraft placed on jacks, 1000 rounds 7.62mm ammunition.

LAB-4521 1.5 \* B,T,A S/A

#### IDWS Functionality

Goal. The CCUI/AOUI has a familiarity with all functions and controls associated with the DWS.

Required reading. ACS 16624 DWS technical and flight manual

Prerequisites. LAB-4520.

External syllabus support. DWS simulator or MV-22 configured with DWS system and aircraft placed on jacks.

LAB-4522 1.0 180 B,T,A,R,M C/S

#### DWS Emergency Procedures

Goal. The CCUI/AOUI has a familiarity with all emergency procedures associated with the IDWS and the GAU-17.

Required reading. ACS 16624 DWS technical and flight manual, A1-V22AB-NFM-800.

Prerequisites. LAB-4521

External syllabus support. DWS simulator if applicable.

LAB-4523 1.0 \* B,T,A C

#### GAU-17/A Breakdown and Cleaning Procedures

Goal. The CCUI/AOUI will be familiar with the breakdown, inspection, function check, and cleaning procedures of the GAU-17/A mini gun.

##### Requirements

1. Discuss:
  - a. Nomenclature
  - b. Inspection procedures
  - c. Weapon emergencies
  - d. Cleaning procedures
2. Introduce:
  - a. Cycle of operation
  - b. Weapons checklist
  - c. Trouble shooting procedures
  - d. DWS inspection and mounting procedures

##### Performance Standards

1. Demonstrate knowledge of nomenclature, cycle of operation, and inspection procedures for the GAU-17/A machine gun.

2. Demonstrate DWS inspection procedures and operation.
3. Demonstrate trouble shooting procedures.

Instructor. DWSI

Required Reading. NAVAIR 11-95GAU17-1

Prerequisite. ACAD-4510

DWS-4531	1.5	*	B,T,A	A	2	MV-22B
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Goal. To introduce defensive weapons system employment in a day section environment with no rounds.

Requirements

1. Discuss:
  - a. CRM.
  - b. ICS procedures.
  - c. Safety considerations.
  - d. Weapons conditions.
  - e. Weapons commands.
  - f. Weapon system malfunctions/stoppages/emergencies.
  - g. Crew served weapons checklist.
  - h. Aiming techniques.
  - i. Muzzle awareness.
  - j. Weapons preparation/nomenclature.
  - k. Target identification.
  - l. Sensor utilization.
  - m. Gunner station symbology.
  - n. TSAR.
  - o. Shifting fires and target handoff procedures.
2. Introduce:
  - a. Preparation of weapons and aircraft configuration.
  - b. Engaging pre-briefed targets with defensive weapons system in training mode.
  - c. Weapons parameters and limitations.
  - d. Add a waypoint and utilize the capture point function.

Performance Standards

1. Demonstrate knowledge of the defensive weapons system operating procedures.
2. Demonstrate the ability to deploy the defensive weapon system to all positions.
3. Demonstrate proper utilization of all weapons commands.
4. Demonstrate emergency weapons procedures.
5. Verbally demonstrate knowledge of weapons parameters.
6. Demonstrate use of the crew served weapons checklist.

7. Demonstrate the ability to operate the defensive weapon system controls to acquire and simulate engagement on multiple targets in a day single aircraft environment.

Instructor. DWSI

Required reading. NFM-800 Weapons checklist

Prerequisites. 3000 phase complete. TG-2535, LAB-4522

DWS-4532    1.5    365    B,T,A,R,M    1    MV-22B

Goal. To introduce defensive weapons system employment in a day single-aircraft environment.

Requirements

1. Discuss:
  - a. CRM.
  - b. ICS procedures.
  - c. Safety.
  - d. Weapons malfunctions/stoppages/emergencies.
  - e. Muzzle awareness.
  - f. Weapons preparation/nomenclature.
  - g. Sensor utilization.
  - h. Fields of fire/Sectors of fire.
2. Introduce:
  - a. Defensive weapon system operations.
  - b. Fields of fire.
  - c. Sectors of fire.
  - d. Simulated approach to landings while engaging targets.

3. Review: DWS-4531

Performance Standards

1. Demonstrate knowledge of the three weapons control procedures.
2. Demonstrate use of crew served weapons checklists.
3. Demonstrate proper utilization of all fire control voice and hand signals.
4. Demonstrate the ability to operate the defensive weapon system controls to acquire and engage multiple targets in a day single aircraft environment.
5. Demonstrate the ability to perform weapon system troubleshooting and emergency procedures.
6. Verbally demonstrate knowledge of weapons parameters.
7. Demonstrate knowledge of cabin configuration limitations while utilizing the DWS.

Instructor. DWSI

Prerequisites. DWS-4531

Ordnance. 2000 rounds per gunner of appropriate ammunition



External Syllabus Support. Appropriate aerial gunnery range and moving land target (MLT) if available

DWS-4533	1.5	365	B, T, A, R	2	MV-22B
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Goal. To introduce multi-aircraft Defensive Weapons System employment.

## Requirements

1. Discuss:
  - a. CRM.
  - b. ICS procedures.
  - c. Safety.
  - d. Weapons system malfunctions/stoppages/emergencies.
  - e. Muzzle awareness in a multi-aircraft environment.
  - f. Weapons preparation/nomenclature.
  - g. Integrating sectors of fire.
  - h. Surface danger zones.
2. Introduce:
  - a. Firing techniques in a multi-aircraft environment.
  - b. Target hand off to other aircraft.
  - c. Muzzle awareness in a multi-aircraft environment.
  - d. Formation flight patterns for weapons employment.

## Performance Standards

1. Demonstrate the ability to operate the defensive weapon system controls to acquire and engage multiple targets in a day multi-aircraft environment.
2. Demonstrate use of fire control procedures to suppress targets.
3. Demonstrate use of system sensors for target acquisition and engagement in a multi-aircraft environment.
4. Maintain muzzle awareness at all times during multi-aircraft live fire evolution.
5. Demonstrate the ability to perform weapon system troubleshooting and emergency procedures.
6. Demonstrate the ability to successfully suppress targets while conducting target hand-off from the gunners station to another weapon system within the flight.

Instructor. DWSI

Prerequisites. DWS-4532

Ordnance. 2000 rounds per gunner of appropriate ammunition.

External Syllabus Support. Appropriate aerial gunnery range and moving land target (MLT) if available.

DWS-4534	2.0	*	B, T, A	NS	A	2	MV-22
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Goal. To introduce defensive weapons system employment in a night section environment with no rounds.

Requirements

1. Discuss:
  - a. CRM.
  - b. ICS procedures.
  - c. Safety considerations.
  - d. Weapons conditions.
  - e. Weapons commands.
  - f. Weapon system malfunctions/stoppages/emergencies.
  - g. Crew served weapons checklist.
  - h. Aiming techniques at night.
  - i. Muzzle awareness.
  - j. Weapons preparation/nomenclature.
  - k. Target identification at night.
  - l. Sensor utilization.
  - m. Training mode.
2. Introduce:
  - a. Preparation of weapons and aircraft.
  - b. Practice acquiring pre-briefed targets with defensive weapons.  
system at night
  - c. Weapons parameters.
3. Review: DWS-4533

Performance Standards

1. Demonstrate knowledge of the defensive weapons system operating procedures.
2. Demonstrate understanding of all sensor modes of operation.
3. Demonstrate proper utilization of all fire control voice and hand signals at night.
4. Demonstrate appropriate emergency weapons procedures.
5. Verbally demonstrate knowledge of weapons parameters.
6. Demonstrate use of the crew served weapons checklist.
7. Demonstrate the ability to operate the defensive weapon system controls to acquire, and simulate engagement on multiple targets in a night single aircraft environment.

Instructor. DWSI

Prerequisites. DWS-4531

DWS-4535	1.5	365	B,T,A,R	NS	A	1	MV-22
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Goal. To introduce single aircraft DWS employment at night under HLL or LLL conditions.

Requirements

1. Discuss:
  - a. CRM.

- b. ICS procedures.
  - c. Safety.
  - d. Weapons malfunctions/stoppages/emergencies.
  - e. Muzzle awareness.
  - f. Weapons preparation/nomenclature.
  - g. Weapons effects on NVDs.
  - h. Sensor utilization at night.
2. Introduce:
- a. Firing techniques utilizing NVDs.
  - b. Target acquisition utilizing NVDs and DWS sensors.
  - c. Single aircraft defensive weapon system operations at night.
3. Review: DWS-4532, 4534

Performance Standards

- 1. Demonstrate the ability to operate the defensive weapon system controls to acquire, sight on, and fire on multiple targets in a single aircraft environment at night utilizing NVDs.
- 2. Demonstrate use of fire control procedures to suppress targets at night.
- 3. Demonstrate use of system sensors for target acquisition and engagement in a single aircraft environment at night utilizing NVDs.
- 4. Demonstrate the ability to perform weapon system troubleshooting and emergency procedures at night.
- 5. Demonstrate knowledge of cabin configuration limitations while utilizing the DWS.

Instructor. DWSI

Prerequisites. DWS-4532,4534

Ordinance. 2000 rounds per gunner of appropriate ammunition.

External Syllabus Support. Appropriate aerial gunnery range and moving land target (if available).

DWS-4536	1.5	240	B,T,A,R,M	NS	A	2	MV-22
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Goal. To introduce multi-aircraft Defensive Weapons System employment at night under HLL or LLL conditions.

Requirements

- 1. Discuss:
  - a. CRM.
  - b. ICS procedures.
  - c. Safety.
  - d. Weapons malfunctions/stoppages/emergencies.
  - e. Muzzle awareness in a multi-aircraft environment.
  - f. Weapons preparation/nomenclature.
  - g. Weapons effects on NVDs.

2. Introduce:
  - a. Firing techniques in a multi-aircraft environment at night.
  - b. Target acquisition at night in a multi-aircraft environment.
  - c. Multi-aircraft defensive weapon system operations at night.
3. Review: DWS-4835

Performance Standards

1. Demonstrate the ability to operate the defensive weapon system controls to acquire and engage multiple targets in a multi-aircraft environment at night.
2. Demonstrate use of fire control procedures to suppress targets at night.
3. Maintain muzzle awareness at all times during multi-aircraft live fire evolutions.
4. Demonstrate use of system sensors for target acquisition and engagement in a multi-aircraft environment at night.
5. Demonstrate the ability to perform weapon system troubleshooting and emergency procedures at night.
6. Demonstrate the ability to successfully suppress targets while conducting target hand-off from the gunners station to another weapon system within the flight.

Instructor. DWSI

Prerequisites. DWS-4535

Ordnance. 2000 rounds per gunner of appropriate ammunition.

External Syllabus Support. Appropriate aerial gunnery and moving land target (MLT) if available.

3.13.10 Chemical, Biological, Radiological, and Nuclear (CBRN)

3.13.10.1 Purpose. To introduce the AR-5 CBRN protective mask and associated CBRN equipment.

3.13.10.2 General. For safe execution of all flights, 1 aircrewman shall remain unmasked during flights in the aircraft.

Crew Requirement. P/P/CC/AO

LAB-4620	0.5	*	B,T,A	CLSRM
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CBRN Equipment Fitting and Familiarization

Goal. The CCUI/AOUI is introduced to CBRN protective equipment and is fitted with the required gear for flight operations.

Performance Standard. Student is provided introductory training with the flight equipment utilized in a CBRN environment.

Instructor. BICC

Required Reading. NAVAIR 00-80T-121

Prerequisite. CAL-2132

SCBRN-4630 1.0 \* B,T,A S 1 FFS/FTD

Goal. Demonstrate the ability to conduct flight in a CBRN environment with mask and gear donned during day conditions.

Requirements

1. Discuss:
  - a. CRM while masked, to include emergency procedures and ground handling signals.
  - b. Mask limitations pertaining to vision and scan.
  - c. Physiological limitations and fatigue factors imposed by CBRN protective equipment.
  - d. Mask maintenance and factors that render the mask unserviceable.
2. Demonstrate: Proper mask use (donning and doffing).
3. Introduce:
  - a. CBRN defensive suit.
  - b. Start while masked.
  - c. Taxi while masked.
  - d. Takeoff and landings while masked.
  - e. Normal flight operations while masked.

Performance Standards

1. Properly don CBRN protective equipment and conduct flight maneuvers.
2. Demonstrate knowledge of CBRN operations IAW the MV-22 NTP Manual.

Instructor. BICC

Prerequisites. LAB-4620

SCBRN-4631 1.0 \* B,T,A NS S 1 FFS/FTD

Goal. Demonstrate the ability to conduct flight in a CBRN environment with mask and gear donned during NVD conditions.

Requirements

1. Discuss:
  - a. NVD limitations pertaining to vision and scan.
  - b. CRM while wearing the mask and NVDs.
2. Introduce:
  - a. CBRN defensive suit.
  - b. Start while masked.
  - c. Taxi while masked.
  - d. Takeoff and landings while masked.
  - e. Normal flight operations while masked.

Performance Standards

1. Properly don CBRN protective equipment and conduct flight maneuvers with NVDs.

2. Demonstrate knowledge of CBRN operations IAW the MV-22 NTP Manual.
3. Demonstrate proper mask donning procedures.

Instructor. BICC

Prerequisites. SCBRN-4630

#### 3.13.11 Reduced Visibility Landings (RVL)

3.13.11.1 Purpose. To develop proficiency in tiltrotor reduced visibility landing techniques and procedures under RVL conditions.

3.13.11.2 General. Initial RVL-4730 shall be conducted during the day. Subsequent execution of RVL-4730 may be conducted at night. Aircrew shall be NSQ for the appropriate light level if conducting RVL-4731 using NVDs.

Crew Requirement. P/P/CC/AO.

RVL-4730	1.5	180	B,T,A,R,M	(NS)	A	1	MV-22
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Goal. Introduce RVLs in RVL scale level 4-5.

#### Requirements

1. Discuss:
  - a. Reduced visibility landing environment.
  - b. MV-22 high disc loading.
  - c. Loss of visual reference to the horizon and/or the LZ.
  - d. Micro terrain, obstacles, and aircraft clearances.
  - e. Wind effects.
  - f. RVL scale.
  - g. Standard approach procedures to RVLs.
  - h. RVL procedures (No Hover, HIGE Hover Coupled, HOGE Hover Coupled, Approach to Hover).
  - i. Landing cadence.
  - j. Wave-off criteria for RVL.
  - k. After landing procedures.
  - l. Takeoff procedures.
  - m. Advantages and disadvantages of each type of RVL approach.
  - n. Reverse echelon landing formation.
  - o. Effects of obscurants on aircraft system performance (Gearbox temperatures, Engine performance percentage, FOD).
2. Introduce:
  - a. RVLs.
  - b. Takeoffs and departures with reduced visibility.
  - c. Set up for Approach to Hover.

#### Performance Standards

1. Demonstrate the proper procedures for RVLs IAW the NTP.
2. Land within 0.1 nm of intended point of landing.
3. Recognize and respond correctly to deviations from RVL profile conditions.

Prerequisites. CAL-2133

Required Reading. NTTP Ch 3, NATOPS Ch 14.2 and 14.5

External Syllabus Support. Suitable landing site with 7nm radius of protected airspace to 1000' AGL

3.13.12 Carrier Qualification Unaided (CQ)

3.13.12.1 Purpose. Qualify the CCUI/AOUI in flight operations from a carrier deck or ship platform under night unaided conditions.

3.13.12.2 General

Refer to LHA/LHD/ NATOPS Manuals for carrier operations. Refer to NWP-42 for air capable ship operations.

Crew Requirement. P/P/CC/AO

CQ-4781	1.0	365	B,T,A,R	N*	A	1	MV-22
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Goal. Introduce night unaided CQ patterns and procedures in a FCLP scenario.

Requirement

1. Discuss:
  - a. Differences and similarities of day and night landing and takeoff techniques.
  - b. CQ-2931 discussion items.
2. Introduce:
  - a. Unaided carrier operation
    - (1) Night takeoff/landing patterns (minimum 5 for initial sorties).
    - (2) Communication procedures.
    - (3) Lights and light signals specific to night operations.
    - (4) LSE signals and procedures.
    - (5) Carrier aided and unaided lighting configurations.
  - b. Self-taxi procedures.
  - c. STOs.
  - d. Pitch-up and side slip characteristics.

Performance Standards

1. Properly execute the night unaided CQ pattern IAW LHA/LHD/ NATOPS.
2. Provide accurate drift correction calls to the pilots in the landing environment.

Instructor. BICC

Required Reading. NATOPS Ch 8, LHA/LPH/LHD NATOPS Ch 2, 3, 4, 5, 6, 7.2, 7.3 App A,D

Prerequisites. CQ-2931

External Syllabus Support. FCLP area

CQ-4782	1.5	365	B,T,A,R,M	N*	A	1	MV-22
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Goal. Night unaided carrier qualification flight.

Requirements

1. Discuss:
  - a. Aircraft ditching.
  - b. Emergency egress procedures.
2. Introduce:
  - a. Procedures for unaided landings and takeoffs.
  - b. Night unaided patterns.
  - c. Unaided approaches and landings (minimum 5 for initial sorties).
  - d. Aircraft lighting configuration.
  - e. Deck lighting configuration.
  - f. Unaided closure rates.
3. Review:
  - a. CRM.
  - b. Emergency Egress Lighting System (EELS).
  - c. LSE signals.
  - d. Voice procedures.

Performance Standards

1. Properly execute the night unaided CQ pattern IAW LHA/LHD/ NATOPS.
2. Provide accurate drift correction calls to the pilots in the landing environment.

Instructor. BICC

Prerequisites. CQ-2932, 4781

External Syllabus Support. Landing platform afloat.

3.13.13 Defensive Combat Measures (DCM)

3.13.13.1 Purpose. To introduce and develop proficiency in tactics and aerial defensive measures used to evade enemy air-to-air threats.

3.13.13.2 General

CCUI/AOUIs in this stage must be LAT qualified and proficient in LAT-2233 and GTR-2832.

A DCMI is required for all non-proficient aircrew.

The flight lead must be DCM qualified and specifically brief all applicable DCM training rules per the MV-22 NTTP Manual, the Aviation T&R Program Manual, and this Manual.

After completion of DCM-4831 the CCUI/AOUI is DCM Qualified (DCMQ).

The flight lead shall brief aggressor aircrew per Aviation T&R Program Manual and brief training rules prior to each flight.

Sequences for all DCM flights shall be flown as outlined in the MV-22 NTTP Manual.

Crew Requirements. P/P/CC/AO



ACAD-4810 1.0 \* B,T,A CLSRM

Attack Helicopter Threat to Assault Support (S)

Goal. The CCUI/AOUI has an introductory knowledge specific attack helicopter threats to assault support aircraft.

Requirement. Utilize MAWTS-1 courseware.

Performance Standard. The student is introduced to specific attack helicopter threats to assault support.

Instructor. DCMI

Required Reading. NTTP Ch. 15

Prerequisites. GTR-2832

ACAD-4811 0.5 \* B,T,A CLSRM

Fixed Wing Threat to Assault Support (S)

Goal. The CCUI/AOUI has an introductory knowledge of the fixed wing threat to assault support.

Requirement. Utilize MAWTS-1 courseware.

Performance Standard. The student is introduced to the fixed wing threats to assault support.

Instructor. DCMI

Required Reading. NTTP Ch. 15

Prerequisites. GTR-2832

ACAD-4812 1.0 \* B,T,A CLSRM

Defensive Combat Maneuvers

Goal. The CCUI/AOUI has an introductory knowledge of MV-22 Defensive Combat Maneuvers.

Requirement. Utilize MAWTS-1 courseware

Performance Standard. Student is introduced to MV-22 Defensive Combat Maneuvers.

Instructor. DCMI

Required Reading. NTTP App B

Prerequisite. GTR-2832, ACAD-4810, ACAD-4811

LAB-4820 0.5 \* B,T,A CLSRM

Defensive Combat Maneuver Walk-through

Goal. The CCUI/AOUI has a satisfactory knowledge of MV-22 defensive combat maneuvers prior to in-flight execution.

Requirement. DCMI

Performance Standard. Student completes a walkthrough of all briefed DCM flight maneuvers and line numbers.

Required Reading. NTTP App B

Prerequisite. ACAD-4812

DCM-4831 1.0 365 B,T,A,R,M A 2 MV-22

Goal. Introduce section DCM against a FW aggressor.

Requirement

1. Discuss:
  - a. Lookout doctrine.
  - b. Situational awareness.
  - c. Adversary aircraft parameters.
  - d. Adversary weapons parameters, envelopes, and considerations.
  - e. Mutual support.
2. Demonstrate/Introduce:
  - a. Tiltrotor DCM versus a single FW aggressor per the MV-22 NTTP Manual.
  - b. DCM line numbers in accordance with the MV-22 NTTP.
  - c. Aggressor attacks at various altitudes.

Performance Standards

1. Execute proper DCM vs. a FW threat IAW the MV-22 NTTP Manual.
2. Maintain DCM ROC IAW the Aviation T&R Program Manual.
3. Maintain proper lookout doctrine during DCM.

Instructor. DCMI

Prerequisites. LAT-2233, GTR-2832, LAB-4820

Ordinance. 60 flares, RMWS

External Syllabus Support. FW adversary, ACM range space.

3.14 INSTRUCTOR TRAINING PHASE (5000)

3.14.1 Purpose. To establish training for instructor designations.

3.14.2 General

3.14.2.1 Admin notes

ROC will be per T&R Program Manual.

CCUI may fly night flights using NVDs in this phase under HLL or LLL conditions provided they are NSQ for that light level.

3.14.2.2 Stages. The following stages are included in the Instructor training phase.

Par No.	Stage Name
3.14.3	Basic Instructor Crew Chief (BICC)
3.14.4	Crew Chief FRS Instructor Training (FIT)
3.14.5	Tail Gunnery Instructor (TGI)
3.14.6	Defensive Weapons Instructor (DWSI)
3.14.7	Low Altitude Tactics Instructor (LATI)
3.14.8	Night Systems Familiarization Instructor (NSFI)
3.14.9	Defensive Combat Maneuvers Instructor (DCMI)
3.14.10	Night Systems Instructor (NSI)
3.14.11	Weapons and Tactics Instructor (WTI)

3.14.3 Basic Instructor Crew Chief (BICC)

3.14.3.1 Purpose. To develop qualified basic instructor crew chiefs using a standardized instructor training program. This syllabus is designed to prepare

crew chiefs to instruct specific T&R events that do not otherwise have an instructor requirement. This portion of the syllabus shall be used by VMM squadrons to assist in instructor standardization.

### 3.14.3.2 General

IUT events will emphasize instructional techniques, briefing and debriefing, and applicable aircrew training publications. Emphasis on all events within the syllabus is on training objectives, method of instruction, and student problem areas.

Conduct IUT events with a designated ANI, NI or WTI.

Crew Requirement. P/P/CC/AO

Prerequisites. Crew chiefs shall be NSQ and recommended by the squadron standardization board prior to beginning the IUT syllabus.

ACAD-5010	8.0	*	B,T	CLSRM
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### Basic Instructor Training Course

Goal. The CCUI will have an introductory knowledge of instructional techniques, briefing and debriefing styles, and tactical risk mitigation for instructional sorties.

Requirement. Utilize Basic Instructor Training Course courseware.

Performance Standard. Successfully complete all training requirements of the BITC course curriculum.

Prerequisites. Recommended by squadron standardization board.

LAB-5020	3.0	*	B,T,R	CLSRM
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### Aircrew Training Manuals

Goal. Introduce the IUT to training manuals crew chiefs utilize for instructing students.

#### Requirements

1. Discuss:
  - a. MV-22 T&R Ch. 1 and 3.
  - b. T&R program manual Ch. 2 and 3.
  - c. MV-22 NTTP Ch. 3,5,8,9.
  - d. IATF writing procedures.
  - e. M-SHARP discussion.
  - f. Brevity code manual.

Performance Standard. IUT demonstrates familiarity with all aircrew training manuals and publications.

Instructor. WTI

Required Reading. NAVMC 3500.11, NAVMC 3500.14

Prerequisites. ACAD-5010. Recommended by Squadron Standardization board.

BICC-5030	1.0	*	B,T,R	E	A	1	MV-22
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Goal. Demonstrate the ability to brief, debrief, and instruct events that do not otherwise have an instructor requirement.

### Requirements

1. Discuss:
  - a. All "discuss" items for events that do not otherwise have an instructor requirement in the Core Skill phase.
  - b. CRM.
  - c. Lookout doctrine.
  - d. Comfort levels.
  - e. Aircraft emergencies/system failures.
  - f. Aircraft weight and balance.
  - g. CG limitations.
  - h. How to read a flight schedule.
  - i. Proper PPE.
2. Introduce:
  - a. Instructor techniques.
  - b. T&R briefing items.

### Performance Standards

1. Demonstrate the ability to brief and debrief a crew chief student.
2. Demonstrate the capability to recognize and correct student errors in the aircraft.

Instructor. WTI, NE, NI, or ANI

Prerequisites. LAB-5020

### 3.14.4 Crew Chief FRS Instructor Training (FIT)

3.14.4.1 Purpose. To certify a qualified MV-22 crew chief in instructional procedures and techniques to support crew chief training at the FRS.

#### 3.14.4.1 General

All Instructor Under Training (IUT) events are intended to emphasize standardization of crew chief procedures and techniques. The Crew Chief Instructor Under Training (CCIUT) should be capable of demonstrating and verbalizing all training objectives associated with the Core Skill Introduction Phase of instruction.

For academic support and certification criteria for NS and LAT Instructors refer to MAWTS-1 Course Catalog.

Crew Requirement. FRS CCI/CCIUT

Prerequisites. Crew chiefs are not required to be NSQ in order to begin CCIUT training. However, crew chiefs shall be NSQ prior to completion of FIT-5033 as well as recommended by the Squadron Standardization Board.

ACAD-5010	8.0	*	B,T	CLSRM
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### Basic Instructor Training Course

Goal. The CCUI will have an introductory knowledge of instructional techniques, briefing and debriefing styles, and tactical risk mitigation for instructional sorties.

Requirement. Utilize appropriate courseware.

Performance Standard. Successfully complete all training requirements of the BITC course curriculum.

Prerequisites. Recommended by squadron standardization board.

FIT-5130	2.0	*	B,T,R	E	A	1	MV-22
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Goal. Demonstrate standardized procedures for pre-flight, mission preparation, and post-flight to include plane captain duties.

Requirements

1. Discuss:
  - a. Instructional techniques.
  - b. Student tendencies.
  - c. Standardized procedures.
  - d. Common student mistakes.
  - e. Crew day/crew rest.
2. Introduce:
  - a. Instructional techniques.
  - b. Student tendencies.
  - c. Standardized procedures.
3. Review: Crew chief FAM procedures.

Performance Standards

1. Demonstrate the ability to thoroughly brief and debrief students.
2. Demonstrate the ability to instruct standardized procedures outlined in the V-22 NATOPS.

Instructor. FRSCCI

Prerequisites. ACAD-5010.

FIT-5131	1.5	*	B,T,R	E	A	1	MV-22
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Goal. Review CAL instructional techniques.

Requirements

1. Discuss:
  - a. ICS procedures and common tendencies.
  - b. Closure rates to the ground.
  - c. Waveoff procedures.
  - d. Ramp operations.
  - e. Obstacle clearance calls.
  - f. Common student mistakes.
2. Review:
  - a. Lookout doctrine.
  - b. Aircraft clearances.
  - c. Crew chief duties during CAL landings and takeoffs.
  - d. CRM.

Performance Standard. Demonstrate standard CAL procedures and verbally correct students when standardized procedures are not executed.

Instructor. FRSCCI

Prerequisites. ACAD-5010.

FIT-5132	1.5	*	B,T,R	E	A	2	MV-22
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Goal. Review formation flight instructional techniques.

Requirements

1. Discuss:
  - a. Parade and cruise formations and positioning.
  - b. Closure rates between aircraft.
  - c. Lookout doctrine techniques in formation flight.
  - d. Inter and intra-aircraft coordination.
  - e. Common student mistakes.

2. Review: Crew chief duties.

Performance Standards. Demonstrate standard FORM procedures previously outlined and show the ability to instruct a student on standard FORM procedures and terminology.

Instructor. FRSCCI

Prerequisites. ACAD-5010.

FIT-5133	2.0	*	B,T,R	E	A	1	MV-22
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Goal. Crew chief instructor standardization check.

Requirement. Evaluate the prospective crew chief instructor for standardization of instructional techniques and flight procedures. All stages of training should be evaluated if possible. The evaluator will set itinerary.

1. Review: FIT-5030, FIT-5031, FIT-5032

Performance Standard. Demonstrate the ability to instruct students on standardized procedures covered in the Core Skill Introduction Phase of training.

Instructor. NE/NI/ANI

Prerequisites. ACAD-5010, FIT-5030, FIT-5031, FIT-5032.

3.14.5 Tail Gunnery Instructor (TGI)

3.14.5.1 Purpose. To certify the MV-22 crew chief as a TGI capable of safely conducting academic and airborne instruction in the employment of crew served weapons in all aspects of tactical flight from the ramp position.

3.14.5.2 General. Reference the MAWTS-1 Course Catalog for the TGI POI.

Crew Requirements. Reference the MAWTS-1 Course Catalog for individual event requirements.

ACAD-5410	1.0	*	B,T	E			CLSRM
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Goal. The TGIUT will instruct one of the MAWTS-1 approved TGI courses to a MAWTS-1 Crew Chief Instructor.

Instructor. MAWTS-1 Crew Chief Instructor

ACAD-5411 1.0 \* B,T CLSRM

Goal. The crew chief under instruction will be presented this class by a MAWTS-1 crew chief, WTI, or MV-22 TGI prior to conducting the certification flight stage.

Instructor. MAWTS-1 Crew Chief Instructor, WTI, TGI

ACAD-5420 1.0 \* B,T E CLSRM

Goal. Demonstrate the ability to instruct LAB-2520 IAW NAVMC 3500.11 Ch.3 to a MAWTS-1 crew chief instructor.

LAB-5421 1.0 \* B,T E CLSRM

Goal. Demonstrate the ability to instruct LAB-4521 IAW NAVMC 3500.11 Ch.3 to a MAWTS-1 crew chief instructor.

Instructor. MAWTS-1 Crew Chief Instructor

TGI-5430 1.5 \* B,T E A 1 MV-22

Goal. Reference the MAWTS-1 Course Catalog for the TGI POI.

Instructor. TGI

TGI-5431 1.5 \* B,T NS E A 1 MV-22

Goal. Reference the MAWTS-1 Course Catalog for the TGI POI.

Instructor. TGI

TGI-5432 1.5 \* B,T,R NS E A 2 MV-22

Goal. Reference the MAWTS-1 Course Catalog for the TGI POI.

Instructor. MAWTS-1 Crew Chief Instructor

TGI-5433 1.5 \* B,T,R (NS) E A 1 MV-22

Goal. Reference the MAWTS-1 Course Catalog for the TGI POI.

Requirement. The TGI instructing this event must be proficient in both TG-5433 and TG-5434 in order to instruct this event.

Instructor. TGI

TGI-5434 1.5 \* B,T,R NS E A 2 MV-22

Goal. Reference the MAWTS-1 Course Catalog for the TGI POI.

Instructor. MAWTS-1 Crew Chief Instructor

### 3.14.6 Defensive Weapon System Instructor (DWSI)

3.14.6.1 Purpose. To certify the MV-22 crew chief as a DWSI capable of safely conducting academic and airborne instruction in the employment of crew served weapons in all aspects of tactical flight.

3.14.6.2 General. Reference the MAWTS-1 Course Catalog for the DWSI POI.

Crew Requirements. Reference the MAWTS-1 Course Catalog for individual event requirements.

ACAD-5511 1.0 \* B,T E CLSRM

Goal. The DWSIUT will instruct one of the MAWTS-1 approved DWSI courses to a MAWTS-1 Crew Chief Instructor.

Instructor. MAWTS-1 Crew Chief Instructor

LAB-5520 1.0 \* B,T E CLSRM

Goal. Demonstrate the ability to instruct LAB-4520 IAW NAVMC 3500.11 Ch.3 to a MAWTS-1 crew chief instructor.

Instructor. MAWTS-1 Crew Chief Instructor

LAB-5521 1.0 \* B,T,R E CLSRM

Goal. Demonstrate the ability to instruct LAB-4521 IAW NAVMC 3500.11 Ch.3 to a MAWTS-1 crew chief instructor.

Instructor. MAWTS-1 Crew Chief Instructor

LAB-5523 1.0 \* B,T E CLSRM

Goal. Demonstrate the ability to instruct LAB-4523 IAW NAVMC 3500.11 Ch.3 to a MAWTS-1 crew chief instructor.

Instructor. MAWTS-1 Crew Chief Instructor

DWS-5530 1.5 \* B,T E A 1 MV-22

Goal. Reference the MAWTS-1 Course Catalog for the DWSI POI.

Instructor. DWSI

DWS-5531 1.5 \* B,T,R NS E A 2 MV-22

Goal. Reference the MAWTS-1 Course Catalog for the DWSI POI.

Instructor. DWSI

DWS-5532 1.5 \* B,T,R E A 1 MV-22

Goal. Reference the MAWTS-1 Course Catalog for the DWSI POI.

Requirement. The DWSI instructing this event must be proficient in both DWSI-5532 and DWSI-5533 in order to instruct this event.

Instructor. MAWTS-1 Crew Chief Instructor

DWS-5533 1.5 \* B,T,R NS E A 2 MV-22

Goal. Reference the MAWTS-1 Course Catalog for the DWSI POI.

Instructor. MAWTS-1 Crew Chief Instructor

### 3.14.7 Low Altitude Tactics Instructor (LATI)

3.14.7.1 Purpose. To certify the MV-22 crew chief as a Low Altitude Tactics Instructor (LATI) capable of safely conducting academic and airborne instruction in the MV-22 Low Altitude Tactics syllabus.

3.14.7.2 General. Reference the MAWTS-1 Course Catalog for the LATI POI.

Crew Requirements. Reference the MAWTS-1 Course Catalog for individual event requirements.

ACAD-5610 1.0 \* B,T E CLSRM

Goal. The CCUI will instruct one of the MAWTS-1 approved LATI courses to a WTI or MAWTS-1 Crew Chief Instructor.

Instructor. WTI

LATI-5630 1.5 \* B,T E A 1 MV-22

Goal. Reference the MAWTS-1 Course Catalog for the LATI POI.

Instructor. LATI



LATI-5631    2.0    \*    B,T,R    E    A    2    MV-22

Goal. Reference the MAWTS-1 Course Catalog for the LATI POI.

Instructor. WTI

3.14.8 Night Systems Familiarization Instructor (NSFI)

3.14.8.1 Purpose. To certify the MV-22 crew chief as a Night Systems Familiarization Instructor (NSFI) capable of instructing in the core skill introduction phase (1000 phase) of night vision device flights.

3.14.8.2 General. Reference the MAWTS-1 Course Catalog for the NSFI POI.

Crew Requirements. Reference the MAWTS-1 Course Catalog for individual event requirements.

ACAD-5710    1.0    \*    B,T    E    CLSRM

Goal. The CCUI will instruct one of the MAWTS-1 approved NSFI courses to an NSI, WTI, or MAWTS-1 Crew Chief Instructor.

Instructor. NSI/WTI

NSFI-5731    1.5    \*    B,T    NS    E    A    1    MV-22

Goal. Reference the MAWTS-1 Course Catalog for the NSFI POI.

Instructor. NSI

NSFI-5732    1.5    \*    B,T,R    NS    E    A    2    MV-22

Goal. Reference the MAWTS-1 Course Catalog for the NSFI POI.

Instructor. NSI

3.14.9 Defensive Combat Maneuvers Instructor (DCMI)

3.14.9.1 Purpose. To certify the MV-22 crew chief as an instructor capable of safely conducting instruction of the MV-22 defensive combat maneuvering (DCM) syllabus.

3.14.9.2 General. Reference the MAWTS-1 Course Catalog for the DCMI POI.

Crew Requirements. Reference the MAWTS-1 Course Catalog for individual event requirements.

ACAD-5810    1.0    \*    B,T    E    CLSRM

Goal. The CCUI will instruct one of the MAWTS-1 approved DCM courses to a MAWTS-1 Crew Chief Instructor.

Instructor. MAWTS-1 Crew Chief Instructor

DCMI-5831    2.0    \*    B,T    E    A    2    MV-22

Goal. Reference the MAWTS-1 Course Catalog for the DCMI POI.

Instructor. DCMI

DCMI-5832    2.0    \*    B,T,R    E    A    2    MV-22

Goal. Reference the MAWTS-1 Course Catalog for the DCMI POI.

Instructor. MAWTS-1 Crew Chief Instructor

3.14.10 Night Systems Instructor (NSI)

3.14.10.1 Purpose. To certify the MV-22 crew chief as a Night Systems Instructor (NSI) capable of safely conducting ground and airborne instruction of the MV-22 Night Vision Device (NVD) flight syllabus.

3.14.10.2 General. Reference the MAWTS-1 Course Catalog for the NSI POI.

Crew Requirements. Reference the MAWTS-1 Course Catalog for individual event requirements.

ACAD-5910	1.0	*	B,T	E	CLSRM
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Goal. The CCUI will instruct one of the MAWTS-1 approved NS courses to a MAWTS-1 Crew Chief Instructor.

Instructor. MAWTS-1 Crew Chief Instructor

NSI-5931	2.0	*	B,T	NS	E	A	1	MV-22
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Goal. Reference the MAWTS-1 Course Catalog for the NSI POI.

Instructor. NSI

NSI-5933	2.0	*	B,T	NS	E	A	2	MV-22
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Goal. Reference the MAWTS-1 Course Catalog for the NSI POI.

Instructor. NSI

NSI-5934	2.0	*	B,T,R	NS	E	A	1	MV-22
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Goal. Reference the MAWTS-1 Course Catalog for the NSI POI.

Instructor. MAWTS-1 Crew Chief Instructor

NSI-5935	2.0	*	B,T,R	NS	E	A	2	MV-22
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Goal. Reference the MAWTS-1 Course Catalog for the NSI POI.

Instructor. MAWTS-1 Crew Chief Instructor

### 3.14.11 Weapons and Tactics Instructor (WTI)

3.14.11.1 Purpose. To certify the MV-22 crew chief as a Weapons and Tactics Instructor (WTI) capable of safely conducting ground and airborne instruction of the MV-22 tactical flight syllabus.

3.14.11.2 General. Reference the MAWTS-1 WTI Course Catalog for the detailed WTI POI.

Crew Requirements. Reference the MAWTS-1 Course Catalog for individual event requirements.

Total Training Events. Reference the MAWTS-1 Course Catalog for individual event requirements.

WTI-5950	*	B,T	E
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Goal. The CCUI will receive all academic and flight instruction in accordance with the MAWTS-1 WTI Course Catalog.

Requirement. This event is administrative in nature and must be manually entered into M-SHARP. There is no requirement for an ATF to be filled out for this event.

Instructor. MAWTS-1 Instructor Personnel

### 3.15 REQUIREMENTS, QUALIFICATIONS, AND DESIGNATIONS (RQD) PHASE (6000)

3.15.1 Purpose. To establish training for specific requirements.

#### 3.15.2 General

Squadrons should use this phase of training for check flights, qualifications and designations. The CCUI/AQUI will demonstrate sound levels of aircraft/flight leadership and judgment required in a combat environment.

Requirement and qualification codes in the 6000 phase may be logged in conjunction with any sortie that completes its performance standards. For example, RQD-6030 may be flown in conjunction with any flight in the training syllabus provided that all the requirements for that flight have been met. When the flight to attain the qualification/designation is complete, a letter from the squadron commanding officer awarding the qualification or designation shall be placed in the NATOPS and/or APR.

After the commanding officer has designated the CCUI/AOUI in writing as gaining a designation or qualification, Operations shall make the required qualification or designation entry into M-SHARP.

### 3.15.3 Requirements

3.15.3.1 Purpose. To track requirements as outlined in the MV-22 NATOPS, OPNAVINST 3710.7 and OPNAVINST 1542.7.

3.15.3.2 General. This section allows squadrons to document and track annual NATOPS and Instrument check flights and CRM training.

Crew Requirements. All checks will be per applicable directives.

ACAD-6010	3.0	365	B,T,A,R,M	E	CLSRM
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#### Open Book NATOPS Examination

Goal. The Open Book Examination shall consist of, but not be limited to the question bank. The purpose of the open book examination portion of the written examination is to evaluate the aircrew's knowledge of the appropriate publications and the aircraft.

Performance Standard. Achieve a minimum grade of qualified on the Open Book examination.

Instructor. NI/ANI

ACAD-6011	1.0	365	B,T,A,R,M	E	CLSRM
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#### Closed Book NATOPS Examination

Goal. The Closed Book Examination shall be limited to the question bank. The purpose of the closed book examination portion of the written examination is to evaluate the airman's knowledge of the concerning normal/emergency procedures and aircraft limitations.

Performance Standard. Achieve a minimum grade of qualified on the Closed Book examination.

Instructor. NI/ANI

Prerequisite. ACAD-6010

ACAD-6012	3.0	365	B,T,A,R,M	E	CLSRM
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#### Oral NATOPS Examination

Goal. The Oral shall consist of, but not be limited to the question bank. The evaluator may draw upon their experience to propose questions of a direct and positive manner and in no way be opinionated to evaluate the airman's knowledge of the concerning normal/emergency procedures, aircraft limitations, and performance.

Performance Standard. Achieve a minimum grade of qualified on the Oral examination.

Instructor. NI/ANI

Prerequisite. ACAD-6011

ACAD-6016 1.0 365 B,T,A,R,M E CLSRM

Crew Resource Management Refresher Lecture

Goal. Review the 7 critical CRM skills during a mission scenario as well as during emergencies and system failures.

Instructor. CRMI/F

RQD-6030 1.5 365 B,T,A,R,M (N) E A 1 MV-22

Goal. Conduct an objective evaluation of the aircrew's knowledge of briefing, normal operating procedures (flight and ground), crew resource management, aircraft systems, performance criteria, emergency procedures, and debriefing. The focus is on normal and emergency procedures, not tactical execution. Emphasis shall be placed on the aforementioned items with the addition of local course rules, local SOPs, and admin flight procedures. The NATOPS evaluation is intended to evaluate compliance with NATOPS procedures. The NATOPS evaluation is the means to measure the airman's efficiency in the execution of normal operating procedures and reaction to emergencies and malfunctions. The NATOPS evaluation process should be as much a learning tool and/or experience as it is an evaluation.

Coordination. The crew chief under evaluation shall bring a completed NATOPS evaluation card.

Requirement. The proficiency expected by the evaluator in this flight shall be commensurate with the experience level and highest qualification or designation of the crew chief under evaluation.

Performance Standard. The crew chief under evaluation must be prepared to safely demonstrate emergency procedures and knowledge of all maneuvers and procedures described within the NATOPS, OPNAV 3710.6 and in accordance with all SOPs. Upon successful completion of this event, the evaluator shall log the appropriate training code for tracking purposes.

Instructor. NI/ANI

Prerequisite. ACAD-6012

RQD-6031 1.5 365 B,T,A,R,M (N) E A 1 MV-22

Goal. Review CRM principles while executing a simulated mission scenario.

Requirement. Review the 7 critical CRM skills during a mission scenario as well as during emergencies and system failures.

Performance Standard. Crew chiefs shall demonstrate effective use of the 7 critical CRM skills in accordance with OPNAVINST 1542.7, MV-22 NATOPS, and applicable directives.

Instructor. CRMI/F

Prerequisites. ACAD-6016

RQD-6036 2.0 90 B,T,A,R,M (N) E S/A 1 FFS/FTD

Goal. Emergency Procedures review.

Requirement. This flight will review MV-22 emergency procedures and fulfills the requirement of the 90 day EP review requirement.

Performance Standard. Comply with MV-22 NATOPS procedures while dealing with non-normal conditions.

Prerequisites. RQD-6030 (crew chief only)

TGQ-6533      0.0              B,T,A,R,M      (N)

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Goal. Tracking code for the Tail Gunnery Qualification.

Requirement. Squadrons will log the administrative tracking code 6533 upon completion of the TG stage for either weapon system.

Performance Standard. Completion of ACAD-2510/11,12,13,14, LAB-2520, and TG-2530/32,33,35 or successful completion of ACAD-2510/12,13,14, LAB-2521, and TG 2531/32,34,35 constitutes completion of this event.

Prerequisites. TG-2530/32,33,35 or TG 2531/32,34,35

### 3.15.3 Battlefield Illumination (BI)

3.15.3.1 Purpose. To certify the MV-22B crew chief as a Quality Assurance Safety Officer (QASO) for Aircraft Parachute Flare (APF) delivery during battlefield illumination missions.

#### 3.14.3.2 Goal

The CCUI is introduced to, demonstrates or maintains proficiency in flare delivery procedures as the Quality Assurance Safety Officer (QASO).

At the completion of this event, a designation letter signed by the commanding officer stating the crew chief is a qualified QASO is to be placed in the crew chief's NATOPS jacket prior to conducting battlefield illumination missions as a QASO.

The CCUI will supervise the loading and inspection of Aircraft Parachute Flares (APF), cabin configuration, and delivery of BI. The CCUI will adhere to crew coordination and, safety precautions while performing duties of a QASO, as defined in the NTP. Initial instruction will be conducted by a QASO designated WTI

Crew requirements. P/P/QASO/TL

QASO-6653    1.5    365    B,T,A,R,M    NS    E    A    1    MV-22

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Goal. Introduce, qualify, or maintain proficiency in Battlefield Illumination as a QASO.

#### Requirements

1. Discuss
  - a. CRM.
  - b. ICS procedures.
  - c. APF inspection.
  - d. APF malfunctions.
  - e. Cabin configuration.
  - f. APF emergency procedures.
  - g. Safety precautions.
  - h. QASO duties.
2. Introduce
  - a. APF Inspection and acceptance.
  - b. Cabin configuration for BI.
  - c. Safety Procedures.

- d. APF delivery.
- e. QASO communication responsibilities.

Performance Standards

1. Demonstrate capability to brief emergency procedures during flight brief.
2. Demonstrate inspection and acceptance procedures for APFs.
3. Demonstrate proper crew coordination procedures for BI.
4. Demonstrate understanding of emergency procedures for APFs.
5. Demonstrate proper procedures for verification and setting of APF timers.
6. At a minimum, supervise delivery of 6 LUU-2 or LUU-19 APFs.
7. Perform the duties of QASO during the BI mission.

Instructor. WTI QASO

Prerequisites. BI-4330

Ordinance. Minimum 6 LUU-2 and/or LUU-19 Series APFs are required for initial event.

External Support. Ordnance Qualified Personnel.

3.16 T&R SYLLABUS MATRICES

MV-22 CREW CHIEF													
1000 PHASE CORE SKILL INTRODUCTION													
STAGE	TRNG CODE	EVENT DESCRIPTION	CLASS/LAB HOURS	FLIGHT HOURS	SIMULATOR HOURS	REFLY INTERVAL	DEVICE	# OF A/C	CONDITIONS	PREREQUISITE TRAINING CODES	POI	EVALUATION	EVENT CONVERSION
GROUND SCHOOL													
ACAD	0100	GROUND SCHOOL INBRIEF	1.0			*	CLS	-	-		B,T		
ACAD	0101	ACAD BLK 1	11.5			*	CBT	-	-	0100	B,T		
LAB	0200	FIRE EXT LAB	1.0			*	A	1	-	0100	B,T		
LAB	0201	INGRESS,EGRESS	1.0			*	C/A		-	0100	B,T		
LAB	0202	INTRO TO APU AND CMS STARTUP	5.0			*	S	1	-	0100	B,T		
ACAD	0102	ACAD BLK 2	15.0			*	CBT	-	-	0101	B,T		
LAB	0203	APU AND CMS STARTUP	5.0			*	S	1	-	0101	B,T		
ACAD	0103	ACAD BLK 3	13.5			*	CBT	-	-	0102	B,T		
LAB	0204	CONTROLS AND DISPLAY	5.0			*	S	1	-	0102	B,T		
LAB	0205	COMM AND NAV	5.0			*	S	1	-	0102	B,T		
ACAD	0104	ACAD BLK 4	9.0			*	CBT	-	-	0103	B,T		
LAB	0206	NAVIGATION AND IEWS	4.0			*	S/A	-	-	0103	B,T		
ACAD	0105	ACAD BLK 5	16.0			*	CBT	-	-	0104	B,T		
LAB	0207	ENGINE FAMILIARIZATION	5.0			*	A	1	-	0104	B,T		
LAB	0208	APU AND FIRE PROTECTION	2.0			*	A	1	-	0104	B,T		
LAB	0209	WEIGHT AND BALANCE	4.0			*	S	1	-	0104	B,T		
LAB	0210	CARGO LOADING	3.0			*	C/A	-	-	0104	B,T		
ACAD	0106	ACAD BLK 6	12.0			*	CBT	-	-	0105	B,T		
LAB	0211	PROPROTOR SYSTEM	3.0			*	A	1	-	0105	B,T		
LAB	0212	HYDRAULICS, ENGINE START, EAPS	6.0			*	S	1	-	0105	B,T		
ACAD	0107	ACAD BLK 7	12.5			*	CBT	-	-	0106	B,T		
LAB	0213	LANDING GEAR	2.0			*	A	1	-	0106	B,T		
LAB	0214	SERVICING	2.0			*	A	1	-	0106	B,T		
LAB	0215	INTRO TO BFWS	11.0			*	S	1	-	0106	B,T		
LAB	0216	BFWS	6.0			*	A/S	1	-	0106	B,T		
ACAD	0108	ACAD BLK 8	22.0			*	CBT	-	-	0107	B,T		
LAB	0217	INTRO TO PLANE CAPTAIN INSP	40.0			*	A	1	-	0107	B,T		
ACAD	0109	ACAD BLK 9	17.0			*	CBT	-	-	0108	B,T		
LAB	0218	START-UP, TAXI, SHUTDOWN	5.0			*	A	1	-	0108	B,T		
LAB	0219	MOORING	2.0			*	A	1	-	0108	B,T		

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LAB	0220	ALSS EQUIPMENT	4.0			*	CLS	-	-	0108	B,T		
LAB	0221	EMERGENCY PROCEDURES	4.0			*	C/A	-	-	0108	B,T		
LAB	0222	MISSION PREPARATION/BRIEFING	2.0			*	A	1	-	0108	B,T		
ACAD	0110	CRM INITIAL	4.0			*	CLS	-	-	-	B,T		
ACAD	0111	NITE LAB	8.0			*	CLS	-	-	-	B,T		
TOTAL			268.5	0.0	0.0								
MV-22 CREW CHIEF													
1000 PHASE CORE SKILL INTRODUCTION (CONT)													
STAGE	TRNG CODE	EVENT DESCRIPTION	CLASS/LAB HOURS	FLIGHT HOURS	SIMULATOR HOURS	REFLY INTERVAL	DEVICE	# OF A/C	CONDITIONS	PREREQUISITE TRAINING CODES	POI	EVALUATION	EVENT CONVERSION
ACAD	1010	FAM STAGE INBRIEF	1.0			*	CLS	-	-	GND SCHOOL COMP	B,T		
ESFAM	1032	CMS,CHECKLIST			2.0	*	S	1	-	1010	B,T		
ESFAM	1033	CC CALL OUTS,START-UP			2.0	*	S	1	-	1032	B,T		
FAM	1043	ENG START,NAC DRILL,CONV PAT		2.0		*	A	1	D	1033	B,T		
FAM	1044	CONV PTRN,STP APP,MGW		1.5		*	A	1	D	1043	B,T		
FAM	1045	CONV PTRN, TRNS/CONV,LSC		1.5		*	A	1	D	1044	B,T		
FAM	1046	APLN PTRN		1.5		*	A	1	D	1045	B		
FAM	1047	APLN PTRN,HIGH AOB,STALLS		1.5		*	A	1	D	1046	B,T		
FAM	1048	APLN PTRN,STALLS,ELP		1.5		*	A	1	D	1047	B		
FAM	1049	FAM PROGRESS CHK		1.5		*	A	1	D	1048	B,T		
FAM	1051	NIGHT FAM		1.0		*	A	1	N*	1049	B		
TOTAL			1.0	12.0	4.0								
INST													
ACAD	1210	INST STAGE INBRIEF	1.0			*	CLS	-	-	1049	B,T		
INST	1234	BASIC INSTRUMENT FLIGHT		2.0		*	A/S	1	(N*)	1051~N,1210	B,T		
TOTAL			1.0	2.0	0.0								
CAL													
ACAD	1310	CAL STAGE INBRIEF	1.0			*	CLS	-	-	1049	B,T		
CAL	1332	CAL PTRN,TAC STRT-IN,RVL		2.0		*	A	1	D	1310	B,T		
TOTAL			1.0	2.0	0.0								
FORM													
ACAD	1410	FORM STAGE INBRIEF	1.0	-	-	*	CLS	-	-	1049	B,T		
FORM	1432	FORM SEQ	-	2.0	-	*	A	2	D	1332,1410	B,T		
TOTAL			1.0	2.0	0.0								
LAT													
ACAD	1510	LAT STAGE INBRIEF	1.0	-	-	*	CLS	-	-	1049	B,T		
LAT	1531	LAT MANEUVERS	-	1.5	-	*	A	1	D	1510,1332	B,T		
LAT	1532	LAT NAV, CMS PROG CHK	-	1.5	-	*	A	1	D	1531	B,T		



TOTAL			1.0	3.0	0.0								
NS													
ACAD	1610	NS STAGE INBRIEF	1.5	-	-	*	CLS	-	-	1049	B, T		
NS	1631	NVD FAM, FLIR USE	-	1.5	-	*	A	1	NS	1051,1610,0111	B		
NS	1633	NVD CAL, FLIR	-	1.5	-	*	A	1	NS	1332,1631	B, T		
NS	1635	NVD FORM	-	2.0	-	*	A	2	NS	1432,1633	B, T		
TOTAL			1.5	5.0	0.0								

1000 PHASE CORE SKILL INTRODUCTION													
STAGE	TRNG CODE	EVENT DESCRIPTION	CLASS/LAB HOURS	FLT HOURS	SIM HOURS	REFLY	DEVICE	# OF A/C	COND	PREREQUISITE TRAINING CODES	POI	EVAL	EVENT CONVERSION
CARGO													
ACAD	1710	CARGO OPERATIONS STAGE INBRIEF	1.0	-		*	CLS	-	-	1049	B,T		
ACAD	1711	MISSION CONFIGURATION CLASS	2.0	-		*	C/A	-	-	1710	B,T		
LAB	1720	INTERNAL CARGO LAB	2.0	-		*	C/A	-	-	1710	B,T		
SCAR GO	1730	INTERNAL CARGO SIM	-	-	1.5	*	C/A	-	-	1720	B,T		
TOTAL			5.0	0.0	3.0								
CHECKRIDE													
ACAD	6010	OPEN BOOK NATOPS EXAM	3.0	-	-	365	-	-	-	-	B,T,R,M	E	
ACAD	6011	CLOSED BOOK NATOPS EXAM	1.0	-	-	365	-	-	-	6010	B,T,R,M	E	
ESREV	1830	EP REV	-	-	1.0	*	S/A	1	D	CORE SKILL INTRO	B	E	
ESREV	1831	REV ALL MANEUVERS	-	-	2.0	*	S/A	1	(N)	1830	B		
REV	1832	REV ALL MANEUVERS	-	1.5	-	*	A	1	D	1831	B,T		
ACAD	6012	NATOPS ORAL EXAM	3.0	-	-	365	-	-	-	6011	B,T,R,M	E	
RQD	6030	INITIAL NATOPS EVALUATION	-	1.5	-	365	A	1	D	6012, 1832	B,T	E	
TOTAL			7.0	3.0	3.0								
TOTAL CLS/FLT/SIM HOURS FOR PHASE			288.5	29.0	10.0								

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MV-22 CREW CHIEF												
2000 PHASE CORE SKILL												
STAGE	TRNG CODE	EVENT DESCRIPTION	CLASS/LAB HOURS	FLIGHT HOURS	SIMULATOR HOURS	REFLY INTERVAL	DEVICE	# OF A/C	CONDITIONS	POI	EVALUATION	EVENT CONVERSION
FAM												
ACAD	2010	CRM GROUND INITIAL	4.0			*	CLS	-	-	A		2010
ACAD	2011	NITE LAB	8.0			*	CLS	-	-	A		2011
ACAD	2012	MV-22 AIR-TO-AIR REFUELING	1.0			*	CLS	-	-	B,T,A		2012
LAB	2020	MISSION AUX TANK LAB	2.0			*	A	1	-	B,T,A		2020
LAB	2021	FIRE EXTINGUISHER LAB	1.0			*	A	1	-	A		2021
LAB	2022	INGRESS/EGRESS LAB	1.0			*	A	1	-	A		2022
LAB	2023	STARTUP/SHUTDOWN/TAXI	1.0			*	A	1	-	A		2023
LAB	2024	MOORING LAB	2.0			*	A	1	-	A		2024
LAB	2025	ALSS FAM	2.0			*	CLS	-	-	A		2025
LAB	2026	E.P./EMERGENCY EQUIPMENT LAB	2.0			*	A	1	-	A		2026
TOTAL			24.0	-	-							
FAM												
FAM	2032	FAMILIARIZATION		1.0		*	A	1	-	B,T,A		
CAL												
CAL	2132	TACTICAL CALS		2.0		365	A	1	D	B,T,A		2133
CAL	2133	RVL CALS		1.5		240	A	1	D	B,T,A,R,M		2131
CAL	2135	SECTION CALS		2.0		365	A	2	D	B,T,A		2135
CAL	2136	DIVISION CALS		1.5		365	A	3	D	B,T,A,R,M		2136
TOTAL			-	7.0	-							
FORM												
ACAD	2160	EA TACFORM	1.0	-		*	CLS	-	-	B,T,A		2160
FORM	2182	TACFORM		1.5		365	A	2	D	B,T,A,R,M		2182
FORM	2183	DIVISION FORM		1.0		*	A	3	D	B,T,A		2183
TOTAL			1.0	2.5	-							
ACAD	2210	LAT FOR EAC	1.0			*	CLS	-	-	B,T,A		2210
ACAD	2211	TACTICAL AIRCREW CONSIDERATIONS AND RESPONSIBILITIES	1.0			*	CLS	-	-	B,T,A		2211
LAB	2220	LAT WALKTHROUGH	0.5			*	CLS	-	-	B,T,A,R		2220
LAT	2231	LAT REVIEW		2.0		365	A	1	D	B,T,A		2231
LAT	2233	SECTION LAT		2.0		365	A	2	D	B,T,A,R,M		2233
TOTAL			2.5	4.0	-							

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MV-22 CREW CHIEF												
2000 PHASE CORE SKILL												
STAGE	TRNG CODE	EVENT DESCRIPTION	CLASS/LAB HOURS	FLIGHT HOURS	SIMULATOR HOURS	REFLY INTERVAL	DEVICE	# OF A/C	CONDITIONS	POI	EVALUATION	EVENT CONVERSION
NS HLL												
ACAD	2310	NIGHT VISION TRAINING	2.0			*	CLS	-	-	B,T,A		2310
ACAD	2311	MV-22 FLIR	1.0			*	CLS	-	-	B,T,A		2311
NS HLL	2331	HLL FAM CALS		2.0		365	A	1	NS	B,T,A		2331
NS HLL	2332	HLL SECTION CALS		2.0		365	A	2	NS	B,T,A,R		2332
NS HLL	2334	HLL LAT		2.0		365	A	1	NS	B,T,A		2334
NS HLL	2335	HLL SECTION LAT		2.5		240	A	2	NS	B,T,A,R,M		2335
NS	2336	HLL DIV CALS		1.5		*	A	3	NS	B,T,A,R		
TOTAL			3.0	10.0	-							
NS LLL												
NS LLL	2381	LLL FAM CALS		2.0		365	A	1	NS	B,T,A		2381
NS LLL	2382	LLL SECTION CALS		2.0		365	A	2	NS	B,T,A,R		2382
NS LLL	2384	LLL LAT		2.5		240	A	2	NS	B,T,A,R,M		2384
NS LLL	2385	LLL DIVISION CALS		2.5		240	A	3	NS	B,T,A,R,M		2385
TOTAL			0.0	9.0	-							
TG												
ACAD	2510	FUNDAMENTALS OF AG	1.0			*	CLS			B,T,A		2510
ACAD	2511	M240 MACHINE GUN	0.5			*	CLS			B,T,A		2511
ACAD	2512	GAU-16/A	0.5			*	CLS			B,T,A		2512
ACAD	2513	LASER AIMING DEVICES	0.5			*	CLS			B,T,A		2513
ACAD	2514	LASER BORESIGHTING PROCEDURES	0.5			*	CLS			B,T,A		2514
LAB	2520	M240D	0.5			*	CLS			B,T,A,R		2520
LAB	2521	GAU-16/A	0.5			*	CLS			B,T,A,R		2521
TG	2530	M240D DAY		1.5		365	A	1	D	B,T,A		2530
TG	2531	GAU-16/A DAY		1.5		365	A	1	D	B,T,A		2531
TG	2532	M240D OR GAU-16/A DAY SECTION		1.5		365	A	2	D	B,T,A,R,M		2832
TG	2533	M240D NIGHT		1.5		365	A	1	NS	B,T,A		2533
TG	2534	GAU-16/A NIGHT		1.5		365	A	1	NS	B,T,A		2534
TG	2535	M240D OR GAU-16/A NIGHT SECTION		1.5		240	A	2	NS	B,T,A,R,M		2535
TOTAL			4.0	9.0	-							
AD												
ACAD	2610	EA AIR DELIVERY		1.5		*	A	1	D	B,T,A		4210
AD	2631	AIR DELIVERY CARGO		1.5		365	A	1	(NS)	B,T,A,R,M		4230

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MV-22 CREW CHIEF												
2000 PHASE CORE SKILL												
STAGE	TRNG CODE	EVENT DESCRIPTION	CLASS/LAB HOURS	FLIGHT HOURS	SIMULATOR HOURS	REFLY INTERVAL	DEVICE	# OF A/C	CONDITIONS	POI	EVALUATION	EVENT CONVERSION
			0.0	3.0	-							
MAT												
MAT	2732	DAY MAT		1.5		365	A	1	D	B,T,A		4530
MAT	2733	NIGHT MAT		1.5		365	A	1	NS	B,T,A,R,M		4531
			0.0	3.0								
EW												
ACAD	2810	EAD ASE	1.0			*	CLS	-	-	B,T,A		2810
ACAD	2811	BASIC PRINCIPLES OF EW	1.0			*	CLS	-	-	B,T,A		2811
ACAD	2812	ADA THREAT TO A.S.	1.0			*	CLS	-	-	B,T,A		2812
ACAD	2813	IR SAM THREAT TO A.S.	1.0			*	CLS	-	-	B,T,A		2813
ACAD	2814	RADAR SAM THREAT TO	1.0			*	CLS	-	-	B,T,A		2814
ACAD	2815	MV-22 GROUND THREAT	1.0			*	CLS	-	-	B,T,A,R		2815
LAB	2820	MV-22 GTR WALK THROUGH	0.5			*	CLS	-	-	B,T,A		2820
GTR	2832	GROUND THREAT REACTION		1.5		365	A	2	(NS)	B,T,A,R,M		2832
TOTAL			6.5	1.5	-							
CQ												
CQ	2931	DAY FCLP		1.0		365	A	1	D	B,T,A,R		2931
CQ	2932	DAY CQ		1.5		365	A	1	D	B,T,A,R		2932
CQ	2934	NVD FCLP		1.0		365	A	1	NS	B,T,A,R		2934
CQ	2935	NVD CQ		1.5		365	A	1	NS	B,T,A,R,M		2935
TOTAL			0.0	5.0	-							
TOTAL CLS/FLT/SIM HOURS FOR PHASE			40.5	52.0	-							

3000 PHASE MISSION SKILL												
SHORE												
ACAD	3012	EA ACEOI	1.0			*	CLS			B, T, A		
SHORE	3030	MED THREAT SHORE		0.0		365	-	-	-	B, T, A, R, M		3131
TOTAL			1.0	0.0	-							
SEA												
SEA	3130	MED THREAT SEA		0.0		365				B, T, A, R, M		3030
TOTAL			0.0	0.0	-							
CAT												
ACAD	3216	MOUT	1.0			*	CLS	-	-	B, T, A		3511
ACAD	3217	SIX FUNCTIONS	1.0			*	CLS	-	-	B, T, A		3210
CAT	3230	LOW THREAT ASSAULT SECTION		2.5		365	A	2	(NS)	B, T, A, R, M		3231
CAT	3233	THREAT ASSAULT SECTION		4.0		180	A	2	(NS)	B, T, A, R, M		3231
TOTAL			2.0	6.5	-							
AE												
ACAD	3310	CASEVAC	1.0			*	CLS			B, T, A		3512
ACAD	3311	NEO EXECUTION	1.0			*	CLS			B, T, A		3510
AE	3330	MED THREAT AIR EVACUATION		2.0		365	A	2	(NS)	B, T, A, R, M		3530
TOTAL			2.0	2.0	-							
TRAP												
ACAD	3410	PERSONNEL RECOVERY	1.0			*	CLS	-	-	B, T, A		3410
TRAP	3430	TRAP MISSION		2.0		365	A	2	(NS)	B, T, A, R, M		3430
TOTAL			1.0	2.0	-							
AD												
AD	3530	INTRODUCTION TO AIR DELIVERY		0.0		365				B, T, A, R, M		3330
TOTAL			-	-	-							
TOTAL CLS/FLT/SIM HOURS FOR PHASE			6.0	11.0	-							

MV-22 CREW CHIEF												
4000 PHASE CORE PLUS SKILL												
STAGE	TRNG CODE	EVENT DESCRIPTION	CLASS/LAB HOURS	FLIGHT HOURS	SIMULATOR HOURS	REFLY INTERVAL	DEVICE	# OF A/C	CONDITIONS	POI	EVALUATION	EVENT CONVERSION
AD												
AD	4030	PARAOPS		1.5		365	A	1	(NS)	B,T,A,R,M		4231
AD	4031	DAY SINGLE POINT EXT		1.0		365	A	1	D	B,T,A,R		2631
AD	4032	DAY DUAL POINT EXT		1.5		365	A	1	D	B,T,A,R		2632
AD	4033	NIGHT SINGLE POINT EXT		1.5		365	A	1	NS	B,T,A,R		2633
AD	4034	NIGHT DUAL POINT EXT		1.5		365	A	1	NS	B,T,A,R,M		2634
TOTAL			0.0	7.0	-							
AIE												
ACAD	4111	ALTERNATE INSERT/EXTRACT	0.5			*	CLS	-	-	B,T,A		4211
ACAD	4112	HOIST OPERATIONS	0.5			*	CLS			B,T,A		4211
AIE	4130	FASTROPE/RAPPEL		1.5		365	A	1	(NS)	B,T,A,R,M		4233
AIE	4131	HOISTING OPS		1.5		365	A	1	(NS)	B,T,A,R,M		
AIE	4132	SPIE OPS		1.5		365	A	1	(NS)	B,T,A,R,M		4232
AIE	4133	HELOCAST OPS		1.5		365	A	1	D	B,T,A,R,M		4234
TOTAL			1.0	6.0	-							
RI/E												
RIE	4180	TACTICAL INSERT/EXTRACT		2.5		365	A	1	(NS)	B,T,A,R,M		4730
			-	2.5	-							
ADGR												
ACAD	4210	ADGR	1.0			*	CLS			B,T,A		4610
LAB	4220	ADGR LAB	2.0			*	A	1		B,T,A		4620
ADGR	4230	ADGR MISSION		0.5		365	A	1	(NS)	B,T,A,R,M		4630
			3.0	0.5	-							
BI												
ACAD	4310	EA BATTLEFIELD ILLUMINATION	1.0			*	CLS			B,T,A		
BI	4330	BATTLEFIELD ILLUMINATION		1.5		365	A	1	NS	B,T,A,R,M		
TOTAL			1.0	1.5	-							
C2												
ACAD	4410	MV-22 AIRBORNE COMMAND AND CONTROL	0.5			*	CLS			B,T,R		
LAB	4420	C2 LAB	1.0			*	A	1		B,T		
AC2	4430	C2 TAC MISSION		0.0		730	A	1	(NS)	B,T,R,M		
TOTAL			1.5	-	-							

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MV-22 CREW CHIEF												
4000 PHASE CORE PLUS SKILL												
STAGE	TRNG CODE	EVENT DESCRIPTION	CLASS/LAB HOURS	FLIGHT HOURS	SIMULATOR HOURS	REFLY INTERVAL	DEVICE	# OF A/C	CONDITIONS	POI	EVALUATION	EVENT CONVERSION
DWS												
ACAD	4510	GAU-17/A	1.0			*	CLS			B, T, A, R		
ACAD	4511	EA MV-22 DWS	1.0			*	CLS			B, T, A		
LAB	4520	DWS INSTALLATION AND AMMO CAN LOADING	0.5			*	A	1		B, T, A		
LAB	4521	DWS FUNCTIONALITY	1.5			*	A	1		B, T, A		
LAB	4522	DWS EMERGENCY PROCEDURES	1.0			180	A	1		B, T, A, R, M		
LAB	4523	GAU-17	1.0				CLS			B, T, A		
DWS	4531	DAY W/NO ROUNDS		1.5		*	A	2		B, T, A		
DWS	4532	DAY SINGLE		1.5		365	A	1		B, T, A, R		
DWS	4533	DAY SECTION		1.5		365	A	2		B, T, A, R, M		
DWS	4534	NIGHT W/NO ROUNDS		2.0		*	A	2	NS	B, T, A		
DWS	4535	NIGHT SINGLE		1.5		365	A	1	NS	B, T, A, R		
DWS	4536	NIGHT SECTION		1.5		240	A	2	NS	B, T, A, R, M		
TOTAL			6.0	9.5	-							
CBRN												
LAB	4620	CBRN FITTING AND FAM	0.5			*	CLS	-	-	B, T, A		4120
SCBRN	4630	CBRN SIM			1.0	*	S		-	B, T, A		4130
SCBRN	4631	NVD CBRN SIM			1.0	*	S		NS	B, T, A, R, M		4131
TOTAL			0.5	-	2.0							
RVL												
RVL	4730	RVL		1.5		180	A	1	(NS)	B, T, A, R, M		
			-	1.5	-							
CQ												
CQ	4781	NIGHT UNAIDED FCLPs		1.0		365	A	1	N*	B, T, A, R		4431
CQ	4782	NIGHT UNAIDED CQs		1.5		365	A	1	N*	B, T, A, R, M		4432
			-	2.5	-							
DCM												
ACAD	4810	HELICOPTER THREAT TO ASSAULT SUPPORT	1.0			*	CLS			B, T, A		4010
ACAD	4811	F/W THREAT TO ASSAULT SUPPORT	1.0			*	CLS			B, T, A		4011
ACAD	4812	DEFENSIVE COMBAT MANEUVERS	1.0			*	CLS			B, T, A		4012
LAB	4820	DCM WALK-THROUGH	1.0			*	CLS			B, T, A		4020
DCM	4831	DCM VS F/W AGRESSOR		1.0		365	A	2	D	B, T, A, R, M		4030

TOTAL			4.0	1.0	—							
TOTAL FOR PHASE			17	32	2.0							
BICC												
ACAD	5010	BASIC INSTRUCTOR TRAINING COURSE	8.0			*	CLS			B,T		
LAB	5020	AIRCREW TRAINING MANUALS	3.0			*	CLS			B,T,R		
BICC	5030	BICC EVALUATION		1.0		*	A	1	D	B,T,R	X	
TOTAL			11.0	1.0	—							
FIT												
ACAD	5110	BASIC INSTRUCTOR TRAINING COURSE	8.0			*	CLS	—	—	B,T		
FIT	5130	CCIUT FAM		2.0		*	A	1	D	B,T,R	X	5030
FIT	5131	CCIUT CAL		1.5		*	A	1	D	B,T,R	X	5031
FIT	5132	CCIUT FORM		1.5		*	A	2	D	B,T,R	X	5032
FIT	5133	CCIUT STANX		2.0		*	A	1	D	B,T,R	X	5033
			8.0	7.0	—							
TGI												
TG	5410	IUT CLASS	1.0			*	CLS			B,T	X	5410
ACAD	5411	TRAINING THE AERIAL GUNNER	1.0			*	CLS	—	—	B,T		5411
LAB	5420	IUT LAB	1.0			*	CLS			B,T	X	5420
LAB	5421	IUT LAB	1.0			*	CLS			B,T	X	5421
TG	5430	TGI IUT		1.5		*	A	1	D	B,T	X	5430
TG	5431	TGI IUT		1.5		*	A	1	NS	B,T	X	5431
TG	5432	TGI CERT		1.5		*	A	2	NS	B,T,R	X	5432
TG	5433	TGI IUT		1.5		*	A	1	(NS)	B,T,R	X	5433
TG	5434	TGI CERT		1.5		*	A	1	NS	B,T,R	X	5434
TOTAL			4.0	7.5	—							
DWSI												
ACAD	5511	DWS CERT	1.0			*	CLS			B,T	X	
LAB	5520	DWS CERT	1.0			*	CLS			B,T	X	
LAB	5521	DWS CERT	1.0			*	CLS			B,T,R	X	
LAB	5523	DWS CERT	1.0			*	CLS			B,T	X	
DWS	5530	DWS IUT		1.5		*	A	1	D	B,T	X	
DWS	5531	DWS IUT		1.5		*	A	2	NS	B,T,R	X	
DWS	5532	DWS CERT		1.5		*	A	1	D	B,T,R	X	
DWS	5533	DWS CERT		1.5		*	A	2	NS	B,T,R	X	
TOTAL			3.0	6.0	—							
LATI												
ACAD	5610	LAT LECTURE	1.0			*	CLS	—	—	B,T	X	5610
LAT	5630	LAT IUT		1.5		*	A	1	D	B,T	X	5630
LAT	5631	LAT CERT		2.0		*	A	2	D	B,T,R	X	5631
TOTAL			1.0	3.5	—							
NSFI												
ACAD	5710	NSFI LECTURE	1.0			*	CLS			B,T	X	5710
NS	5731	NSFI IUT		1.5		*	A	1	NS	B,T	X	5731
NS	5732	NSFI CERT		1.5		*	A	2	NS	B,T,R	X	5732



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TOTAL			1.0	3.0	-							
DCMI												
ACAD	5810	DCMI LECTURE	1.0			*	CLS	-	-	B, T	X	5810
DCM	5831	DCMI IUT		2.0		*	A	2	D	B, T	X	5830
DCM	5832	DCMI CERT		2.0		*	A	2	D	B, T, R	X	5831
TOTAL			1.0	4.0	-							

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## 5000 PHASE INSTRUCTOR TRAINING

5000 PHASE INSTRUCTOR TRAINING												
STAGE	TRNG CODE	EVENT DESCRIPTION	CLASS/LAB HOURS	FLIGHT HOURS	SIMULATOR HOURS	REFLY INTERVAL	DEVICE	# OF A/C	CONDITIONS	POI	EVALUATION	EVENT CONVERSION
NSI												
ACAD	5910	NSI LECTURE	1.0			*	CLS	-	-	B,T	X	5910
NSI	5931	NSI IUT		2.0		*	A	1	NS	B,T	X	5931
NSI	5933	NSI IUT		2.0		*	A	2	NS	B,T	X	5933
NSI	5934	NSI CERT		2.0		*	A	1	NS	B,T,R	X	5934
NSI	5935	NSI CERT		2.0		*	A	2	NS	B,T,R	X	5935
TOTAL			1.0	8.0	-							
WTI												
WTI	5950	WEAPONS AND TACTICS COURSE	504.0			*	-	-	-	B,T	X	5950
TOTAL			504.0	-	-							
TOTAL CLS/FLT/SIM HOURS FOR PHASE			529.0	31.0	-							
REQ												
ACAD	6010	OPEN BOOK NATOPS EXAM	3.0			365	CLS	-	-	B,T,A,R,M	X	6010
ACAD	6011	CLOSED BOOK NATOPS EXAM	1.0			365	CLS	-	-	B,T,A,R,M	X	6011
ACAD	6012	ORAL NATOPS EXAM	3.0			365	CLS	-	-	B,T,A,R,M	X	6012
ACAD	6016	CRM GROUND CLASS	1.0			365	CLS	-	-	B,T,A,R,M	X	6016
RQD	6030	NATOPS EVALUATION		1.5		365	A	1	(N)	B,T,A,R,M	X	6030
RQD	6031	CRM FLIGHT		1.5		365	A	1	(N)	B,T,A,R,M	X	6031
RQD	6036	E.P. SIM			2.0	90	S/A	1	(N)	B,T,A,R,M	X	6036
TGQ	6533	TG Qual		0.0		*	A	1	(N)	B,T,A,R,M		
QASO	6653	BI QASO		1.5		365	A	1	NS	B,T,A,R,M	X	
TOTAL			8.0	4.5	2.0							
TOTAL CLS/FLT/SIM HOURS FOR PHASE			8.0	3.0	2.0							

MV-22B CREW CHIEF ATTAIN AND MAINTAIN MATRIX													
EVENT DESCRIPTION	STAGE	CODE	REFLY	BASIC POI		TRANSITION POI		REFRESHER POI		MAINTAIN POI		PREREQUISITE	CHAINING
				STAGE	CODE	STAGE	CODE	STAGE	CODE	STAGE	CODE		
CORE SKILLS (2000 Phase)													
AIR-TO-AIR REFUEL	ACAD	A2012	*	FAM	A2012	FAM	A2012	FAM		FAM			
MSN AUX TANK LAB	LAB	A2020	*		L2020		L2020						
FAM	FAM	2032	*		2032		2032						
SINGLE CAL	CAL	2132	365	CAL	2132	CAL		CAL		CAL		6030~CC, 2032~AO	
RVL CAL	CAL	2133R	240		2133R		2133R		2133R		2133R	2132	2132
SECTION CAL	CAL	2135	365		2135		2135					2132	2132
DIVISION CAL	CAL	2136R	365		2136R		2136R		2136R		2136R	2135	2132, 2135
EA TAC FORM	ACAD	A2160	*	FORM	A2160	FORM	A2160	FORM		FORM		6030~CC	
TAC FORM	FORM	2182R	365		2182R		2182R		2182R		2182R	2132, 2160	2132
DIVISION FORM	FORM	2183	*		2183		2183					2182, 2135	2182
EA LAT	ACAD	A2210	*	LAT	A2210	LAT	A2210	LAT		LAT		2160	
TAC AIRWREW CONS	ACAD	A2211	*		A2211		A2211					2160	
LAT WALKTHROUGH	LAB	L2220R	*		L2220R		L2220R		L220R			2210, 2211	
SINGLE LAT	LAT	2231	365		2231		2231					2220, 2132	2132
SECTION LAT	LAT	2233R	365		2233R		2233R		2233R		2233R	2231, 2182	2132, 2182, 2231
NIGHT VISION TRNG	ACAD	A2310	*	NS HLL	A2310	NS HLL	A2310	NS HLL		NS HLL		2210	
MV-22 FLIR	ACAD	A2311	*		A2311		A2310					2310	
SINGLE CAL	NS HLL	2331	365		2331		2331					2132, 2310	2132
SECTION CAL	NS HLL	2332R	365		2332R		2332R		2332R			2135, 2182, 2331	2132, 2135, 2182, 2331
SINGLE LAT	NS HLL	2334	365		2334		2334					2233, 2311, 2331	2132, 2231, 2331
SECTION LAT	NS HLL	2335R	240		2335R		2335R		2335R		2335R	2332, 2334	2132, 2135, 2182, 2231, 2233, 2331, 2332, 2334
DIVISION CAL	NS HLL	2336R	*		2336R		2336R		2336R			2136, 2183, 2332	2132, 2135, 2136, 2182, 2331, 2332
SINGLE CAL	NS LLL	2381	365		NS LLL	2381	NS LLL	2381	NS LLL		NS LLL		2335, 2336
SECTION CAL	NS LLL	2382R	365	2382R		2382R		2382R				2381~B, T, A; 2336~R	2132, 2135, 2182, 2331, 2332, 2381
SECTION LAT	NS LLL	2384R	240	2384R		2384R		2384R		2384R		2382	2133, 2135, 2182, 2231, 2233, 2331, 2332, 2334, 2335, 2381, 2382
DIVISION CAL	NS LLL	2385R	240	2385R		2385R		2385R		2385R		2336, 2382	2132, 2135, 2136, 2182, 2183, 2331, 2332, 2381, 2382

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## MV-22B CREW CHIEF ATTAIN AND MAINTAIN MATRIX

EVENT DESCRIPTION	STAGE	CODE	REFLY	BASIC POI		TRANSITION POI		REFRESHER POI		MAINTAIN POI		PREREQUISITE	CHAINING
				STAGE	CODE	STAGE	CODE	STAGE	CODE	STAGE	CODE		
FUND OF A/G	ACAD	A2510	*	TG	A2510	TG	A2510	TG		TG		2210	
M240 MACHINE GUN	ACAD	A2511	*		A2511		A2511					2510	
GAU-16/A	ACAD	A2512	*		A2512		A2512					2510	
LASER AIM DEVICES	ACAD	A2513	*		A2513		A2513					2511	
LASER BORESIGHTING	ACAD	A2514	*		A2514		A2514					2513	
M240D	LAB	L2520R	*		L2520R		L2520R		L2520R			2511	
GAU-16/A	LAB	L2521R	*		L2521R		L2521R		L2521R			2512	
M240 DAY SINGLE TG	TG	2530	365		2530		2530					2233, 2520	2132, 6533
GAU-16/A DAY SLE TG	TG	2531	365		2531		2531					2233, 2521	2132, 6533
M240D OR GAU-16 DAY SECTION TG	TG	2532R	365		2532R		2532R		2532R		2532R	2530~M-240, 2531~GAU-16	2132, 2182, 2530~M-240, 2531~GAU-16
M240 NT SINGLE TG	TG	2533	365	2533	2533			2335, 2384~LLL, 2514, 2530	2132, 2331, 2381~LLL, 2530				
GAU-16/A NT SLE TG	TG	2534	365	2534	2534			2335, 2384~LLL, 2514, 2531	2132, 2331, 2381~LLL, 2531				
M240D OR GAU-16 NIGHT SECTION TG	TG	2535R	240	2535R	2535R		2535R	2532, 2533~M-240, 2534~GAU-16	2132, 2135, 2331, 2332, 2381, 2382, 2530~M240, 2531~GAU16, 2532, 2533~M-240, 2534~GAU-16				
EA AIR DELIVERY	ACAD	A2610	*	AD	A2610	AD	A2610	AD		AD		2210	
AIR DELIVERY	AD	2631R	365		2631R		2631R		2631R		2631R	2233, 2334~HLL, 2384~LLL, 2610	2132
DAY SINGLE CAL	MAT	2732	365	MAT	2732	MAT	2732	MAT		MAT		2132	2132
NIGHT SINGLE CAL	MAT	2733R	365		2733R		2733R		2733R		2733R	2732, NSQ FOR LIGHT LEVEL	2732, 2331~NS, 2132, 2381~LLL
EA ASE	ACAD	A2810	*	GTR	A2810	GTR	A2810	GTR		GTR		2210	
BASIC PRINCIPLES OF ELECTRONIC WARFARE	ACAD	A2811	*		A2811		A2811					2810	
ADA THREAT TO A.S.	ACAD	A2812	*		A2812		A2812					2810	
IR SAM THREAT TO A.S.	ACAD	A2813	*		A2813		A2813					2810	
RADAR SAM THREAT TO A. S.	ACAD	A2814	*		A2814		A2814					2810	
MV-22 GTR	ACAD	A2815R	*		A2815R		A2815R		A2815R			2810, 2811, 2812, 2813, 2814	
GTR WALK THROUGH	LAB	L2820	*		L2820		L2820					2815	
SECTION GTR	GTR	2832R	365		2832R		2832R		2832R		2832R	2233, 2182, 2820	2231, 2233, 2182
DAY FCLP	CQ	2931R	365	CQ	2931R	CQ	2931R	CQ		CQ		2132	2132
DAY CARRIER QUAL	CQ	2932R	365		2932R		2932R		2932R			2931	2132, 2931
NIGHT FCLP	CQ	2934R	365		2934R		2934R		2934R			2331, 2931, 2381~LLL	2132, 2331, 2381~LLL, 2931
NIGHT CARRIER QUAL	CQ	2935R	365		2935R		2935R		2935R		2935R	NSQ HLL, 2932, 2934	2132, 2331, 2381~LLL, 2931 2932, 2934
MISSION SKILLS (3000 Phase)													
ACEOI & TRIAD AUTH	ACAD	A3012	*	SHORE	A3012	SHORE	A3012	SHORE		SHORE		2510	
LOW THREAT MSN	SHORE	3030R	365		3030R		3030R		3030R		3030R	NSQ, 2535, 2733	
LOW THREAT MSN	SEA	3130R	365	SEA	3130R	SEA	3130R	SEA	3130R	SEA	3130R	NSQ CQ, 2535, 2733	

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MV-22B CREW CHIEF ATTAIN AND MAINTAIN MATRIX															
EVENT DESCRIPTION	STAGE	CODE	REFLY	BASIC POI		TRANSITION POI		REFRESHER POI		MAINTAIN POI		PREREQUISITE	CHAINING		
				STAGE	CODE	STAGE	CODE	STAGE	CODE	STAGE	CODE				
MOUT	ACAD	A3216	*	CAT	A3216	CAT	A3216	CAT		CAT		2510			
SIX FUNCTIONS	ACAD	A3217	*		A3217						2510				
LOW THREAT SECTION	CAT	3230R	365		3230R		3230R		3230R		NSQ, 2535, 2731, 2832, 3217	2183, 2182, 2135, 2132			
ESCORT SECTION	CAT	3233R	180		3233R		3233R		3233R		NSQ, 3230, 3330	2182, 2183, 2135, 2132			
CASEVAC	ACAD	A3310	*	AE	A3310	AE	A3310	AE		AE		3217			
NEO EXECUTION	ACAD	A3311	*		A3311						3217				
CASEVAC MISSION	AE	3330R	365		3330R		3330R		3330R		3230	2182 2135 2132			
PERSONNEL RECOVERY	ACAD	A3410	*		TRAP		A3410		TRAP		A3410	TRAP		TRAP	
TRAP MISSION	TRAP	3430R	365	3430R		3430R	3430R	3230A, 3410		2182, 2135, 2132					
AD	AD	3530R	365	AD		3530R	AD	S3530R		AD	S3530R		3230, 2631		
CORE PLUS (4000 Phase)															
PARAOPS	AD	4030R	365	AD	4030R	AD	4030R	AD	4030R	AD	4030R	2132, 2610	2132, 2631		
DAY SINGLE PT EXT	AD	4031R	365		4031R		4031R		4031R			2132	2132		
DAY DUAL PT EXT	AD	4032R	365		4032R		4032R		4032R			4031	2132, 4031		
NT SINGLE PT EXT	AD	4033R	365		4033R		4033R		4033R			4031, 2331~NS, 2381~LLL	2132, 4031		
NT DUAL PT EXT	AD	4034R	365		4034R		4034R		4034R		4034R	4032, 4033	2132, 4031 4032 4033		
AIE	ACAD	A4111	*	AIE	A4111	AIE	A4111	AIE		AIE		2210			
HOIST OPERATIONS	ACAD	A4112	*		A4112						2210				
FASTROPE/RAPPEL	AIE	4130R	365		4130R		4130R		4130R		4130R	4031, 4033~NS, 4111	2132, 4031, 4133~NS		
HOISTING	AIE	4131R	365		4131R		4131R		4131R		4131R	4031, 4033~NS, 4112	2132		
SPIE	AIE	4132R	365		4132R		4132R		4132R		4132R	4031, 4033~NS, 4111	2132, 4031, 4133~NS		
HELOCAST/SOFT DUCK	AIE	4133R	365		4133R		4133R		4133R		4133R	2132, 4111, 4031	2132		
RIE MISSION	RIE	4180R	365	RI/E	4180R	RI/E	4180R	RI/E	4180R	RI/E	4180R	APP AIE SKILL PROF	2631		
ADGR LECTURE	ACAD	A4210	*	ADGR	A4210	ADGR	A4210	ADGR		ADGR		2210			
ADGR PRAC APP	LAB	L4220	*		L4220		L4220					4210			
ADGR MISSION	ADGR	4230R	365		4230R		4230R		4230R		4230R	2132, 2331~NS, 2381~LLL, 4220	2132, 2331~NS, 2381~LLL		
BATTLEFIELD ILLUM	ACAD	A4310	*	BI	A4310	BI	A4310	BI		BI		2310			
BI MISSION	BI	4330R	365		4330R		4330R		4330R		4330R	2384, 2385, 2832, 4310			
AIRBORNE C2	ACAD	A4410	*	AC2	A4410	AC2	A4410	AC2	A4410	AC2		2310			
AIRBONE C2 LAB	TRAP	L4420	*		A4420		A4420					4410			
C2 MISSION	AD	4430R	730		4430R		4430R		4430R		4430R	4420, NSQ HLL~NS, NSQ LLL~LLL			
GAU-17/A	ACAD	A4510	*	DWS	A4510	DWS	A4510	DWS	A4510	DWS		2510			
EA MV-22 DWS	ACAD	A4511	*		A4511							4510			
DWS INSTALLATION	LAB	L4520	*		L4520		L4520					4511			
DWS FUNCTIONALITY	LAB	L4521	*		L4521		L4521					4520			
DWS EP'S	LAB	L4522R	180		L4522R		L4522R		L4522R		L4522R	4521			
GAU-17	LAB	L4523			L4523		L4523					4510			
DAY W/NO ROUNDS	DWS	4531	*		4531		4531					3K COMPLETE, 2535, 4522			
DAY SINGLE SHIP	DWS	4532R	365		4532R		4532R		4532R		4532R	4531	2132		
DAY SECTION	DWS	4533R	365		4533R		4533R		4533R		4533R	4532	2132, 4532		
NIGHT W/NO ROUNDS	DWS	4534	*		4534		4534					4531			
NIGHT SINGLE SHIP	DWS	4535R	365		4535R		4535R		4535R		4535R	4532, 4534	2132, 2331, 2381~LLL, 4532		

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MV-22B CREW CHIEF ATTAIN AND MAINTAIN MATRIX													
EVENT DESCRIPTION	STAGE	CODE	REFLY	BASIC POI		TRANSITION POI		REFRESHER POI		MAINTAIN POI		PREREQUISITE	CHAINING
				STAGE	CODE	STAGE	CODE	STAGE	CODE	STAGE	CODE		
NIGHT SECTION	DWS	4536R	240		4536R		4536R		4536R		4536R	4535	2132, 2331, 2381~LLL, 4532 4533, 4535
EQUIPMENT FIT & FAM	LAB	L4620	*		L4620		L4620					2132	
DAY EMPLOYMENT	SCBRN	S4630	*	CBRN	S4630	CBRN	S4630	CBRN		CBRN		4620	
NIGHT EMPLOYMENT	SCBRN	S4631	*		S4631		S4631		S4631		S4631	4630	4630
RVL	RVL	4730R	180	RVL	4730R	RVL	4730R	RVL	4730R	RVL	4730R	2133	2132 2133
NIGHT UNAIDED FCLP	CQ	4781R	365		4781R		4781R		4781R			2931	2931
NIGHT UNAIDED CQ	CQ	4782R	365	CQ	4782R	CQ	4782R	CQ	4782R	CQ	4782R	2932, 4781	2932, 4781
RW THREAT TO AS	ACAD	A4810	*		A4810		A4810					2832	
FW THREAT TO AS	ACAD	A4811	*		A4811		A4811					2832	
DCM	ACAD	A4812	*		A4812		A4812					2832, 4810, 4811	
DCM WALKTHROUGH	LAB	L4820	*		L4820		L4820					4812	
FW AGGRESSOR	DCM	4831R	365		4831R		4831R		4831R		4831R	2832, 4820	2832

MV-22B AERIAL OBSERVER ATTAIN AND MAINTAIN MATRIX											
EVENT DESCRIPTION	STAGE	CODE	REFLY	BASIC POI		REFRESHER POI		MAINTAIN POI		PREREQUISITE	CHAINING
				STAGE	CODE	STAGE	CODE	STAGE	CODE		
CORE SKILLS (2000 Phase)											
CRM GROUND INIT	ACAD	A2010	*	FAM	A2010	FAM		FAM			
NITE LAB	ACAD	A2011	*		A2011						
AIR-TO-AIR REFUEL	ACAD	A2012	*		A2012						
MSN AUX TANK LAB	LAB	L2020	*		L2020						
FIRE EXT LAB	LAB	L2021	*		L2021						
INGRESS/EGRESS LAB	LAB	L2022	*		L2022						
START/TAXI	LAB	L2023	*		L2023						
MOORING LAB	LAB	L2024	*		L2024						
ALSS FAM	LAB	L2025	*		L2025						
E.P./EMERGENGY FAM	LAB	L2026	*		L2026						
FAM	FAM	2032	*	2032							
SINGLE CAL	CAL	2132	365	CAL	2132	CAL		CAL		6030	
RVL CAL	CAL	2133R	240		2133R		2133R		2132	2132	
SECTION CAL	CAL	2135	365		2135				2132	2132	
DIVISION CAL	CAL	2136R	365		2136R		2136R		2135	2132, 2135	
EA TAC FORM	ACAD	A2160	*	FORM	A2160	FORM		FORM		6030	
TAC FORM	FORM	2182R	365		2182R		2182R		2182R	2132, 2160	2132
DIVISION FORM	FORM	2183	*		2183					2182	2182
EA LAT	ACAD	A2210	*	LAT	A2210	LAT		LAT		2160	
TAC AIRWREW CONS	ACAD	A2211	*		A2211					2160	
LAT WALKTHROUGH	LAB	L2220R	*		L2220R		L2220R			2210, 2211	
SINGLE LAT	LAT	2231	365		2231					2220, 2132	2230
SECTION LAT	LAT	2233R	365		2233R		2233R		2233R	2231, 2182	2132, 2182, 2231

MV-22B AERIAL OBSERVER ATTAIN AND MAINTAIN MATRIX											
EVENT DESCRIPTION	STAGE	CODE	REFLY	BASIC POI		REFRESHER POI		MAINTAIN POI		PREREQUISITE	CHAINING
				STAGE	CODE	STAGE	CODE	STAGE	CODE		
NIGHT VISION TRNG	ACAD	A2310	*	NS HLL	A2310	NS HLL		NS HLL		2160	
MV-22 FLIR	ACAD	A2311	*		A2311					2310	
SINGLE CAL	NS HLL	2331	365		2331					2132, 2310	2132
SECTION CAL	NS HLL	2332R	365		2332R		2332R			2135, 2182, 2331	2132, 2135, 2182, 2331
SINGLE LAT	NS HLL	2334	365		2334					2233, 2311, 2331	2132, 2231, 2331
SECTION LAT	NS HLL	2335R	240		2335R		2335R		2335R	2332, 2334	2132, 2135, 2182, 2231, 2233, 2331, 2332, 2334
DIVISION CAL	NS HLL	2336R	*		2336R		2336R			2136, 2183, 2332	2132, 2135, 2136, 2182, 2331, 2332
SINGLE CAL	NS LLL	2381	365	NS LLL	2381	NS LLL		NS LLL		2335, 2336	2132, 2331
SECTION CAL	NS LLL	2382R	365		2382R		2382R			2381	2132, 2135, 2182, 2331, 2332, 2381
SECTION LAT	NS LLL	2384R	240		2384R		2384R		2384R	2382	2133, 2135, 2182, 2231, 2233, 2331, 2332, 2334, 2335, 2381, 2382
DIVISION CAL	NS LLL	2385R	240		2385R		2385R		2385R	2336, 2382	2132, 2135, 2136, 2182, 2331, 2332, 2381, 2382
FUND OF A/G	ACAD	A2510	*	TG	A2510	TG		TG		2210	
M240 MACHINE GUN	ACAD	A2511	*		A2511					2510	
GAU-16/A	ACAD	A2512	*		A2512					2510	
LASER AIM DEVICES	ACAD	A2513	*		A2513					2511	
LASER BORESIGHTING	ACAD	A2514	*		A2514					2513	
M240D	LAB	L2520R	*		L2520R		L2520R			2511	
GAU-16/A	LAB	L2521R	*		L2521R		L2521R			2512	
M240 DAY SINGLE TG	TG	2530	365		2530					2233, 2520	2132
GAU-16/A DAY SLE TG	TG	2531	365		2531					2233, 2521	
M240D OR GAU-16 DAY SECTION TG	TG	2532R	365		2532R		2532R		2532R	2530~M-240, 2531~GAU-16	2132, 2182, 2530~M-240, 2531~GAU-16
M240 NT SINGLE TG	TG	2533	365		2533					2335, 2384, 2514, 2531	2132, 2331, 2381, 2530
GAU-16/A NT SLE TG	TG	2534	365		2534					2335, 2384~LLL, 2514, 2531	2132, 2331, 2381~LLL, 2531
M240D OR GAU-16 NIGHT SECTION TG	TG	2535R	240		2535R		2535R		2535R	2532, 2533~M-240, 2534~GAU-15	2132, 2135, 2331, 2332, 2381, 2382, 2530~M-240, 2531~GAU-16, 2532, 2533~M-240, 2534~GAU-16
EA AIR DELIVERY	ACAD	A2610	*	AD	A2610	AD		AD		2210	
AIR DELIVERY	AD	2631R	365		2631R		2631R		2631R	2233 2334~HLL, 2384~LLL 2610	2132
DAY SINGLE CAL	MAT	2732	365	MAT	2732	MAT		MAT		2132	2132
NIGHT SINGLE CAL	MAT	2733R	365		2733R		2733R		2733R	2732, NSQ FOR LIGHT LEVEL	2732, 2731, 2730, 2331, 2132, 2130
EA ASE	ACAD	A2810	*	GTR	A2810	GTR		GTR		2210	
BASIC PRINCIPLES OF ELECTRONIC WARFARE	ACAD	A2811	*		A2811					2810	
ADA THREAT TO A.S.	ACAD	A2812	*		A2812					2810	
IR SAM THREAT TO A.S.	ACAD	A2813	*		A2813					2810	

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## MV-22B AERIAL OBSERVER ATTAIN AND MAINTAIN MATRIX

MV-22B AERIAL OBSERVER ATTAIN AND MAINTAIN MATRIX											
EVENT DESCRIPTION	STAGE	CODE	REFLY	BASIC POI		REFRESHER POI		MAINTAIN POI		PREREQUISITE	CHAINING
				STAGE	CODE	STAGE	CODE	STAGE	CODE		
RADAR SAM THREAT TO A. S.	ACAD	A2814	*		A2814					2810	
MV-22 GTR	ACAD	A2815	*		A2815					2810,2811,2812,2813, 2814	
GTR WALK THROUGH	LAB	L2820	*		L2820					2815	
SECTION GTR	GTR	2832R	365		2832R		2832R	2832R	2233,2182,2820	2231,2233,2182	
DAY FCLP	CQ	2931R	365	CQ	2931R	CQ	2931R	CQ		2132	2132
DAY CARRIER QUAL	CQ	2932R	365		2932R		2932R			2931	2132,2931
NIGHT FCLP	CQ	2934R	365		2934R		2934R			2331,2931	2132,2331,2381~LLL,2931
NIGHT CARRIER QUAL	CQ	2935R	365		2935R		2935R		2935R	NSQ HLL,2932,2934	2132,2331,2381~LLL,2931 2932,2934
MISSION SKILLS (3000 Phase)											
ACEOI & TRIAD AUTH	ACAD	A3012	*	SHORE	A3012	SHORE		SHORE		2510	
LOW THREATT MSN	SHORE	3030R	365		3030R		3030R		3030R	NSQ,2535,2733	
LOW THREAT MSN	SEA	3130R	365	SEA	3130R	SEA	3130R	SEA	3130R	NSQ CQ,2535,2733	
MOUT	ACAD	A3216	*	CAT	A3216	CAT		CAT		2510	
SIX FUNCTIONS	ACAD	A2317	*		A3217					2510	
LOW THREAT SECTION	CAT	3230R	365		3230R		3230R		3230R	NSQ,2535,2731,2832,3217	2182,2135,2132
ESCORT SECTION	CAT	3233R	180		3233R		3233R		3233R	NSQ,3230	2182,2135,2132
CASEVAC	ACAD	A3310	*	AE	A3310	AE		AE		3217	
NEO EXECUTION	ACAD	A3311	*		A3311					3217	
CASEVAC MISSION	AE	3330R	365		3330R		3330R		3330R	3230	2182,2135,2132
PERSONNEL RECOVERY	ACAD	A3410	*		A3410					3217	
TRAP MISSION	TRAP	3430R	365	TRAP	3430R	TRAP	3430R	TRAP	3430R	3230A	2182,2180,2135,2134,2132,2130
AD	AD	3530R	365	AD	3530R	AD	S3530R	AD	S3530R	3230,2631	
CORE PLUS (4000 Phase)											
PARAOPS	AD	4030R	365	AD	4030R	AD	4030R	AD	4030R	2132,2610	2132,2631
DAY SINGLE PT EXT	AD	4031R	365		4031R		4031R			2132	2132
DAY DUAL PT EXT	AD	4032R	365		4032R		4032R			4031	2132,4031
NT SINGLE PT EXT	AD	4033R	365		4033R		4033R			4031	2132,4031
NT DUAL PT EXT	AD	4034R	365		4034R		4034R		4034R	4032,4033	2132,4031,4032,4033
AIE	ACAD	A4111	*	AIE	A4111	AIE		AIE		2210	
HOIST OPERATIONS	ACAD	A4112	*		A4112					2210	
FASTROPE/RAPPEL	AIE	4130R	365		4130R		4130R		4130R	4031,4033~NS	2132
HOISTING	AIE	4131R	365		4131R		4131R		4131R	4031,4033~NS,4112	2132
SPIE	AIE	4132R	365		4132R		4132R		4132R	4031,4033~NS,4111	2132
HELOCAST/SOFT DUCK	AIE	4133R	365		4133R		4133R		4133R	2132,4111	2132
RIE MISSION	RIE	4180R	365	RI/E	4180R	RI/E	4180R	RI/E	4180R	APP AIE SKILL PROF	2631
ADGR LECTURE	ACAD	A4210	*	ADGR	A4210	ADGR		ADGR		2210	
ADGR PRAC APP	LAB	L4220	*		L4220					4210	
ADGR MISSION	ADGR	4230R	365		4230R		4230R		4230R	2132,2331~NS,2381~LLL,4220	2132,2331~NS,2381~LLL
BATTLEFIELD ILLUM	ACAD	A4310	*	BI	A4310	BI		BI		2310	
BI MISSION	BI	4330R	365		4330R		4330R		4330R	2384,2385,2832,4310	



MV-22B AERIAL OBSERVER ATTAIN AND MAINTAIN MATRIX											
EVENT DESCRIPTION	STAGE	CODE	REFLY	BASIC POI		REFRESHER POI		MAINTAIN POI		PREREQUISITE	CHAINING
				STAGE	CODE	STAGE	CODE	STAGE	CODE		
GAU-17/A	ACAD	A4510	*	DWS	A4510	DWS	A4510	DWS		2510	
EA MV-22 DWS	ACAD	A4511	*		A4511					4510	
DWS INSTALLATION	LAB	L4520	*		L4520					4511	
DWS FUNCTIONALITY	LAB	L4521	*		L4521					4520	
DWS EP'S	LAB	L4522R	180		L4522R		L4522R		L4522R	4521	
GAU-17	LAB	L4523	*		L4523					4510	
DAY W/NO ROUNDS	DWS	4531	*		4531					3K COMPLETE, 2535, 4522	
DAY SINGLE SHIP	DWS	4532R	365		4532R		4532R			4531	2132
DAY SECTION	DWS	4533R	365		4533R		4533R		4533R	4532	2132, 4532
NIGHT W/NO ROUNDS	DWS	4534	*		4534					4531	
NIGHT SINGLE SHIP	DWS	4535R	365		4535R		4535R			4532, 4534	2132, 2331, 2381~LLL, 4532
NIGHT SECTION	DWS	4536R	240		4536R		4536R		4536R	4535	2132, 2331, 2381~LLL, 4532 4533 4535
EQUIPMENT FIT & FAM	LAB	L4620	*	CBRN	L4620	CBRN		CBRN		2132	
DAY EMPLOYMENT	SCBRN	S4630	*		S4630					4620	
NIGHT EMPLOYMENT	SCBRN	S4631R	*		S4631R		S4631R		S4631R	4630	4630
RVL	RVL	4730R	180	RVL	4730R	RVL	4730R	RVL	4730R	2133	2132, 2133
NIGHT UNAIDED FCLP	CQ	4781R	365	CQ	4781R	CQ	4781R	CQ		2931	2931
NIGHT UNAIDED CQ	CQ	4782R	365		4782R		4782R		4782R	2932 , 4781	2932, 4781
RW THREAT TO AS	ACAD	A4810	*	DCM	A4810	DCM		DCM		2832	
FW THREAT TO AS	ACAD	A4811	*		A4811					2832	
DCM	ACAD	A4812	*		A4812					2832, 4810, 4811	
DCM WALKTHROUGH	LAB	L4820	*		L4820					4812	
FW AGGRESSOR	DCM	4831R	365		4831R		4831R		4831R	2832, 4820	2832