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NAVMC 3500.34

From: Commandant of the Marine Corps
To: Distribution List

Subj: UNMANNED AERIAL SYSTEM (UAS) T&R MANUAL

Ref: (a) NAVMC DIR 3500.14

Encl: (1) UAS T&R MANUAL

1. Purpose. Revise standards and regulations regarding the training of UAS crewmembers per the reference.

2. Information

   (a) This revision, which supersedes MCO 3500.21A, brings the UAS T&R Manual into compliance with the reference's T&R syllabus structure requirements.

   (b) Concurrent with the development of this Manual, a rapid timeline has been established to transition from the Pioneer to the Shadow 200 System. This Manual was originally developed to facilitate the training of crewmembers on the Pioneer unmanned aerial system. However, as a result of high operational tempo, an urgent need exists to train crewmembers on the newly acquired Shadow 200 System in order to support the increasing demand for UAS support.

   (c) A fully developed UAS T&R manual addressing specific training requirements for the Shadow 200 System is at least one year from publication. In the interim, subject matter experts have determined that this Manual provides standardized programs of instruction based on specific performance standards designed to ensure proficiency in all existing core competencies, regardless of the type of UAS system in use. This Manual provides the fundamental tools for commanders to build and maintain unit combat readiness for both the Pioneer and Shadow 200 System. Using this Manual as a template, commanders will be able to execute an effective training plan that supports unit METS.

   (d) As such, this Manual is fully approved for Pioneer use, and is conditionally approved for use on the Shadow 200 System. Within 18 months of commencing UAS training on the Shadow 200 System, a review of Shadow 200 System T&R requirements will be conducted, resulting in a revision to this Manual to exclusively accommodate the Shadow 200 System training requirements.

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3. <u>Recommendations</u>. Recommended changes to this order are invited, and may be submitted via the syllabus sponsor and the appropriate chain of command to: Commanding General, Training and Education Command, Aviation Training Branch via e-mail (refer to <u>http://www.tecom.usmc.mil/atb/contacts .htm</u>) or the Defense Message System using the following plain-language address: CG TECOM QUANTICO VA ATB.

4. <u>Reserve Applicability</u>. This Manual is applicable to the Marine Corps Total Force.

5. <u>Certification</u>. Reviewed and approved this date.

GEORGE J. FLYNN
By direction

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UNMANNED AERIAL SYSTEM TRAINING AND READINESS (T&R) MANUAL

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UNMANNED AIRCRAFT SYSTEM (UAS) MISSION COMMANDER
MOS 7315

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CHAPTER 1

UNMANNED AIRCRAFT SYSTEM (UAS) MISSION COMMANDER
MOS 7315

100. MARINE UNMANNED AERIAL VEHICLE SQUADRON (VMU) UNIT CORE COMPETENCY

1. Overview

    a. Marine Aviation plays a crucial role in the MAGTF's ability to conduct Maneuver Warfare. The ultimate goal of Marine Aviation is to attain the highest possible level of combat readiness to support Expeditionary Maneuver Warfare while at the same time preserving and conserving our Marines and equipment. Embedded within our combat readiness is the ability to rapidly, effectively, and efficiently deploy on short notice; to quickly and effectively plan for crises and/or contingency operations thereby ensuring Marine Aviation remains ready for combat when and where the need arises.

    b. This Marine Unmanned Aircraft System (UAS) T&R Directive represents the collaborative effort of UAS Subject Matter Experts who designed training standards to maximize the full combat capabilities of the UAS and its crew. These standards, intrinsic in the core competency section, describe and define unit capabilities and requirements necessary to maintain like-squadron proficiency in core skills and combat leadership. Training events are based on specific requirements and performance standards to ensure aircrew maintain a common base of training and depth of combat capabilities. Together, the T&R comprises a building block approach to ensure that trained aircrews remain ready, relevant, and fully capable of supporting the MAGTF commander.

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

2. Marine Unmanned Aerial Vehicle Squadron (VMU) Mission. Support the MAGTF commander by providing day and night aerial reconnaissance, surveillance, target acquisition (RSTA), indirect fire adjustment, bomb hit assessment (BHA) and support of the rear area security plan during expeditionary operations or joint and combined operations during Visual Meteorological Conditions (VMC).

3. Mission Essential Task List (METL)

    a. MCT 1.1   Provide Forces

    b. MCT 1.6.5   Conduct Tactical Operations

    c. MCT 2.1.1   Conduct Intelligence Functions

    d. MCT 2.1.2   Conduct Intelligence Support

    e. MCT 2.2.5   Conduct Aviation Intelligence Collection Activities

4. <u>Table of Organization (T/O)</u>. Refer to T/O 8890 managed by Total Force Structure, MCCDC, for current authorized organizational structure and personnel strength for VMU units. As of this publication date, a VMU unit is authorized:

Squadron
5 aircraft 05 External Pilots 33 Internal Operators 05 Mission Commanders

5. <u>Core Capability</u>. A core capable squadron is able to sustain four single plane sorties on a daily basis during contingency/combat operations. The above sortie rates are based on a 4.5 hour average sortie duration and assume 80 percent FMC aircraft and 85 percent T/O aircrew on hand. If unit FMC aircraft < 80 percent or T/O aircrew < 85 percent, core capability will be degraded by a like percentage. The extent to which a core capable squadron is able to surge beyond its core capability is situational dependent.

6. <u>METL/Core Skills</u>. Core skills shall be a determining factor in developing T&R training requirements. Core skill abbreviations are listed below. Core skills/core plus training requirements must receive appropriate prioritization and emphasis based on the training need and the likelihood of those types of missions being assigned during operations.

CORE SKILL ABBREVIATIONS	
CORE SKILL	ABBREVIATION
Navigation	NAV
Night Flight Operations	NFO
Tactical Flight Operations	TFO
Short Field Operations	SFO
Fires Coordination	FC

MISSION ESSENTIAL TASKS		CORE SKILLS					CORE PLUS		
		NAV	NFO	TFO	SFO	FC	TFO	SFO	FC
MCT 1.1	Provide Forces	X		X	X	X			
MCT 1.6.5	Conduct Tactical Operations	X	X	X	X	X	X	X	X
MCT 2.1.1	Conduct Intelligence Functions	X		X		X	X		X
MCT 2.1.2	Conduct Intelligence Support	X		X		X	X		
MCT 2.2.5	Conduct Aviation Intelligence Collection Activities	X		X			X		

7. <u>Core Model Minimum Requirements (CMMR)</u>. CMMR is measured in terms of the minimum numbers of Core Skill Proficiency (CSP) crews and minimum numbers of

combat leaders. A standard UAS crew consists of two Internal Operators (IO), one External Pilot (EP), and one Mission Commander (MC). A CSP crew consists of individuals representing each crew position who have achieved and maintain individual CSP. In order to be considered proficient in a core skill, a crewmember must attain and maintain proficiency in core skill and core plus events as delineated in paragraphs 7a(1) and 7a(2) below:

a. <u>Minimum Unit Core Skill Proficiency (CSP) Requirements</u>. At a minimum, in order to be considered core competent, a unit must possess the following numbers of personnel who are proficient in each core skill (unit CSP)

VMU CMMR (Unit CSP Requirements)			
CORE SKILL	Internal Operator	External Pilot	Mission Commander
NAV	21	4	4
NFO	21	4	4
TFO	21	4	4
SFO	21	4	4
FC	21	4	4
CORE PLUS	Internal Operator	External Pilot	Mission Commander
TFO	10	NA	2
SFO	NA	2	NA
FC	NA	NA	2
* Proficiency in Core Plus Skills is not required to obtain unit CSP.			

(1) <u>Events Required to Attain Individual CSP</u>. To initially attain CSP in a specific core skill, an individual must simultaneously have a proficient status in all 200-300 level T&R events for that core skill:

INDIVIDUAL CSP ATTAIN TABLE					
Mission Commander (MOS 7315)	TFO	NAV	NFO	FC	NBC
	200R, 201R, 202, 203R, 204R, 205R, 219R, 300R, 301R, 302R, 303R, 304R, 305R	210 211R	215R 216R	306R 307R	308R
R = Refresher Event					

(2) <u>Events Required to Maintain Individual CSP</u>. To maintain CSP in a specific core skill, an individual must maintain proficiency in all 200-300 level T&R events for that core skill:

INDIVIDUAL CSP MAINTAIN TABLE					
Mission Commander (MOS 7315)	TFO	NAV	NFO	FC	NBC
	200R, 201R, 203R, 204R, 205R, 219R, 300R, 301R, 302R, 303R, 304R, 305R	211R	215R 216R	306R 307R	308R
R = Refresher Event					

(3) <u>Events Required to Attain Individual Proficiency in Core Plus Skills</u>. 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 attain proficiency in a core plus skill, an individual must be proficient in all T&R events listed for that core plus skill.

INDIVIDUAL CORE PLUS SKILL ATTAIN TABLE	
Mission Commander (MOS 7315)	TFO 400R 401R
R = Refresher Event	

(4) Events Required to Maintain Individual Proficiency in Core Plus Skills. To maintain proficiency in a core plus skill, an individual must maintain proficiency in all 400 level T&R events for that core plus skill:

INDIVIDUAL CORE PLUS SKILL MAINTAIN TABLE	
Mission Commander (MOS 7315)	TFO 400R 401R
R = Refresher Event	

b. Minimum Combat Leader Requirements. At a minimum, in order to be considered core competent, a VMU squadron must possess the following numbers of crewmembers with the listed combat leadership designations.

CMBR (UNIT COMBAT LEADERSHIP REQUIREMENTS)			
Designation	Internal Operator	External Pilot	Mission Commander
Mission Commander (MC)	NA	NA	4
Functional Check Flight (FCF)*	4	2	2
*Although not specifically a combat leader, is required to sustain core capability in contingency operations			

8. Qualifications, Designations and Instructor Requirements. The tables below delineate T&R events required to be completed to attain initial qualifications, to re-qualify, and to attain designations. All stage lectures, briefs, squadron training and prerequisites shall be complete prior to completing final events. Qualification and designation letters signed by the commanding officer shall be placed in individual NATOPS and individual performance records (APR/MPR).

   a. Qualification. A qualification is a status assigned based on demonstrated proficiency in a specific skill. Specific criteria to achieve qualifications are delineated below, in the MAWTS-1 course catalog, NATOPS or other governing directives. Upon completion of qualification criteria, commanding officers shall issue a qualification letter for inclusion into individual performance records. Qualifications are not lost when refreshing events. Loss of proficiency and/or time expiration (delinquent refresh events) for all associated qualification events constitutes loss of the qualification. Re-qualification requires demonstrated proficiency by

successfully completing all R-coded events associated with the qualification (unless waived per the Aviation T&R Program Manual).

MOS 7315 QUALIFICATIONS		
Qualification	Tracking Code	Requirements
Mission Commander	QUAL-620	MCQM-219
Annual NATOPS	RQD-619	MCQM-219

b. <u>Designation</u>. A designation is a status assigned by the commanding officer to an individual based on leadership ability. It is command specific and remains in effect until removed for cause, transferred, or rescinded at the commander's discretion. Commanders are encouraged to ensure the individual designation requirements noted below are met prior to designating an individual. Once an individual is designated, commanders shall issue a designation letter for inclusion into the individual performance record. Follow-on commands shall repeat the "initial documentation procedure."

MOS 7315 DESIGNATIONS		
Designation	Tracking Code	Requirements
Mission Commander (MC)	DESG-600	MCQM-219, and standardization board recommendation and CO approval
Mission Commander Instructor (MCI)	DESG-601	MCIUT-508, and standardization board recommendation and CO approval
NATOPS Instructor (NI)	DESG-602	MCQM-219, MCIUT-508, and standardization board recommendation and CO approval
Assistant NATOPS Instructor (ANI)	DESG-603	MCQM-219, MCIUT-508, and standardization board recommendation and CO approval
NATOPS Evaluator (NE)	DESG-604	MCQM-219, MCIUT-508, and standardization board recommendation and CO approval
Functional Check Pilot (FCP)	DESG-605	MCQM-219
Weapons & Tactics Instructor (WTI)	DESG-610	DESG-601, and graduate from WTI course.

c. <u>Instructor Requirements</u>. At a minimum, a VMU squadron should maintain instructor designations to support VMU operations. Instructor designations are outlined in the MAWTS-1 Course Catalog, MCO 3500.12C (WTTP), NATOPS, and applicable directives. Squadron CO/XO instructor designations shall not count toward the following numbers:

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UNIT INSTRUCTOR REQUIREMENTS			
Designations	Internal Operator	External Pilot	Mission Commander
NATOPS Instructor (NI)[1]	1	1	1
Assistant NATOPS Instructor (ANI)	1	1	1
External Pilot Instructor (EPI)	NA	1	NA
Internal Operator Instructor (IOI)	1	NA	NA
Mission Commander Instructor (MCI)	NA	NA	1
Weapons Tactics Instructor (WTI)	1[2]	NA	NA
Note 1: NATOPS Evaluator can fulfill this requirement			
Note 2: Although an Internal Operator is noted, any instructor can fill this unit requirement for one WTI.			

9. Mission Commander Training Progression Model. This progression model provides the VMU community with recommended progression timelines for the mission commander. Timeline assumes continuous assignment to a VMU squadron.
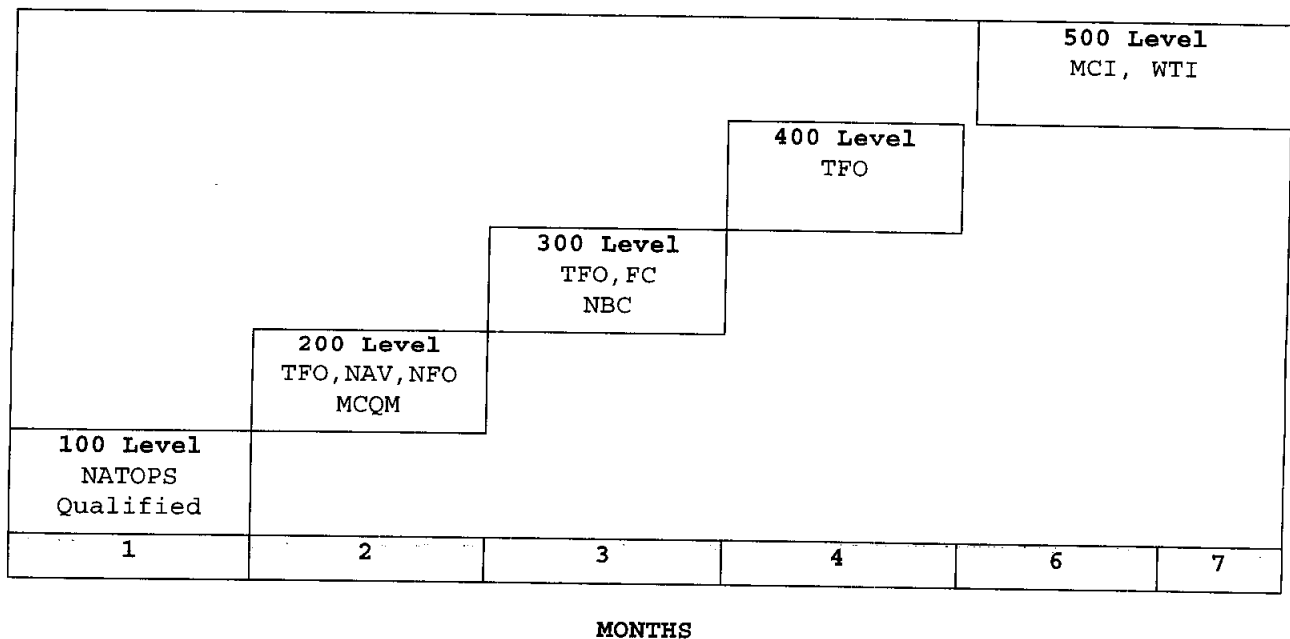

MONTHS

Figure 1-1. Mission Commander Training Progression Model

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101. BASIC PROGRAM OF INSTRUCTION (POI) FOR MISSION COMMANDER

Weeks	Phase	Activity
1-3	Core Skill Introduction	TW-6 UAV DET
4-7	Core Skill Basic	Tactical Squadron
8-11	Core Skill Advanced	Tactical Squadron
12-15	Core Plus	Tactical Squadron

102. REFRESHER POI FOR MISSION COMMANDER

Weeks	Phase	Activity
1-4	Core Skill Basic	Tactical Squadron
5-8	Core Skill Advanced	Tactical Squadron
9-12	Core Plus	Tactical Squadron

103. ACADEMIC/GROUND TRAINING

1. Academic training shall be conducted for each phase/stage of the syllabus. Commanders are strongly encouraged to incorporate the lectures into their training plans. Where indicated, standardized academic training materials exist and may be obtained from the sponsoring activity.

2. External academic courses of instruction available to complete the syllabus are listed below:

Course	Activity
MC Ground/Flight Syllabus	Tactical Squadron
Military Airspace Management Course	Keesler AFB, MS
Weapons Tactics Instructor Course	MAWTS-1
Air and Space Operation Center Initial Qualification Training (AOCIQT); Airspace Course	Hurlburt Field, FL

104. EVENT PERFORMANCE REQUIREMENTS

1. General

    a. The purpose of this section is to provide the commander with standardized programs of instruction for all VMU personnel. The goal is to develop unit warfighting capabilities, not to measure the proficiency of individuals. Syllabi are based on specific performance standards designed to ensure proficiency in core competencies. An effective T&R program is the first step in providing the MAGTF commander with an Aviation Combat Element (ACE) capable of accomplishing any and all of its stated missions. The T&R program provides the fundamental tools for commanders to build and maintain unit combat readiness. Using these tools, training managers can construct and execute an effective training plan that supports the unit METS.

    b. Unit training management is the application of the Marine Corps Training Principles and the Systems Approach to Training to satisfy the training requirements of commanders at all levels in order to accomplish their wartime mission. Guidance concerning unit training management and the process for establishing effective unit training management programs are contained in MCRP 3-0A, *Unit Training Management Guide*, and formed the basis for the development of this T&R Directive. Familiarity with MCRP 3-0A will enhance understanding of the Systems Approach to Training used in T&R development and Marine Corps UTM principles.

2. <u>Flight/Simulator Training</u>. This Manual generalizes mission guidance to allow for local conditions and to allow this manual to remain unclassified. CMC (A) and CG MCCDC encourage squadrons to use the full range of tactics in the tactical manuals and adopt the latest developed and proven tactics. All events shall terminate with a comprehensive debrief with emphasis on the aircrew's performance using applicable evaluation techniques.

3. <u>Syllabus Assignment</u>

    a. <u>Basic Syllabus</u>. Mission Commanders (MCs) will be assigned to fly the entire syllabus.

    b. <u>Refresher Syllabus</u>. The refresher syllabus is predicated on the experience of the refresher MC. A MC in the refresher syllabus should fly all R-coded events in the respective core skill. However, a refresher MC need not fly every event within a stage of training to requalify in that stage. The commanding officer may tailor the refresher syllabus to fit the experience of the refresher MC per NAVMC P3500.14. When the R-coded events within a stage of training are complete, the MC may be credited with the CRP for the entire stage of training. This assumes the MC previously attained proficiency in that stage of training. If the MC has no previous proficiency in a stage or particular event, then the entire stage or all events not current or not previously flown must be completed. The refresher syllabus applies only to those stages achieved during the individual's prior tour. All other stages not previously completed shall be completed in their entirety.

4. <u>Aircrew Evaluation Flights</u>. All MCs shall have a NATOPS evaluation form filled out annually upon completion of the annual NATOPS Check. A designated NATOPS instructor (NI) or an assistant NATOPS instructor (ANI) shall evaluate the annual NATOPS event.

5. <u>Aircrew Training Forms (ATFs)</u>

    a. An ATF is required for any initial flight of any event completed by a Basic or Refresher External Operator or as recommended by the squadron standardization board.

    b. If the commanding officer has waived a syllabus event, the squadron training officer shall place a waiver letter in the APR/MPR.

6. <u>Flight Completion</u>. Compliance with the written flight description is mandatory for syllabus flight completion. Times indicated for each flight are only recommendations.

7. <u>Weight and Balance</u>. Weight and balance sheets will be completed per NATOPS guidelines and standard operating procedures (SOP).

8. <u>Responsibilities</u>

    a. <u>Payload Operator (PO)</u>. Crewmember responsible for operation of the UAS sensor or payload.

    b. <u>Internal Pilot (IP)</u>. Crewmember responsible for the flight operation of the UAS.

    c. <u>Internal Operator (IO)</u>. Crewmember qualified and designated as a Payload Operator <u>and</u> Internal Pilot.

d. <u>External Pilot (EP)</u>. Crewmember responsible for operation of the unmanned aircraft during launch and recovery.

9. <u>Definitions</u>

a. <u>Discuss</u>

(1) The Mission Commander Instructor (MCI) shall discuss a procedure or maneuver during the brief, in flight, or debrief.

(2) The Mission Commander Under Instruction (MCUI) is responsible for knowledge of the applicable procedures prior to the briefing.

b. <u>Demonstrate</u>

(1) The MCI shall perform the maneuver with accompanying description.

(2) The MCUI observes the maneuver and is responsible for the knowledge of the procedures prior to the flight.

c. <u>Introduce</u>

(1) The MCI may perform the maneuver with an accompanying description, or he may coach the MCUI through the maneuver without demonstration.

(2) The MCUI shall perform the maneuver with coaching as necessary and is responsible for knowledge of the procedures prior to the flight.

d. <u>Practice</u>

(1) The MCI observes the maneuver with limited coaching to the MCUI. An airborne critique of the MCUI's performance is at the option of the instructor.

(2) The MCUI shall perform the maneuver with limited coaching as necessary and is responsible for knowledge of procedures prior to the flight.

e. <u>Evaluate</u>

(1) The MCI observes and grades the maneuver without coaching the MCUI. An airborne critique of the MCUI's performance is at the option of the instructor.

(2) The MCUI is expected to perform the maneuver without coaching and devoid of procedural error at a level acceptable to warrant progress into the next stage of training.

105. <u>CORE SKILL INTRODUCTION TRAINING</u>

1. <u>General</u>

a. This phase of training provides ground and flight training to develop Mission Commander (MC) proficiency. The course develops proficiency and experience in tactical UAS operations (day and night) and covers introduction to the Unmanned Aircraft System (UAS), GCS, PCS and TCU, equipment familiarization, system operating modes, payloads, autopilot, UAS operating

procedures, mission planning, map reading, aerial navigation, emergency procedures and UAS launch/recovery systems. Upon completion of the formal Mission Commander Course at TW-6 UAV DET in Navarre, FL, the MC is considered NATOPS qualified and eligible to be designated as a squadron MC by the commanding officer.

    b. <u>Core Skill Introduction Stages</u>

        (1) Familiarization (FAM)
        (2) Navigation (NAV)
        (3) Emergency Procedures (EMG)

2. <u>Familiarization (FAM), Navigation (NAV) and Emergency Procedures (EMG)</u>

    a. <u>Purpose</u>. To develop the basic knowledge and experience in tactical UAS system operations emphasizing crew resource management, system operations, navigation, and emergency procedures to perform as an NATOPS qualified MC.

    b. <u>Prerequisites</u>

        (1) Must meet the physical requirements of a Class III flight physical per NAVMED P-117 (Manual of the Naval Medical Department, section IV article 15-65, paragraph 1.15.

        (2) The MC student shall meet all MOS manual prerequisites.

        (3) To be trained in this portion of the academic and flight syllabus, all MC students shall be eligible to obtain a secret clearance.

    c. <u>Ground Training</u>. Ground school classes have been scheduled to augment the flight syllabus requirements. These classes can be executed in conjunction with the flight events. However, the completion of ground school classes prior to the corresponding flight is mandatory. Ground classes cannot update or replace the corresponding flight event. Prior to commencement of flight operations, the MC will have successfully completed the local course rules exam and Squadron Flight SOP exam.

    d. <u>Administrative Note</u>. All ground training events are based on a class size of eight students; whereas, each syllabus flight accounts for the training of 2 students during the allotted time. The <u>MC</u> is the crewmember responsible for the execution of all facets of crew coordination, mission accomplishment and safety of flight.

    e. <u>Ground Training</u>. 51 classes.

    f. <u>Flight Training</u>. 5 flights, 15.0 hours.

<u>FAM-100</u> 3.0   A   R   (1) UAS   (N)   CREW POSITION   MC

    <u>Goal</u>. Introduce the MC to a flight mission.

    <u>Requirement</u>

        (1) Introduce and perform MC requirements for the conduct and coordination of flight operations on a local or range flight mission.
        (2) Prepare and execute a MC flight mission brief.
        (3) Perform the MC flight mission debrief.

Performance Standard. IAW NATOPS and local SOP.

NAV-101 3.0 A/S   (1) UAS (N)   CREW POSITION   MC

Goal. Introduce a range flight mission.

Requirement

(1) Perform the MC flight mission brief, conduct and coordinate
    flight operations in the performance of a range mission.
(2) Perform the MC's flight mission debrief.

Performance Standard. IAW NATOPS and local SOP.

Prerequisite. FAM-100.

NAV-102 3.0 A/S   R   (1) UAS (N)   CREW POSITION   MC

Goal. Practice a range flight mission.

Requirement. Perform all aspects of a range flight mission.

Performance Standard. IAW NATOPS and local SOP.

Prerequisite. NAV-101.

EMG-103 3.0 A/S   (1) UAS (N)   CREW POSITION   MC

Goal. Introduce emergency procedures.

Requirement

(1) Emergency procedures for ground emergencies.
(2) Launch and recovery emergencies.
(3) In-flight emergencies.
(4) Perform all aspects of the range flight mission.

Performance Standard. IAW NATOPS and local SOP.

Prerequisite. NAV-102.

EMG-104 3.0 A/S   R   (1) UAS (N)   CREW POSITION   MC

Goal. Perform emergency procedures for ground emergencies, launch
and recovery emergencies, and in-flight emergencies.

Requirement. Manage all aspects of the range flight mission.

Performance Standard. IAW NATOPS and local SOP.

Prerequisite. NAV-101, EMG-103

106. <u>CORE SKILL BASIC TRAINING</u>

1. <u>General</u>

a. This phase applies skills and information learned during Core Skill Introduction training phase (100-level) while assigned to a VMU squadron. Initial individual core skills are learned and mastered using ground training and a mix of live and simulation training. Training includes introduction to UAS equipment and the Marine Air Command and Control Squadron (MACCS). The phase culminates with the UAS operator being fully Naval Air Training and Operating Procedures Standardization (NATOPS) qualified on the Pioneer Unmanned Aircraft System (RQ-2). Upon completion of this phase of training, the MC is Qualified-in-Model (MCQM).

b. <u>Prerequisite</u>

(1) The MC under training must complete the Core Skill Introduction phase of training prior to commencing training in this phase.

(2) The MC shall have a secret clearance.

(3) The MC must have completed local course rules, open/closed book NATOPS, and squadron flight SOP exams.

c. <u>Ground Training</u>. Ground syllabus events have been scheduled to augment the flight syllabus requirements. These events can be executed in conjunction with the flight events. However, the completion of the ground training event prior to its corresponding flight is mandatory. Ground events cannot update or replace the corresponding flight event.

d. <u>Refresher Training</u>. Refresher training is required once a Core Skill Basic qualified MC has been absent from a VMU billet assignment for more than 365 days. Upon return to a VMU billet, the MC will complete the R-coded 200 level events in the MC syllabus, see Maintain table in this chapter.

e. <u>Core Skill Basic Stages</u>

(1) Tactical Flight Operations (TFO)
(2) Navigation (NAV)
(3) Night Flight Operations (NFO)
(4) Mission Commander Qualified in Model (MCQM) Check

2. <u>Tactical Flight Operations (TFO)</u>

a. <u>Purpose</u>. To develop proficiency and experience in tactical UAS operation and to emphasize the importance of crew resource management, system operation, emergency procedures, operational terminology and familiarization with squadron and local SOPs.

b. <u>Ground Training</u>. 3 events, 4.0 hours.

c. <u>Flight Training</u>. 3 flights, 4.0 hours.

| TFO-200 | 1.0 | R | (N) | CREW POSITION | MC |

<u>Goal</u>. Introduce area of operation, squadron SOPs, local course rules and regulations.

Requirement. Complete the open/closed book NATOPS, annual course rules exam and the squadron SOP exam.

Performance Standard. Pass an open/closed book NATOPS, course rules and squadron SOP written exam with a minimum score of 80%. Instructor MCI.

TFO-201   1.0   R   (1) UAS   (N)   CREW POSITION   MC

Goal. Introduce the UAS, crew coordination, and pre-flight and post-flight procedures.

Requirement. Introduce, review and discuss the following:

(1) All components of the system.
(2) Crew coordination.
(3) Mapping utilities.
(4) Pre-flight of all system components individual crew position responsibilities.
(5) Rolling/RATO/Pneumatic launch procedures.
(6) Post flight procedures.

Performance Standard. IAW NATOPS and squadron SOPs. Instructor MCI.

Prerequisite. TFO-200.

TFO-202   1.0   A   (1) UAS   (N)   CREW POSITION   MC

Goal. Introduce the local flight pattern.

Requirement

(1) Introduce the local flight pattern to include launch and recovery procedures.
(2) Introduce coordination with local controlling agencies.
(3) Introduce emergency procedures.

Performance Standard. IAW NATOPS and squadron SOPs. Instructor MCI.

Prerequisite. TFO-201.

TFO-203   1.0   A   R   (1) UAS   (N)   CREW POSITION   MC

Goal. Introduce range flight operations.

Requirement

(1) Conduct a range flight.
(2) Review local flight procedures to include exit/entry procedures.
(3) Introduce dish lock procedures, range flight operations and coordination with controlling agencies.

Performance Standard. IAW NATOPS and squadron SOPs. Instructor MCI.

Prerequisite. TFO-202.

TFO-204 2.0   A   R   (1) UAS (N)   CREW POSITION   MC

Goal. Introduce in-flight emergency procedures.

Requirement

(1) Introduce simulated in-flight emergency procedures.
(2) Conduct range flight operations.

Performance Standard. IAW NATOPS and local unit SOP. Instructor MCI.

Prerequisite. TFO-203.

TFO-205 2.0   R   (N)   CREW POSITION   MC

Goal. Introduce mission planning, briefing, and debriefing.

Requirement

(1) Introduce mission planning, briefing, and debriefing.
(2) Collect meteorological data.
(3) Calculate fuel required and take off distance.
(4) Determine routes, altitude requirements, and airspeeds.
(5) Coordinate with supported unit and controlling agencies.

Performance Standard. IAW NATOPS and local unit SOP. Instructor MCI.

Prerequisite. TFO-204.

3. Navigation (NAV)

a. Purpose. To develop proficiency and experience in UAS navigational procedures.

b. Flight Training. 2 flights, 3.0 hours.

NAV-210 1.5   A   (1) UAS (N)   CREW POSITION   MC

Goal. Introduce the MC to UAS navigation.

Requirement Introduce/demonstrate navigational procedures using the PDMS, radial maps, terrain association, payload graphics, ATC assistance and PDMS failure procedures.

Performance Standard. Instructor MCI. During the knobs control mode of flight:

(1) Using the PDMS, coordinate navigation to two points.
(2) Using radial maps, coordinate navigation to two points.
(3) During PDMS failure, coordinate effective crew coordination to navigate.

Prerequisite. TFO-205.

NAV-211 1.5   A   R   (1) UAS (N)   CREW POSITION   MC

Goal. Conduct UAS navigation.

Requirement. Using mission planning information developed in TFO-205, plan, brief, execute, and debrief a range navigation flight.

Performance Standard. Instructor MCI.

(1) Execute the plan within given parameters to successfully navigate to a minimum of four points.
(2) Conduct effective coordination with controlling agencies and UAS crew.

Prerequisite. NAV-210.

4. Night Flight Operations (NFO)

a. Purpose. To develop proficiency and experience in UAS night operations.

b. Administrative Notes. The MC is the only crew member authorized to use Night Vision Devices (NVDs) and their use is limited to gaining and maintaining situational awareness of the local flight pattern for UAS departure and recovery procedures. Stipulations of the Aviation T&R Program Manual, chapter 4 titled Fixed Wing Rules of Conduct for Night Operations concerning manned aviation do not apply to UAS operations.

c. Ground Training. 1 Event, 1.0 Hour. Ground training events for this stage can be executed in conjunction with the flight event(s). However, the completion of each ground training event prior to its corresponding flight is mandatory.

d. Flight Training. 1 flight, 1.0 hour.

NFO-215   1.0   R   (N)   CREW POSITION   MC

Goal. Introduce the MC to UAS night operations.

Requirement

(1) Introduce safety procedures, lighting requirements of the runway, UAS aircraft lighting, and the launch/recovery site.
(2) Review and discuss specific emergencies affected by night operation, night procedures, night crew coordination procedures, and payload/sensor characteristics.
(3) Review and discuss local SOPs and regulations for night operations.

Performance Standard. Demonstrate knowledge of airfield lighting, aircraft lighting, and Night Vision Device Usage, through practical application. Instructor MCI.

Prerequisite. NAV-211.

NFO-216   1.0   A   R   (1) UAS   (N)   CREW POSITION   MC

Goal. Conduct UAS night operations.

Requirement. Conduct planning, briefing, execution, and debriefing of both a local and range flight.

Performance Standard. Instructor MCI.

(1) Observe low approaches and entry/exit procedures.
(2) Conduct effective crew coordination.
(3) Coordinate with controlling agencies.

Prerequisite. NFO-215.

5. Qualification in Model (MCQM)

a. Purpose. To review all areas of instruction, demonstrate proficiency and knowledge of all maneuvers to certify the MC under instruction (MCUI) as Mission Commander Qualified in Model (MCQM) and Core Skill Basic complete.

b. General. The MCUI will demonstrate proficiency through the Core Skill Basic phase. Upon completion of the evaluation event, the MCUI meets the requirements for qualification as MCQM.

c. Flight Training. 1 flight, 1 hour.

MCQM-219   1.0   A   R   (1) UAS   (N)   CREW POSITION   MC

Goal. Mission Commander (MC) Check.

Requirement

(1) Plan, brief, execute, and debrief a local and range flight.
(2) Coordinate procedures, navigation, and simulated emergency procedures.

Performance Standard. Execute flight IAW all NATOPS, local course rules, and squadron SOPs. Instructor MCI.

Prerequisite. TFO-200, TFO-201, TFO-202, TFO-203, TFO-204, TFO-205, NAV-210, NAV-211, NFO-215, NFO-216.

107. CORE SKILL ADVANCED TRAINING

1. General

a. This phase progresses the MC through the remaining core skills required to be fully qualified on the UAS. It introduces functions and capabilities a VMU brings to the MAGTF commander, in specific tactical flight operations. MCs develop proficiency and experience in the tactical employment of the UAS.

b. Prerequisite

(1) Training should be accomplished by completing events in sequence when practical. The MC must complete the Core Skill Basic phase of training prior to completion of the Core Skill Advanced phase.

(2) The MC shall have a secret clearance.

c. Administrative Note. This phase will produce core competent leaders. Personnel trained in this phase are those a commanding officer feels are capable of directing the actions of crewmembers during wartime scenarios.

d. <u>Refresher Training</u>. Refresher training is required once a Core Skill Advanced qualified MC has been absent from a VMU billet assignment for more than 365 days. Upon return to a VMU billet, the MC will complete all 300 level R-coded events in the MC syllabus; see the Maintain table in this chapter.

e. <u>Core Skill Advanced Stages</u>

(1) Tactical Flight Operations (TFO)
(2) Fires Coordination (FC)
(3) Nuclear, Biological and Chemical (NBC)

2. <u>Tactical Flight Operations (TFO)</u>

a. <u>Purpose</u>. To develop proficiency and experience in threat recognition, mission planning, and split site operations.

b. <u>Ground Training</u>. 1 events, 6.0 hours.

c. <u>Flight Training</u>. 3 flight, 5.0 hours.

TFO-300   2.0   R   (N)   CREW POSITION   MC

   <u>Goal</u>. Assess current air and ground threat weapons and vehicle recognition.

   <u>Requirement</u>. Attend a threat weapons and vehicle recognition class given by the intelligence section. The class will include friendly as well as enemy weapon/vehicle recognition.

   <u>Performance Standard</u>. Pass an exam with a minimum score of 80%. Instructor IOI/IPI.

TFO-301   2.0   A   R   (1) UAS   (N)   CREW POSITION   MC

   <u>Goal</u>. In a threat scenario, conduct preflight, tactical mission planning, briefing, execution, and debriefing.

   <u>Requirement</u>. Given a threat scenario:

   (1) Conduct all preflight planning.
   (2) Prepare the tactical mission brief.
   (3) Conduct the mission.
   (4) Debrief the mission.
   (5) Airborne mission changes will be introduced.

   <u>Performance Standard</u>. IAW NATOPS. Instructor MCI.

   (1) Conduct the brief, mission, and debrief.
   (2) During the mission, coordinate navigation to a minimum of four specific targets/areas while adapting to dynamic mission changes.
   (3) Report the required items/events pertaining to the mission.

   <u>Prerequisite</u>. TFO-300.

TFO-302   3.0   R   (N)   CREW POSITION   MC

   <u>Goal</u>. Conduct advanced tactical mission planning.

Requirement

(1) Introduce selection of UAS deployment site for single and split site operations.
(2) Determine mission requirements from JTAR/S, ACO, ACEOI and ATO/SPINS.
(3) Determine coordination, communication, and planning requirements needed to effectively integrate with other aircraft and supporting arms.

Performance Standard. Conduct the event IAW NATOPS, while considering the following parameters to determine planning and execution requirements for UAS operations. Instructor MCI.

(1) Communications
(2) Intelligence
(3) Fire support coordination
(4) Aviation schemes of maneuver
(5) Ground schemes of maneuver
(6) Airspace control measures
(7) Aviation tasking
(8) Command and control
(9) Joint/combined forces

Prerequisite. TFO-301.

TFO-303   2.0   A   R   (1) UAS   (N)   CREW POSITION   MC

Goal. Conduct advanced tactical mission planning, briefing, execution, and debriefing.

Requirement. Given a threat scenario:

(1) Conduct and prepare the tactical mission brief
(2) Conduct and debrief the mission.
(3) Conduct in-flight coordination in order to react to dynamic changes in primary mission.

Performance Standard. IAW NATOPS. Instructor MCI.

(1) Conduct the brief, mission, and debrief.
(2) During the mission, supervise navigation to a minimum of four specific targets/areas and report the required items/events pertaining to the mission.
(3) Maintain effective crew coordination and situational awareness while reacting to in flight changes to the briefed mission.

Prerequisite. TFO-302.

TFO-304   1.0   R   (N)   CREW POSITION   MC

Goal. Introduce split site operations.

Requirement

(1) Introduce UAS split site operations and procedures.
(2) Discuss emergency procedures, return home procedures, mission planning requirements, GCS/PCS operations, communication/no-

communication procedures, presets/pre-flight checks and control
transfer.
(3) Discuss the differences in payload operation and navigation as they differ from the GCS and PCS.

Performance Standard. Demonstrate knowledge of the UAS and its use with respect to split site operations. Instructor MCI.

Prerequisite. TFO-303.

TFO-305   1.0   A   R   (1) UAS   (N)   CREW POSITION   MC

Goal. Conduct split site operations.

Requirement

(1) The MC will conduct UAS split site operations.
(2) Demonstrate:
    (a) Simulated emergency procedures.
    (b) Simulated return home procedures.
    (c) GCS/PCS operations.
    (d) Communication/no-communication procedures.
    (e) Presets/pre-flight checks.
    (f) Control transfer.
(3) Conduct mission planning requirements.

Performance Standard. Conduct the event IAW NATOPS and squadron SOPs. Instructor MCI.

Prerequisite. TFO-304.

3. Fires Coordination (FC)

    a. Purpose. To develop proficiency and experience in UAS observation of fires and coordination for indirect fires.

    b. Prerequisite. MCs not previously designated as a Forward Air Controller (FAC) or Forward Air Controller Airborne (FAC(A)) will complete the Forward Observer MCI.

    c. Ground Training. 1 event, 3.5 hours.

    d. Flight Training. 1 flight, 2.0 hours. For simulator training, the MC may use the TSFO Facility or CAS Trainer Facility to simulate coordination of supporting arms.

FC-306   3.5   R   (N)   CREW POSITION   MC

Goal. Introduce observation of fires, fire support coordination and supporting arms control.

Requirement

(1) Instruct the MC on:
    (a) Observation of fires
    (b) Fire support coordination
    (c) Call for fire for artillery/mortar and naval surface fires, supporting arms adjustment.

(2) Instruct the MC on communication requirements to fire support units, and in artillery, mortars and naval surface fires weapon systems.

(3) Using the TSFO Trainer Facility, CAS Trainer Facility, or local terrain model, conduct simulated call for fire missions and adjustment of indirect fire.

Performance Standard. Pass a verbal exam with 80% accuracy. Instructor MCI.

FC-307   2.0 A/S   R   (1) UAS   (N)   CREW POSITION   MC

Goal. Conduct call for fire and adjustment of indirect fire.

Requirement. Call for and adjust indirect fire on a specific target.

Performance Standard. Instructor MCI.

(1) Complete a minimum of one artillery, mortar, or naval surface fire mission.

(2) Report BHA upon completion of firing.

Prerequisite. FC-306.

Ordnance. Eleven (11) M795/M107-155mm HE and one (1) M485-155mm ILA with M732-variable time fuses and other components required for a complete round. Equivalent mortar/naval surface fire (NSF) ammunition may be substituted.

External Syllabus Support. Artillery section/mortar section/naval surface fire support (ordnance specific)

4. NBC OPERATIONS (NBC)

   a. Purpose. To develop proficiency and experience in operating the UAS during NBC conditions.

   b. Flight Training. 1 event, 1.0 hour.

NBC-308   1.0 A/S   R   (1) UAS   (N)   CREW POSITION   MC

Goal. Perform MC function while in an NBC environment.

Requirement

(1) Demonstrate ability to perform MC responsibilities in a simulated NBC environment.

(2) Demonstrate crew resource management while wearing NBC protective equipment.

Performance Standard. Instructor MCI.

(1) Perform MC responsibilities IAW NATOPS in MOPP level 4.

(2) Demonstrate the ability to effectively communicate with the crew and perform the function of a MC while in MOPP level 4.

Prerequisite. MCQM-219.

108. CORE PLUS TRAINING

1. General

a. This phase of training is reserved for large scale integrated missions and/or events having unique mission tasks. Personnel that complete this phase are capable of the most demanding combat tasks. In some cases, higher echelon supervisory position training and designations may be reflected where the development of a separate T&R syllabus is not practical or warranted. These personnel are the most experienced personnel within a unit. They are expected to display the maturity and tactical/operational skill commensurate with this status on a daily basis.

b. Prerequisite

(1) The MC has normally completed the Core Skill Advanced phase of training prior to commencing training in the Core Plus phase.

(2) To be trained in this portion of the academic and flight syllabus the operator shall have a secret clearance.

c. Administrative Note. This phase will produce core competent leaders. Personnel trained in this phase are those a commanding officer feels are capable of directing the actions of crewmembers during wartime scenarios.

d. Refresher Training. Refresher training is required once a Core Plus qualified MC has been absent from a VMU billet assignment for more than 365 days. Upon return to a VMU billet, the MC will complete all 400 level R-coded events in the MC syllabus; see the Maintain table in this chapter.

e. Core Plus Stage. Tactical Flight Operations (TFO).

2. Tactical Flight Operations (TFO)

a. Purpose. To introduce and develop proficiency and experience in dual UAS operations. Dual UAS operations is defined as having two unmanned aircraft airborne under single system control to maximize Intelligence Surveillance and Reconnaissance (ISR) coverage and/or time on target (TOT).

b. Prerequisite. The MC must complete the Core Skill Advanced syllabus and split site operations events.

c. Ground Training. 1 event, 1.0 hour.

d. Flight Training. 1 flight, 1.0 hour.

TFO-400 1.0   R   (N)   CREW POSITION   MC

Goal. Introduce dual UAS operations.

Requirement

(1) Introduce dual UAS operations.
(2) Discuss:
    (a) Transferring control of UAS's
    (b) Dual UAS operation

    (c) Checklist procedures IAW NATOPS and Squadron SOP
    (d) Frequency requirements
    (e) Specific emergency procedures
    (f) Use of navigation programmer
    (g) Crew coordination

Performance Standard. Pass a verbal exam with 100% accuracy. Instructor MCI.

Prerequisite. MCQM-219.

TFO-401 1.0 A   R   (1) UAS (N)   CREW POSITION MC

Goal. Conduct dual UAS flight operations.

Requirement. Conduct dual UAS flight operations.

Performance Standard. Conduct the event IAW NATOPS and squadron SOPs. Instructor MCI.

Prerequisite. TFO-400.

109. INSTRUCTOR TRAINING

1. **Purpose.** To develop standardized training for MCs with the ability to teach skills requisite to certification as an instructor for the Mission Commander position (MC designation is required prior to starting MCIUT stage of training) or as a Weapons or Tactics Instructor (WTI).

2. **Prerequisite**

  a. Complete the Core Plus phase of training.

  b. Be nominated by the squadron standardization board with concurrence from the commanding officer.

  c. Maintain a proficient status in the area in which they are certified to instruct.

  d. Completion of the MCIUT stage meets the requirements for the MC to be designated a MCI. At the discretion of the commanding officer a letter designating the IUT as MCI shall be placed in the NATOPS jacket, APR/MPR and tracking code of DESG-601 will be logged.

  e. Completion of the WTIUT stage meets the requirements for the MC to be designated a WTI. At the discretion of the commanding officer a letter designating the IUT as WTI shall be placed in the NATOPS jacket, APR/MPR and tracking code of DESG-610 will be logged.

  f. **Administrative Note.** Upon completion of this phase of training the instructor under training (IUT) may be designated a MCI or WTI.

3. **Mission Commander Instructor Under Training (MCIUT)**

MCIUT-500 1.0   R   (N)

  Goal. Introduce principles of instruction and standardization/ training tools.

Requirement

(1) Introduce/discuss instruction techniques.
(2) Introduce/discuss instructor duties.
(3) Discuss training references, to include:
    (a) NATOPS.
    (b) Aviation T&R Program Manual.
    (c) Local/squadron SOPs.
    (d) Range SOPs.
(4) Introduce Aviation T&R Program policy and requirements.
(5) Review training documentation requirements.
(6) Understand all system components and their functions.
(7) Instruction will cover all administrative duties, NATOPS requirements, CRM training and readiness record keeping, and evaluation documentation.

Performance Standard. Pass a verbal exam with 100% accuracy. Instructor MCI.

MCIUT-501   1.0   R   (N)

Goal. Conduct TFO-201 instruction.

Requirement

(1) Conduct a TFO-201 period of instruction.
(2) Identify and evaluate student performance.
(3) Complete an ATF on MCUI.
(4) Correct MCUI deficiencies.

Performance Standard. Instructor MCI.

(1) Demonstrate the ability to conduct instruction of TFO-201.
(2) Demonstrate the ability to evaluate performance in task organization and mission planning in a tactical scenario.
(3) Identify deficiencies in a timely manner
(4) Document MCUI training on the ATF.

Prerequisite. MCIUT-500.

MCIUT-502   2.0 A   R   (1) UAS   (N)

Goal. Conduct instruction during a mission commander TFO flight event.

Requirement

(1) Conduct instruction during an MC TFO flight.
(2) Identify and evaluate MCUI performance.
(3) Correct MCUI deficiencies.
(4) Complete an ATF on MCUI.

Performance Standard. Instructor. MCI.

(1) Demonstrate the ability to conduct a class on a mission commander TFO flight.

(2) Demonstrate the ability to evaluate performance in task organization and mission planning in a tactical scenario.
(3) Identify deficiencies in a timely manner
(4) Document MCUI training on the ATF.

Prerequisite. MCIUT 501.

MCIUT-503   3.5 A   R   (1) UAS   (N)

Goal. Conduct instruction during a NAV flight.

Requirement

(1) Conduct a class on a mission commander NAV flight.
(2) Identify and evaluate MCUI performance.
(3) Correct MCUI deficiencies.
(4) Complete an ATF on MCUI.
(5) Demonstrate to the MCUI: navigation with and without PDMS, payload graphics, radial maps and system information.

Performance Standard. Instructor MCI.

(1) Demonstrate the ability to instruct a MCUI during NAV flight
(2) Demonstrate the ability to evaluate performance in task organization and mission planning in a tactical scenario.
(3) Identify deficiencies in a timely manner
(4) Document MCUI training on the ATF.
(5) Demonstrate to the MCUI, navigation with and without PDMS, payload graphics, radial maps and system information.

Prerequisite. MCIUT-500.

MCIUT-504   2.0   R   (1) UAS   (N)

Goal. Conduct instruction during a TFO-302 event.

Requirement

(1) Conduct instruction during a TFO-302 event.
(2) Identify and evaluate MCUI performance.
(3) Correct MCUI deficiencies.
(4) Document MCUI training on the ATF.

Performance Standard. Instructor MCI.

(1) Demonstrate ability to instruct a MCUI during TFO-302event.
(2) Demonstrate the ability to evaluate performance in task organization and mission planning in a tactical scenario.
(3) Identify deficiencies.
(4) Document MCUI training on the ATF.

Prerequisite. MCIUT-500 and MCIUT 503.

MCIUT-505   3.0 A   R   (1) UAS   (N)

Goal. Conduct instruction during a TFO-303 flight.

Requirement

(1) Conduct instruction during TFO-303 flight.
(2) Identify and evaluate MCUI performance.
(3) Correct MCUI deficiencies.
(4) Document MCUI training on the ATF.

Performance Standard. Instructor MCI.

(1) Demonstrate the ability to instruct a MCUI during TFO-303 flight.
(2) Demonstrate the ability to evaluate performance in task organization and mission planning in a tactical scenario.
(3) Identify deficiencies in a timely manner
(4) Document MCUI training on the ATF.

Prerequisite. MCIUT-504.

| MCIUT-506 | 3.5 | | R | | (N) |

Goal. Conduct instruction during a FC-306 event.

Requirement

(1) Conduct instruction during a FC-306 event.
(2) Identify and evaluate MCUI performance.
(3) Correct MCUI deficiencies.
(4) Document MCUI training on the ATF.

Performance Standard. Instructor MCI.

(1) Demonstrate the ability to instruct a mission commander during FC-306 event.
(2) Demonstrate the ability to evaluate performance in task organization and mission planning in a tactical scenario.
(3) Identify deficiencies in a timely manner.
(4) Document MCUI training on the ATF.

Prerequisite. MCIUT-500.

| MCIUT-507 | 1.0 | A/S | R | (1) UAS | (N) |

Goal. Conduct instruction during a FC-307 event.

Requirement

(1) Conduct instruction during a FC-307 event.
(2) Identify and evaluate MCUI performance.
(3) Correct MCUI deficiencies.
(4) Document MCUI training on the ATF.

Performance Standard. Instructor MCI.

(1) Demonstrate an ability to instruct a MCUI during FC-307 event.
(2) Demonstrate an ability to evaluate performance in task organization and mission planning in a tactical scenario.
(3) Identify deficiencies in a timely manner.
(4) Document MCUI training on the ATF.

Prerequisite. MCIUT-506.

MCIUT-508 1.0 A   R,E   (1) UAS   (N)   CREW POSITION   MCI

Goal. Certify as a Mission Commander Instructor (MCI).

Requirement. Conduct instruction on any MCUI flight event.

Performance Standard. IAW NATOPS. Upon successful completion of this event, the MCIUT may be designated as a MCI by the commanding officer. Instructor MCI.

(1) Conduct a period of instruction.
(2) Identify and evaluate MCUI performance.
(3) Correct MCUI deficiencies.
(4) Document MCUI training on the ATF.

Prerequisite. MCIUT-500, MCIUT-501, MCIUT-502, MCIUT-503, MCIUT-504, MCIUT-505, MCIUT-506, MCIUT-507, and MCIUT-508.

110. REQUIREMENTS, QUALIFICATIONS AND DESIGNATIONS

1. General

    a. This phase contains tracking codes and events designated to facilitate training management. This level also provides community standardization for combat leadership designation. CRP is not awarded for 600 level events.

    b. Once the event to attain the qualification/designation is complete, a letter from the commanding officer (CO) awarding the qualification/designation shall be placed in the NATOPS and the individual performance records (APR/MPR) before that qualification/designation can be utilized.

    c. Once the IUT is designated in writing by the CO, training personnel shall log the events with their respective tracking codes.

2. Mission Commander Qualifications

QUAL-620
        Goal. Tracking code for Mission Commander Qualification in Model (MCQM)

        Prerequisite. MCQM-219.

3. Mission Commander Designations

DESG-600
        Goal. Tracking codes for Mission Commander (MC) designation.

        Prerequisite. MCQM-219, recommended by the squadron standardization board and then be designated by the commanding officer.

DESG-601
        Goal. Tracking code for Mission Commander Instructor (MCI) designation.

Prerequisite. MCIUT-508, recommended by the squadron standardization board, and then be designated by the commanding officer.

DESG-602

Goal. Tracking code for NATOPS Instructor (NI) designation.

Prerequisite. MCQM-219, MCIUT-508, and Squadron standardization board recommendation and commanding officer approval

DESG-603

Goal. Tracking code for Assistant NATOPS Instructor (ANI) designation.

Prerequisite. MCQM-219, MCIUT-508, and Squadron standardization board recommendation and commanding officer approval

DESG-604

Goal. Tracking code for NATOPS Evaluator (NE) designation.

Prerequisite. MCQM-219, MCIUT-508, Model Manager's standardization board recommendation and commanding officer approval.

DESG-605

Goal. Tracking code for Functional Check Pilot (FCP) designation.

Prerequisite. MCQM-219, recommended by the squadron standardization board.

DESG 610

Goal. Tracking code for Weapons and Tactics Instructor (WTI) designation.

Prerequisite. DESG-601, Complete the WTI syllabus per the MAWTS-1 course catalog.

4. Requirements (RQD)

a. Purpose. To ensure mission commanders are evaluated annually per standards, procedures and requirements of the NATOPS Manual.

b. Prerequisite

(1) Written examinations must be completed prior to the flight event and current within 60 days.

(2) The NATOPS Manual will be used as the reference for these events.

(3) At the completion of each NATOPS event, the operator will have met the initial/ annual requirement in respective crew position.

(4) The Initial NATOPS qualification is received at the entry-level school. Subsequent NATOPS checks shall be conducted by the VMU per NATOPS.

c. Flight Training. 3 flights, 5.0 hours.

RQD-619   2.0   A   R,E   (1) UAS   (N)   CREW POSITION   MC

Goal. Annual NATOPS MC evaluation.

Requirement. Perform as the MC during the conduct of this event. Specific launch/recovery type is not required.

Performance Standard. All procedures listed in the NATOPS Manual will be conducted to standard. Pass open/closed book NATOPS exams 3.5/3.3 of 4.0 accuracy minimum. NATOPS Instructor.

Prerequisite. MCQM-219.

111. Ordnance Requirements. Annual ordnance requirements are developed on a "per standard crew" basis per OPNAVNOTE 8010. The chart below captures the ordnance requirement for one standard aircrew that consists of (1) MC, (2) IOs, and (1) EP. The EP is required only for the RQ-2B Pioneer crew.

ORDNANCE	100 SERIES	200 SERIES	300* SERIES	400** SERIES	REFRESHER	IUT	ANNUAL***
155mm HE (1)	0	0	11	33	11	0	11
155mm ILA (2)	0	0	1	3	1	0	1

* Ordnance requirement for 7315 MCs only.
** Ordnance requirement for 7314 IOs only.
*** Annual ordnance requirement maintains aircrews proficient.

Notes:
(1) Fires distribution model is based on one battery mission with five rounds in adjust and six rounds in effect.
(2) Illumination round is supplement in adjusting fires for one mission.

112. EVENT SUMMARY MATRIX

MOS: 7315 UAS MISSION COMMANDER										
100 LEVEL - CORE SKILL INTRODUCTION										
STAGE	TRNG CODE	TRNG HRS	SIM HRS	READY UNIT/AIR	DEVICE	PREREQ	FO	EVAL	CRP	CHAINING
FAM	100	3	0		A		R		10.0	
NAV	101	3	0		A/S		R		10.0	
NAV	102	3	0		A/S		R		13.0	
EMG	103	3	0		A/S		R		13.0	
EMG	104	3			A/S		R		14.0	
Phase Totals		15	0						60	CRP

MOS: 7315 UAS MISSION COMMANDER										
200 LEVEL - CORE SKILL BASIC										
STAGE	TRNG CODE	TRNG HRS	SIM HRS	READY UNIT/SRV AIR	DEVICE	PREREQ	FO	EVAL	CRP	CHAINING
TFO	200	0	0	1095		Core Skill Introduction	R		1.0	
TFO	201	0	0	1095		200	R		1.0	
TFO	202	1.0	0	1095	A	201			1.0	201
TFO	203	1.0	0	1095	A	202	R		1.0	201,202
TFO	204	2.0	0	1095	A	203	R		1.0	201,202,203
TFO	205	0	0	1095		204	R		1.0	201,202, 203,204
NAV	210	1.5	0	1095	A	205			1.5	201,202,203, 204,205
NAV	211	1.5	0	1095	A	210	R		1.5	201,202,203, 204,205,210
NFO	215	0	0	1095		211	R		1.5	201,202,203, 204,205,210,211
NFO	216	1.0	0	1095	A	215	R		1.5	201,202,203, 204,205,210,211, 215
MCQM	219	1.0	0	1095	A	200, 201 202, 203 204, 205 210, 211 215, 216	R	E	3.0	201,202,203, 204,205,210,211, 215,216
Phase Totals		9.0	0						15.0	CRP

					MOS: 7315 UAS MISSION COMMANDER					
					300 LEVEL - CORE SKILL ADVANCED					
STAGE	TRNG CODE	FLT HRS	SIM HRS	REFLY INTERVAL	DEVICE	PREREQ	POI	EVAL	CRP	CHAINING
TFO	300	0	0	1095		219	R		1.5	
TFO	301	2.0	0	1095	A	300	R		1.5	
TFO	302	0	0	1095		301	R		2.0	300
TFO	303	2.0	0	1095	A	302	R		2.0	300
TFO	304	0	0	1095		303	R		2.0	300,301,302
TFO	305	1.0	0	1095	A	304	R		2.0	304
FC	306	0	0	1095		219	R		3.0	
FC	307	2.0	2.0	1095	A/S	306	R		3.0	306
NBC	308	1.0	1.0	1095	A/S	219	R		3.0	
Phase Totals		8.0	3.0						20.0	

					MOS: 7315 UAS MISSION COMMANDER					
					400 LEVEL - CORE SKILL PLUS					
STAGE	TRNG CODE	FLT HRS	SIM HRS	REFLY INTERVAL	DEVICE	PREREQ	POI	EVAL	CRP	CHAINING
TFO	400	0	0	1095		219	R		2.5	
TFO	401	1.0	0	1095	A	400	R		2.5	400
Phase Totals		1.0	0						5.0	

113. <u>EVENT CONVERSION MATRIX</u>. Appendix A provides an event conversion matrix for all events in this Mission Commander (MC) syllabus as they correspond to the previous MC syllabus that this chapter replaced.

CHAPTER 2

UNMANNED AIRCRAFT SYSTEM (UAS) INTERNAL OPERATOR
MOS 7314

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CHAPTER 2

UNMANNED AIRCRAFT SYSTEM (UAS) INTERNAL OPERATOR
MOS 7314

200. <u>MARINE UNMANNED AERIAL VEHICLE SQUADRON (VMU) UNIT CORE COMPETENCY</u>

1. <u>Overview</u>

a. Marine Aviation plays a crucial role in the MAGTF's ability to conduct Maneuver Warfare. The ultimate goal of Marine Aviation is to attain the highest possible level of combat readiness to support Expeditionary Maneuver Warfare while at the same time preserving and conserving our Marines and equipment. Embedded within our combat readiness is the ability to rapidly, effectively, and efficiently deploy on short notice; to quickly and effectively plan for crises and/or contingency operations thereby ensuring Marine Aviation remains ready for combat when and where the need arises.

b. This Marine Unmanned Aircraft System (UAS) T&R Directive represents the collaborative effort of UAS Subject Matter Experts who designed training standards to maximize the full combat capabilities of the UAS and its crew. These standards, intrinsic in the core competency section, describe and define unit capabilities and requirements necessary to maintain like-squadron proficiency in core skills and combat leadership. Training events are based on specific requirements and performance standards to ensure aircrew maintain a common base of training and depth of combat capabilities. Together, the T&R comprises a building block approach to ensure that trained aircrews remain ready, relevant, and fully capable of supporting the MAGTF commander.

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

2. <u>Marine Unmanned Aerial Vehicle Squadron (VMU) Mission</u>. Support the MAGTF commander by providing day and night aerial reconnaissance, surveillance, target acquisition (RSTA), indirect fire adjustment, bomb hit assessment (BHA) and support of the rear area security plan during expeditionary operations or joint and combined operations during Visual Meteorological Conditions (VMC).

3. <u>Mission Essential Task List (METL)</u>

    a. MCT 1.1   Provide Forces

    b. MCT 1.6.5   Conduct Tactical Operations

    c. MCT 2.1.1   Conduct Intelligence Functions

    d. MCT 2.1.2   Conduct Intelligence Support

    e. MCT 2.2.5   Conduct Aviation Intelligence Collection Activities

4. <u>Table of Organization (T/O)</u>. Refer to T/O 8890 managed by Total Force Structure, MCCDC, for current authorized organizational structure and personnel strength for VMU units. As of this publication date, a VMU unit is authorized:

Squadron
5 aircraft
05 External Pilots
33 Internal Operators
05 Mission Commanders

5. <u>Core Capability</u>. A core capable squadron is able to sustain four single plane sorties on a daily basis during contingency/combat operations. The above sortie rates are based on a 4.5 hour average sortie duration and assume 80 percent FMC aircraft and 85 percent T/O aircrew on hand. If unit FMC aircraft < 80 percent or T/O aircrew < 85 percent, core capability will be degraded by a like percentage. The extent to which a core capable squadron is able to surge beyond its core capability is situational dependent.

6. <u>METL/Core Skills</u>. Core skills shall be a determining factor in developing T&R training requirements. Core skill abbreviations are listed below. Core skills/core plus training requirements must receive appropriate prioritization and emphasis based on the training need and the likelihood of those types of missions being assigned during operations.

CORE SKILL ABBREVIATIONS	
CORE SKILL	ABBREVIATION
Navigation	NAV
Night Flight Operations	NFO
Tactical Flight Operations	TFO
Short Field Operations	SFO
Fires Coordination	FC

MISSION ESSENTIAL TASKS		CORE SKILLS					CORE PLUS		
		NAV	NFO	TFO	SFO	FC	TFO	SFO	FC
MCT 1.1	Provide Forces	X		X	X	X			
MCT 1.6.5	Conduct Tactical Operations	X	X	X	X	X	X	X	X
MCT 2.1.1	Conduct Intelligence Functions	X		X		X	X		X
MCT 2.1.2	Conduct Intelligence Support	X		X		X	X		
MCT 2.2.5	Conduct Aviation Intelligence Collection Activities	X		X			X		

7. <u>Core Model Minimum Requirements (CMMR)</u>. CMMR is measured in terms of the minimum numbers of Core Skill Proficiency (CSP) crews and minimum numbers of combat leaders. A standard UAS crew consists of two Internal Operators (IO), one External Pilot (EP), and one Mission Commander (MC). A CSP crew consists of individuals representing each crew position who have achieved and maintain individual CSP. In order to be considered proficient in a core skill, a crewmember must attain and maintain proficiency in core skill and core plus events as delineated in paragraphs 7a(1) and 7a(2) below:

    a. <u>Minimum Unit Core Skill Proficiency (CSP) Requirements</u>. At a minimum, in order to be considered core competent, a unit must possess the following numbers of personnel who are proficient in each core skill (unit CSP)

VMU CMMR (Unit CSP Requirements)			
CORE SKILL	Internal Operator	External Pilot	Mission Commander
NAV	21	4	4
NFO	21	4	4
TFO	21	4	4
SFO	21	4	4
FC	21	4	4
CORE PLUS	Internal Operator	External Pilot	Mission Commander
TFO	10	NA	2
SFO	NA	2	NA
FC	NA	NA	2
* Proficiency in Core Plus Skills is not required to obtain unit CSP.			

    (1) <u>Events Required to Attain Individual CSP</u>. To initially attain CSP in a specific core skill, an individual must simultaneously have a proficient status in all 200-300 level T&R events for that core skill:

INDIVIDUAL CSP ATTAIN TABLE		
	TFO	NAV
Internal Operator (MOS 7314)	220R, 221R, 222R, 223R, 224R 225R, 226R, 227R, 250R, 255R 320R, 321R, 322R, 323R, 324R 325R, 330R, 359R	230R 231 232 233R 234R
R = Refresher Event		

    (2) <u>Events Required to Maintain Individual CSP</u>. To maintain CSP in a specific core skill, an individual must maintain proficiency in all 200-300 level T&R events for that core skill:

INDIVIDUAL CSP MAINTAIN TABLE		
Internal Operator (MOS 7314)	**TFO**	**NAV**
	220R, 221R, 222R, 223R, 224R 225R, 226R, 227R, 250R, 255R 320R, 321R, 322R, 323R, 324R 325R, 330R, 359R	230R 233R 234R
	R = Refresher Event	

(3) <u>Events Required to Attain Individual Proficiency in Core Plus Skills</u>. 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 attain proficiency in a core plus skill, an individual must be proficient status in all T&R events listed for that core plus skill.

INDIVIDUAL CORE PLUS SKILL ATTAIN TABLE		
Internal Operator (MOS 7314)	**TFO**	**FC**
	420R, 421R, 425R 426R, 430R, 431R	435R 436R
	R = Refresher Event	

(4) <u>Events Required to Maintain Individual Proficiency in Core Plus Skills</u>. To maintain proficiency in a core plus skill, an individual must maintain proficiency in all 400 level T&R events for that core plus skill:

INDIVIDUAL CORE PLUS SKILL MAINTAIN TABLE		
Internal Operator (MOS 7314)	**TFO**	**FC**
	431R, 421R, 425R 426R, 430R, 431R	435R 436R
	R = Refresher Event	

b. <u>Minimum Combat Leader Requirements</u>. At a minimum, in order to be considered core competent, a VMU squadron must possess the following numbers of crewmembers with the listed combat leadership designations.

CMMR (UNIT COMBAT LEADERSHIP REQUIREMENTS)			
Designation	Internal Operator	External Pilot	Mission Commander
Mission Commander (MC)	NA	NA	4
Functional Check Pilot (FCP)*	4	2	2
* Although not specifically a combat leader, is required to sustain core capability in contingency operations			

8. <u>Qualifications, Designations, and Instructor Requirements</u>. The tables below delineate T&R events required to be completed to attain initial qualifications, to re-qualify, and to attain designations. All stage lectures, briefs, squadron training, and prerequisites shall be complete prior to completing final events. Qualification and designation letters

signed by the commanding officer shall be placed in individual NATOPS and individual performance records (APR/MPR).

a. <u>Qualification</u>. A qualification is a status assigned based on demonstrated proficiency in a specific skill. Specific criteria to achieve qualifications are delineated below, in the MAWTS-1 course catalog, NATOPS or other governing directives. Upon completion of qualification criteria, commanding officers shall issue a qualification letter for inclusion into individual performance records. Qualifications are not lost when refreshing events. Loss of proficiency and/or time expiration (delinquent refresh events) for all associated qualification events constitutes loss of the qualification. Re-qualification requires demonstrated proficiency by successfully completing all R-coded events associated with the qualification (unless waived per the Aviation T&R Program Manual).

MOS 7314 QUALIFICATIONS		
Qualification	Tracking Code	Requirements
Payload Operator (PO)	QUAL-650	POQM-250, TFO-220, TFO-221, TFO-222, TFO-224, TFO-226, NAV-231
Internal Pilot (IP)	QUAL-655	IPQM-255, TFO-220, TFO-221, TFO-222, TFO-223, TFO-225, TFO-227, NAV-230, NAV-232, NAV-233, NAV-234
Internal Operator (IO)	QUAL-659	IOQM-359, TFO-320, TFO-321, TFO-322, TFO-323, TFO-324, TFO-325, NBC-330
Annual NATOPS	RQD-659	POQM-250 or IPQM-255 or IOQM-359, based on the position for which the NATOPS evaluation is being conducted

b. <u>Designation</u>. A designation is a status assigned by the commanding officer to an individual based on leadership ability. It is command specific and remains in effect until removed for cause, transferred, or rescinded at the commander's discretion. Commanders are encouraged to consider the individual designation requirements noted below prior to designating an individual. Once an individual is designated, commanders shall issue a designation letter for inclusion into the individual performance record. Follow-on commands shall repeat the "initial documentation procedure."

MOS 7314 DESIGNATIONS		
Designation	Tracking Code	Requirements
Weapons & Tactics Instructor (WTI)	DESG-610	IOQM-359 or EPQM-299; completion of the WTI syllabus and CO designated
Payload Operator (PO)	DESG-620	POQM-250, recommended by the squadron standardization board and CO designated
Internal Pilot (IP)	DESG-621	IPQM-255, recommended by the squadron standardization board and CO designated
Internal Operator (IO)	DESG-622	IOQM-359, recommended by the squadron standardization board and CO designated
Payload Operator Instructor (POI)	DESG-623	POIUT-525, recommended by the squadron standardization board and CO designated

Internal Pilot Instructor (IPI)	DESG-624	IPIUT-536, recommended by the squadron standardization board and CO designated
Internal Operator Instructor (IOI)	DESG-626	POIUT-525 and IPIUT-536; recommended by the squadron standardization board and CO designated
NATOPS Instructor (NI)	DESG-627	Per NATOPS, Standardization Board recommendation and CO approval
Assistant NATOPS Instructor (ANI)	DESG-628	Per NATOPS, Standardization Board recommendation and CO approval
NATOPS Evaluator	DESG-629	Model Manager's Standardization Board recommendation and CO approval
Functional Check Pilot (FCP)	DESG-630	POQM-250 or IPQM-255 or IOQM-359; recommended by the squadron standardization board and CO designated

c. Instructor Requirements. At a minimum, a VMU squadron should maintain instructor designations to support VMU operations. Instructor designations are outlined in the MAWTS-1 Course Catalog, MCO 3500.12C (WTTP), NATOPS, and applicable directives. Squadron CO/XO instructor designations shall not count toward the following numbers:

UNIT INSTRUCTOR REQUIREMENTS			
Designations	Internal Operator	External Pilot	Mission Commander
NATOPS Instructor (NI)[1]	1	1	1
Assistant NATOPS Instructor (ANI)	1	1	1
External Pilot Instructor (EPI)	NA	1	NA
Internal Operator Instructor (IOI)	1	NA	NA
Mission Commander Instructor (MCI)	NA	NA	1
Weapons Tactics Instructor (WTI)	1[2]	NA	NA
Note 1: NATOPS Evaluator can fulfill this requirement			
Note 2: Although an Internal Operator is noted, any instructor can fill this unit requirement for one WTI.			

9. <u>Internal Operator Training Progression Model</u>. The progression model provides the VMU community with recommended progression timelines for the average crewmember. Timeline assumes continuous assignment to VMU squadron.
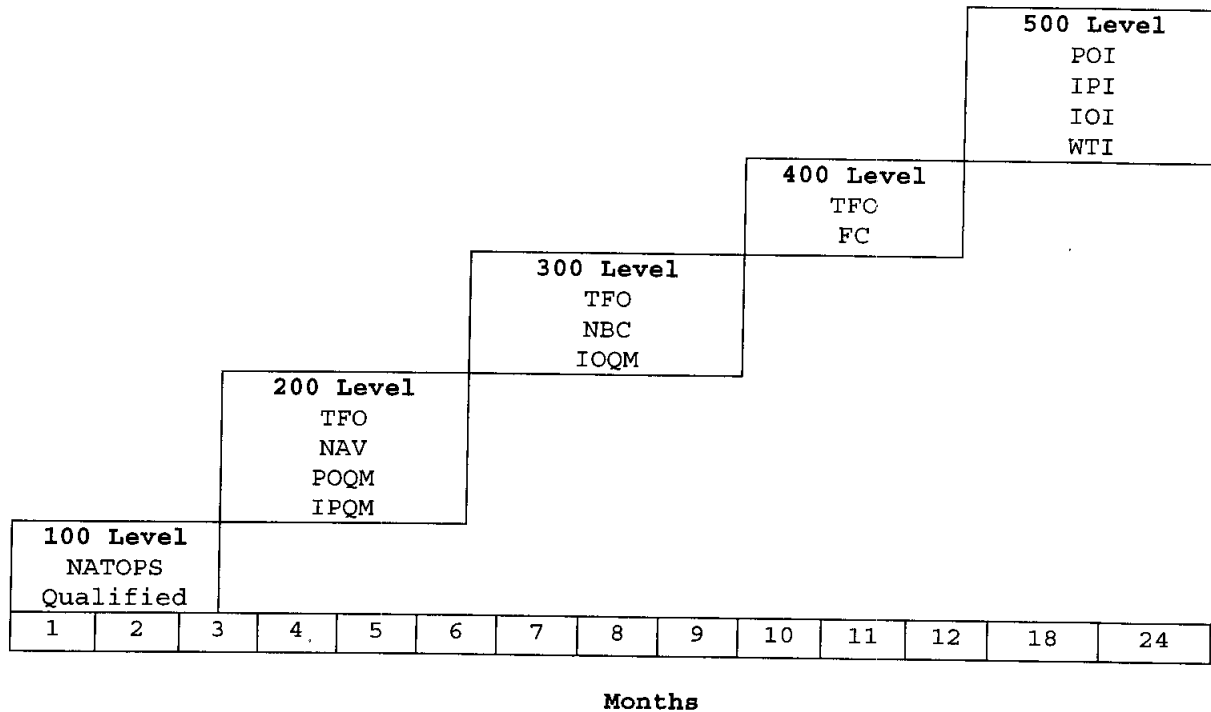
```
                                                    ┌──────────────┐
                                                    │  500 Level   │
                                                    │     POI      │
                                                    │     IPI      │
                                                    │     IOI      │
                                          ┌─────────┤     WTI      │
                                          │ 400 Level             │
                                          │    TFO     │──────────┘
                                          │    FC      │
                               ┌──────────┤            │
                               │ 300 Level           │
                               │    TFO    │─────────┘
                               │    NBC    │
                               │    IOQM   │
                     ┌─────────┤           │
                     │ 200 Level          │
                     │    TFO    │────────┘
                     │    NAV    │
                     │    POQM   │
           ┌─────────┤    IPQM   │
           │100 Level│          │
           │ NATOPS  │──────────┘
           │Qualified│
```

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 18 | 24 |

Months

Figure 2-1. Internal Operator Training Progression Model

201. <u>BASIC PROGRAM OF INSTRUCTION (POI) FOR INTERNAL OPERATOR</u>

<u>Weeks</u>	<u>Phase</u>	<u>Activity</u>
1-14	Core Skill Introduction	TW-6 UAV DET
15-27	Core Skill Basic	Tactical Squadron
28-46	Core Skill Advanced	Tactical Squadron
47-58	Core Plus	Tactical Squadron

202. <u>REFRESHER POI FOR INTERNAL OPERATOR</u>

<u>Weeks</u>	<u>Phase</u>	<u>Activity</u>
1-4	Core Skill Basic	Tactical Squadron
5-24	Core Skill Advanced	Tactical Squadron
25-31	Core Plus	Tactical Squadron

203. <u>ACADEMIC/GROUND TRAINING</u>

1. Academic training shall be conducted for each phase/stage of the syllabus. Commanders are strongly encouraged to incorporate the lectures into their training plans. Standardized academic training materials exist and may be obtained from the sponsoring activity.

2. External academic courses of instruction available to complete the syllabus are listed below:

Course	Activity
IO Ground/Flight Syllabus	Tactical Squadron
Military Airspace Management Course	Keesler AFB, MS
Weapons & Tactics Instructor Course	MAWTS-1
Air and Space Operation Center Initial Qualification Training (AOCIQT); Airspace Course	Hurlburt Field, FL

204. EVENT PERFORMANCE REQUIREMENTS

1. General

    a. The purpose of this section is to provide the commander with standardized programs of instruction for all VMU personnel. The goal is to develop unit warfighting capabilities, not to measure the proficiency of individuals. Syllabi are based on specific performance standards designed to ensure proficiency in core competencies. An effective T&R program is the first step in providing the MAGTF commander with an Aviation Combat Element (ACE) capable of accomplishing any and all of its stated missions. The T&R program provides the fundamental tools for commanders to build and maintain unit combat readiness. Using these tools, training managers can construct and execute an effective training plan that supports unit MCTLs.

    b. Unit training management is the application of the Marine Corps Training Principles and the Systems Approach to Training to satisfy the training requirements of commanders at all levels in order to accomplish their wartime mission. Guidance concerning unit training management and the process for establishing effective unit training management programs are contained in MCRP 3-0A, Unit Training Management Guide, and form the basis for the development of this T&R Directive. Familiarity with MCRP 3-0A will enhance understanding of the Systems Approach to Training used in T&R development and Marine Corps UTM principles.

2. Flight/Simulator Training. This manual generalizes mission guidance to allow for local conditions and to allow this manual to remain unclassified. CMC (A) and CG MCCDC encourage squadrons to use the full range of tactics in the tactical manuals and adopt the latest developed and proven tactics. All events shall terminate with a comprehensive debrief with emphasis on the crewmember's performance using all evaluation techniques.

3. Syllabus Assignment

    a. Basic Syllabus. Internal Operators (IOs) will be assigned to fly the entire basic syllabus.

    b. Refresher Syllabus. The refresher syllabus is predicated on the experience of the IO. An IO in the refresher syllabus should fly all R-coded events in the respective core skill. However, a refresher IO need not fly every event within a stage of training to requalify in that stage. Per NAVMC 3500.14, the commanding officer may tailor the refresher syllabus to fit the experience of the IO. When the R- coded events within a stage of training are complete, the IO may be credited with the CRP from the entire stage of training. This assumes the IO previously attained proficiency in that stage of training. If the IO has no previous proficiency in a stage or particular event, then the entire stage or all events not current or not

previously flown must be completed. The refresher syllabus applies only to those stages completed during the individual's prior tour. All other stages not previously completed shall be completed in their entirety.

4. <u>Aircrew Evaluation Flights</u>. All IOs shall have a NATOPS evaluation form filled out annually upon completion of the annual NATOPS check. A designated NATOPS instructor (NI) or an assistant NATOPS instructor (ANI) shall evaluate the annual NATOPS event.

5. <u>Aircrew Training Forms (ATFs)</u>

    a. An ATF is required for any initial event completed by a Basic or Refresher Internal Operator or as recommended by the squadron standardization board.

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

6. <u>Flight Completion</u>. Compliance with the written flight description is mandatory for syllabus flight completion. Times indicated for each flight are only recommended.

7. <u>Weight and Balance</u>. Weight and balance sheets will be completed per NATOPS guidelines and standard operating procedures.

8. <u>Responsibilities</u>

    a. <u>Payload Operator (PO)</u>. Crewmember responsible for operation of the UAS sensor or payload.

    b. <u>Internal Pilot (IP)</u>. Crewmember responsible for the flight operation of the UAS.

    c. <u>Internal Operator (IO)</u>. Crewmember qualified and designated as a Payload Operator <u>and</u> Internal Pilot.

    d. <u>External Pilot (EP)</u>. Crewmember responsible for operation of the unmanned aircraft during launch and recovery.

9. <u>Definitions</u>

    a. <u>Discuss</u>

       (1) The Internal Operator Instructor (IOI) shall discuss a procedure or maneuver during the brief, in flight, or debrief.

       (2) The Internal Operator Under Instruction (IOUI) is responsible for knowledge of the applicable procedures prior to the briefing.

    b. <u>Demonstrate</u>

       (1) The IOI shall perform the maneuver with accompanying description.

       (2) The IOUI observes the maneuver and is responsible for the knowledge of the procedures prior to the flight.

c. Introduce

(1) The IOI may perform the maneuver with an accompanying description, or he may coach the IOUI through the maneuver without demonstration.

(2) The IOUI shall perform the maneuver with coaching as necessary and is responsible for knowledge of the procedures prior to the flight.

d. Practice

(1) The IOI observes the maneuver with limited coaching to the IOUI. An airborne critique of the IOUI's performance is at the option of the instructor.

(2) The IOUI shall perform the maneuver with limited coaching as necessary and is responsible for knowledge of procedures prior to the flight.

e. Evaluate

(1) The IOI observes and grades the maneuver without coaching the IOUI. An airborne critique of the IOUI's performance is at the option of the instructor.

(2) The IOUI is expected to perform the maneuver without coaching and devoid of procedural error at a level acceptable to warrant progress into the next stage of training.

205. CORE SKILL INTRODUCTION TRAINING

1. General

a. This phase of training provides ground and flight training to develop Internal Operator (IO) basic proficiency. The course develops proficiency and experience in tactical Unmanned Aerial System (UAS) operations and emphasizes the importance of crew resource management, system operation, emergency procedures, operational terminology and familiarization with local SOPs. Upon completion of the Pioneer SR-RPV Internal Operator course at TW-6 UAV DET in Navarre, FL, the IO will be initial NATOPS qualified and eligible to be designated as a squadron IO by the commanding officer.

b. Core Skill Introduction Stages

(1) Familiarization (FAM)
(2) Navigation (NAV)
(3) Emergency Procedures (EMG)

2. Familiarization (FAM), Navigation (NAV), Emergency Procedures (EMG)

a. Purpose. To develop proficiency and experience in UAS operations and to emphasize the importance of crew resource management, system operation, emergency procedures, operational terminology, and familiarization with local SOPs.

b. Prerequisite

(1) Must meet the physical requirements of a Class III flight physical per NAVMED P-117 (Manual of the Naval Medical Department, section IV article 15-65, paragraph 1.15.

(2) The IO student shall meet all MOS manual prerequisites.

(3) To be trained in this portion of the academic and flight syllabus, all operators shall be eligible to obtain a secret clearance.

c. Ground Training. Ground school classes have been scheduled to augment the flight syllabus requirements. These classes can be executed in conjunction with the flight events. However, the completion of ground school classes prior to the corresponding flight is mandatory. Ground classes cannot update or replace the corresponding flight event. Prior to commencement of flight operations, the operator will have successfully completed the local course rules exam and Squadron Flight SOP exam.

d. Administrative Note. All ground training scheduled for the IOUI is based on a class size of 8 students; whereas, each syllabus flight accounts for the training of 2 students during the allotted time.

e. Ground Training. 43 classes.

f. Flight Training. 22 flights, 58 hours.

3. Familiarization (FAM)

FAM-101   1.0   A   (1) UAS   CREW POSTION   IP

Goal. Demonstrate local operations and flight procedures.

Requirement. Receive a demonstration of local flight procedures to include launch, pattern, crew coordination and recovery.

Performance Standard

(1) Complete presets with <3 errors within 30 min.
(2) Complete pre-flight within 30 min.

FAM-102   1.0   A   (1) UAS   (N)   CREW POSITION   IP

Goal. Introduce local operations and flight procedures.

Requirement. Introduce local flight procedures to include launch, pattern, crew coordination and recovery.

Performance Standard

(1) Completed presets with <3 errors within 30 min.
(2) Pre-flight complete within 30 min.
(3) Accurate range and altitude calls at crosswind, downwind, base, and final.

Prerequisite. FAM-101.

FAM-103 1.0 A R (1) UAS (N) CREW POSITION IP

> Goal. Practice local operations and flight procedures.
>
> Requirement. Practice local flight procedures to include launch, pattern, crew coordination and recovery.
>
> Performance Standard
>
> (1) Complete presets with <3 errors within 30 min.
> (2) Accurate range and altitude calls at crosswind, downwind, base, and final.
> (3) Pre-flight complete within 30min.
> (4) Altitude calibration prior to downwind.
>
> Prerequisite. FAM-102.

FAM-104 1.0 A (1) UAS (N) CREW POSITION IP

> Goal. Practice local operations and flight procedures.
>
> Requirement. Practice local flight procedures to include launch, pattern, crew coordination and recovery.
>
> Performance Standard
>
> (1) Presets completed with <3 errors within 30 min.
> (2) Accurate range and altitude calls at crosswind, downwind, base, and final.
> (3) Pre-flight complete within 30 min.
> (4) Altitude calibration prior to downwind.
>
> Prerequisite. FAM-103.

FAM-105 1.0 A R E (1) UAS (N) CREW POSITION IP

> Goal. Evaluate student on local operations and flight procedures.
>
> Requirement. Without assistance from the instructor, execute the local flight procedures to include launch, pattern, crew coordination and recovery procedures.
>
> Performance Standard
>
> (1) Complete presets with <3 errors within 30 min.
> (2) Accurate range and altitude calls at crosswind, downwind, base, and final.
> (3) Pre-flight complete within 30 min.
> (4) Altitude calibration prior to downwind.
>
> Prerequisite. FAM-104.

FAM-106 3.0 A/S (1) UAS (N) CREW POSITION IO

> Goal. Demonstrate/Introduce dishlock, climb and descent procedures.

Requirement. IAW NATOPS, local SOP and course rules, introduce dishlock, climb and descent procedures.

Performance Standard

(1) AS: +/- 5 Kts.
(2) Acquire dishlock prior to 2.0 Km.
(3) ALT: +/- 100 ft.
(4) HDG: +/- 5 DEG.

Prerequisite. FAM-105.

FAM-107 3.0 A/S   R   (1) UAS (N)   CREW POSITION   IO

Goal. Practice dishlock, climb and descent procedures.

Requirement. Practice dishlock, climb and descent procedures.

Performance Standard

(1) AS: +/- 5 Kts.
(2) Acquire dishlock prior to 2.0 Km.
(3) ALT: +/- 100 ft.
(4) HDG: +/- 5 DEG.

Prerequisite. FAM-106.

FAM-108 3.0 A/S   (1) UAS (N)   CREW POSITION   IO

Goal. Practice dishlock, departure/climb and RTB/descent procedures.

Requirement. Practice, dishlock, departure/climb, and RTB/descent procedures.

Performance Standard

(1) AS: +/-5 Kts.
(2) Presets completed ≤3 errors within 30 min.
(3) ALT: +/- 100 ft.
(4) Pre-flight complete within 30 min.
(5) HDG: +/- 5 DEG.
(6) Acquire dishlock prior to 2.0 Km.

Prerequisite. FAM-107.

FAM-109 2.0 A   R   E   (1) UAS (N) CREW POSITION   IO

Goal. Evaluate dishlock, departure/climb and RTB/descent procedures.

Requirement. Perform dishlock, departure/climb, and RTB/descent procedures, without assistance from the instructor.

Performance Standard

(1) AS: +/-5 Kts.

(2) Presets completed with ≤3 errors within 30 min.
(3) ALT: +/- 100 ft.
(4) Pre-flight complete within 30 min.
(5) HDG: +/- 5 DEG.
(6) Acquire dishlock prior to 2.0 Km.

Prerequisite. FAM-108.

4. Navigation (NAV)

NAV-111   3.0   A   (1) UAS   (N)   CREW POSITION   IO

Goal. Introduce basic fundamentals of range navigation.

Requirement. Introduce range navigation and payload procedures.

Performance Standard

(1) AS: +/- 5 Kts (Knobs) / +/- 8 Kts (Sticks).
(2) ALT: +/- 100 ft (Knobs) / +/-150 ft (Sticks).
(3) HDG: +/- 5 DEG.
(4) Acquire dishlock prior to 2 Km.

Prerequisite. FAM-109.

NAV-112   3.0   A/S   R   (1) UAS   (N)   CREW POSITION   IO

Goal. Practice basic fundamentals of range navigation and payload operations with the focus on full knobs mode.

Requirement. Introduce Point to Point navigation in full knobs mode, orbiting in full knobs mode and practice payload procedures.

Performance Standard

(1) AS: +/- 5 Kts (Knobs) / +/- 8 Kts (Sticks).
(2) ALT: +/- 100 ft (Knobs) / +/-150 ft (Sticks).
(3) HDG: +/- 5 DEG.
(4) Acquire dishlock prior to 2 Km.
(5) Acquire (5) targets utilizing target acquisition.

Prerequisite. NAV-111.

NAV-113   3.0   A/S   (1) UAS   (N)   CREW POSITION   IO

Goal. Introduce basic fundamentals of range navigation with focus on mixed mode/sticks procedures and practice payload procedures.

Requirement. Practice range navigation procedures and introduce mixed mode / sticks procedures.

Performance Standard

(1) AS: +/- 5 Kts (Knobs) / +/- 8 Kts (Sticks).
(2) ALT: +/- 100 ft (Knobs) / +/-150 ft (Sticks).
(3) HDG: +/- 5 DEG.

(4) Acquire dishlock prior to 2 Km.
(5) Acquire (5) targets utilizing terrain association.

Prerequisite. NAV-112.

NAV-114   3.0   A/S   (1) UAS   (N)   CREW POSITION   IO

Goal. Practice basic fundamentals of range navigation with focus on
PDMS failure procedures.

Requirement. Practice range navigation procedures introducing PDMS
failure procedures in Point to Point navigation and orbiting
procedures. Introduce camera guide mode.

Performance Standard

(1) AS: +/- 5 Kts (Knobs) / +/- 8 Kts (Sticks).
(2) ALT: +/- 100 ft (Knobs) / +/-150 ft (Sticks).
(3) HDG: +/- 5 DEG.
(4) Acquire dishlock prior to 2 Km.
(5) Acquire (5) targets utilizing the observer bay (OBY) graphics.

Prerequisite. NAV-113.

NAV-115   3.0   A/S   (1) UAS   (N)   CREW POSITION   IO

Goal. Practice basic fundamentals of range navigation with focus on
programmer control mode.

Requirement. Practice range navigation procedures introducing
programmer control mode.

Performance Standard

(1) AS: +/- 5 Kts (Knobs) / +/- 8 Kts (Sticks).
(2) ALT: +/- 100 ft (Knobs) / +/-150 ft (Sticks).
(3) HDG: +/- 5 DEG.
(4) Acquire dishlock prior to 2 Km.
(5) Acquire (2) targets utilizing target acquisition, terrain
    association, and the observer bay (OBY) graphics.

Prerequisite. NAV-114.

NAV-116   3.0   A/S   R   (1) UAS   (N)   CREW POSITION   IO

Goal. Practice Point to point navigation, orbiting procedures (in
all flight modes), camera guide, programmer and payload operating
procedures proficiency.

Requirement. Conduct range navigation procedures and payload
operations practicing programmer operations.

Performance Standard

(1) AS: +/- 5 Kts (Knobs) / +/- 8 Kts (Sticks).
(2) ALT: +/- 100 ft (Knobs) / +/-150 ft (Sticks).
(3) HDG: +/- 5 DEG.

(4) Acquire dishlock prior to 2 Km.
(5) Acquire (3) targets utilizing target acquisition, terrain association, and the observer bay (OBY) graphics.

Prerequisite. NAV-115.

NAV-117   3.0   A/S   R,E   (1) UAS   (N)   CREW POSITION   IO

Goal. Evaluate point to point navigation, orbiting procedures (in all flight modes), camera guide, programmer and payload operating procedures proficiency.

Requirement. Without assistance from the instructor, perform point to point navigation, orbiting procedures (in all flight modes), camera guide, programmer and payload operating procedures.

Performance Standard

(1) AS: +/- 5 Kts (Knobs) / +/- 8 Kts (Sticks).
(2) ALT: +/- 100 ft (Knobs) / +/-150 ft (Sticks).
(3) HDG: +/- 5 DEG.
(4) Acquire dishlock prior to 2 Km.
(5) Acquire (2) targets utilizing target acquisition, terrain association, and the observer bay (OBY) graphics.

Prerequisite. NAV-116.

5. Emergency Procedures (EMG)

EMG-121   3.0   A/S   (1) UAS   (N)   CREW POSITION   IO

Goal. Introduce engine emergencies.

Requirement. Introduce Engine Cut (IP at the Controls), Engine Temp, Flight Idle Low / High Idle, and Stuck Throttle emergency procedures.

Performance Standard

(1) AS: +/- 5 Kts (Knobs) / +/- 8 Kts (St
(2) Select proper ditching site.

Prerequisite. NAV-117.

EMG-122   3.0   A   (1) UAS   (N)   CREW POSITION   IO

Goal. Introduce communications emergencies and practice engine emergencies.

Requirement. Introduce No Report, Single / Dual Uplink Loss, and Emergency Control Station Transfer emergency procedures and practice engine emergencies.

Performance Standard

(1) AS: +/- 5 Kts (Knobs) / +/- 8 Kts (Sticks).
(2) ALT: +/- 100 ft (Knobs) / +/-150 ft (Sticks).

(3) HDG: +/- 5 DEG.
(4) Dead reckoning point to point +/- 1.5 Km.

Prerequisite. EMG-121.

EMG-123 3.0 A/S   (1) UAS   (N)   CREW POSITION   IO

Goal. Introduce electrical emergencies and practice engine and communications emergencies.

Requirement. Introduce to Generator Fail (12DS) and Battery Fail emergency procedures and practice all engine and communications emergencies.

Performance Standard

(1) AS: +/- 5 Kts (Knobs)/+/- 8 Kts (Sticks).
(2) ALT: +/- 100 ft (Knobs)/+/-150 ft (Sticks).
(3) HDG: +/- 5 DEG.

Prerequisite. EMG-122.

EMG-124 3.0 A/S   (1) UAS   (N)   CREW POSITION   IO

Goal. Introduce flight control emergencies, engine, communications and electrical emergencies.

Requirement

(1) Introduce to Autopilot Fail (A-PLT) and UAS oscillations emergency procedures.
(2) Practice engine, communications and electrical emergencies.

Performance Standard

(1) AS: +/- 5 Kts (Knobs) / +/- 8 Kts (Sticks).
(2) ALT: +/- 100 ft (Knobs) / +/-150 ft (Sticks).
(3) HDG: +/- 5 DEG.

Prerequisite. EMG-123.

EMG-125 3.0 A/S   R   (1) UAS   (N)   CREW POSITION   IO

Goal. Practice emergency procedures practice.

Requirement. Practice engine, communications, electrical and flight control emergency procedures.

Performance Standard

(1) AS: +/- 5 Kts (Knobs) / +/- 8 Kts (Sticks).
(2) ALT: +/- 100 ft (Knobs) / +/-150 ft (Sticks).
(3) HDG: +/- 5 DEG.

Prerequisite. EMG-124.

EMG-126   3.0   A   R,E   (1) UAS   (N)   CREW POSITION   IO

Goal. Evaluate performance of emergency procedures.

Requirement. Without assistance, perform engine, communications, electrical and flight control emergency procedures.

Performance Standard

(1) AS: +/- 5 Kts (Knobs) / +/- 8 Kts (Sticks).
(2) ALT: +/- 100 ft (Knobs) / +/-150 ft (Sticks).
(3) HDG: +/- 5 DEG.
(4) Perform all simulated emergencies IAW NATOPS.

Prerequisite. EMG-125.

206. CORE SKILL BASIC TRAINING

1. General

   a. This phase applies skills and information obtained at the Core Skill Introduction phase (100-level) while assigned to a VMU. Basic core skills are learned and mastered using ground training and a mix of live and simulation training. This phase culminates with the operator being Naval Air Training and Operating Procedures Standardization (NATOPS) qualified on the UAS (RQ-2). Upon completion of this phase of training, the operator will be Qualified-in-Model.

   b. Prerequisite

      (1) The operator under training must complete the Core Skill Introduction phase of training prior to commencing any training in the Core Skill Basic phase.

      (2) To be trained in this portion of the academic and flight syllabus the operator shall have an interim secret clearance.

   c. Ground Training. Ground syllabus events have been scheduled to augment the flight syllabus requirements. These events can be executed in conjunction with the flight events. However, the completion of the ground training event prior to its corresponding flight is mandatory. Ground events cannot update or replace the corresponding flight event.

   d. Refresher Training. Refresher training is required once a Core Skill Basic qualified operator has been absent from a VMU billet assignment for more than 365 days. Upon return to a VMU billet, the IO will complete the 200 level R-coded events in the IO syllabus.

   e. Core Skill Basic Stages

      (1) Tactical Flight Operations (TFO)
      (2) Navigation (NAV)
      (3) Qualifications in Model (QM)

2. <u>Tactical Flight Operations (TFO)</u>

a. <u>Purpose</u>. To develop proficiency and experience in tactical UAS operation and to emphasize the importance of crew resource management, system operation, emergency procedures, operational terminology and familiarization with local SOPs.

b. <u>Prerequisite</u>. Prior to commencement of this stage of training, the operator must pass an open/closed book NATOPS exam at the tactical squadron with a minimum score of 80%.

c. <u>Ground Training</u>. 3 events, 4.0 hours.

d. <u>Flight Training</u>. 5 flights, 6.0 hours.

TFO-220   1.0   R   (N)   CREW POSITION   PO/IP

<u>Goal</u>. Introduce the area of operation, unit SOPs, local course rules and regulations.

<u>Requirement</u>

(1) Review the area of operation, unit SOP's, local course rules and regulations in their entirety.
(2) Complete the annual course rules exam.
(3) Complete the squadron SOP exam.

<u>Performance Standard</u>. Pass written exams with a minimum score of 80%. Instructor IOI/POI/IPI.

TFO-221   2.0   R   (N)   CREW POSITION   PO/IP

<u>Goal</u>. Introduce the UAS, crew resource management, pre-flight/presets, post flight and emergency procedures.

<u>Requirement</u>. Review/discuss all components of the UAV system, crew resource management, presets for the payload, Pioneer Digital Mapping System (PDMS), and pilot bays, pre-flight of all system components individual crew position responsibilities, RATO/Pneumatic launch procedures, post flight, and emergency procedures.

<u>Performance Standard</u>

(1) During a practical application, perform all presets, pre- and post-flight procedures IAW NATOPS and local SOP's.
(2) Pass an emergency procedures exam with a minimum score of 80%. Instructor IOI/POI/IPI.

TFO-222   1.0   R   (N)   CREW POSITION   PO/IP

<u>Goal</u>. Introduce mission planning.

<u>Requirement</u>

(1) Introduce the mission planning cycle.
(2) Introduce/demonstrate coordination with the intelligence and operations sections for mission requirements.

(3) Introduce how to collect meteorological data, calculate fuel required, take-off distance, routes, altitude requirements and airspeeds.

Performance Standard. Pass a verbal Exam with 80% accuracy. Instructor IOI/POI/IPI.

TFO-223   1.0   A   R   (1) UAS   (N)   CREW POSITION   IP

Goal. Introduce local flight procedures.

Requirement

(1) Introduce operator to local pattern and emergency procedures while performing in the IP position.
(2) Operator shall:
    (a) Perform launch and recovery procedures.
    (b) Identify entry/exit points.

Performance Standard. During a practical application, perform local flight procedures IAW NATOPS. Instructor IOI/IPI.

Prerequisite. TFO-220, TFO-221.

TFO-224   1.0   A   R   (1) UAS   (N)   CREW POSITION   PO

Goal. Introduce range flight operations.

Requirement

(1) Demonstrate proper payload procedures during launch, recovery, and identify entry/exit points.
(2) Conduct emergency procedures.
(3) Conduct mission planning.
(4) Operate the payload in rate, position, camera guide, and target acquisition control modes.

Performance Standard. During a practical application, perform payload operations IAW NATOPS. Instructor IOI/POI.

Prerequisite. TFO-223.

TFO-225   1.0   A   R   (1) UAS   (N)   CREW POSITION   IP

Goal. Conduct local flight area procedures.

Requirement

(1) Conduct local pattern procedures to include entry/exit procedures.
(2) Introduce dish lock procedures.
(3) Review emergency procedures.

Performance Standard. During a practical application, perform local flight area procedures IAW NATOPS. Instructor IOI/IPI.

Prerequisite. TFO-224.

TFO-226 1.0 A R (1) UAS (N) CREW POSITION PO

Goal. Conduct payload operation during a range flight.

Requirement

(1) Review collection of meteorological data, fuel calculations, routes, altitude requirements, and airspeeds.
(2) Review and conduct simulated emergency procedures.
(3) Conduct payload operation during a range flight
(4) Operate the payload in rate, position, camera guide and target acquisition control modes.

Performance Standard. During a practical application, perform payload operation during a range flight IAW NATOPS. Instructor IOI/POI.

Prerequisite. TFO-225.

TFO-227 2.0 A R (1) UAS (N) CREW POSITION IP

Goal. Conduct range flight operations.

Requirement

(1) Review and conduct emergency procedures.
(2) Demonstrate dish lock proficiency.
(3) Demonstrate proficiency in all flight control modes.

Performance Standard. During practical application, perform range flight operations IAW NATOPS. Instructor IOI/IPI.

Prerequisite. TFO-226.

3. Navigation (NAV)

a. Purpose. To develop proficiency and experience in UAS navigational procedures. Automated Navigation is included in this stage of training by developing proficiency and experience in using the Navigation Programmer Control mode.

b. Prerequisite. Prior to commencement of this stage of training, operator shall complete all TFO-220 series events.

c. Ground Training. 1 event, 2.0 hours.

d. Flight Training. 4 flights, 4.0 hours.

NAV-230 2.0 R (N) CREW POSITION IP

Goal. Introduce UAS navigation.

Requirement. Introduce and discuss the principles of map reading, terrain association, UAS navigation instruments, PDMS operation, use of radial maps, navigation programmer mode, and radar and ATC advisements.

Performance Standard. Verbal exam with 80% accuracy. Instructor IOI/IPI.

Prerequisite. TFO-227.

NAV-231 1.0 A   (1) UAS (N)   CREW POSITION   PO

Goal. Introduce UAS navigation.

Requirement. Introduce navigation using the PDMS, radial maps, terrain association, payload graphics, and PDMS failure procedures.

Performance Standard. Demonstrate proficiency. Instructor IOI/POI.

(1) Navigate while using the PDMS.
(2) During PDMS failure, use effective crew resource management to navigate using terrain association, radial maps, and payload graphics.

Prerequisite. NAV-230.

NAV-232 1.0 A   (1) UAS (N)   CREW POSITION   IP

Goal. Introduce UAS navigation.

Requirement. Introduce navigation using the PDMS, radial maps, PDMS failure procedures, and ATC advisement.

Performance Standard. Demonstrate proficiency in knobs control mode of flight. Instructor IOI/IPI.

(1) Navigate while using the PDMS.
(2) During PDMS failure, use effective crew resource management to navigate.

Prerequisite. NAV-231.

NAV-233 1.0 A   R   (1) UAS (N)   CREW POSITION   IP

Goal. Conduct UAV navigation using knobs and sticks control modes.

Requirement

(1) Conduct navigation using knobs and sticks control.
(2) Navigate using methods with and without PDMS, radial maps.

Performance Standard. Demonstrate proficiency during knobs and sticks control modes of flight. Instructor IOI/IPI.

(1) Using the PDMS.
(2) Using radial maps.
(3) During PDMS failure, use effective crew resource management to navigate.

Prerequisite. NAV-232.

NAV-234   1.0   A   R   (1) UAS   (N)   CREW POSITION   IP

  Goal. Conduct a flight Navigation Programmer Mode.

  Requirement. Conduct a flight in navigation programmer mode.

  Performance Standard. Instructor IOI/IPI.

  (1) Load data and execute navigation programmer to fly to four
      specific points.
  (2) Explain emergency procedures IAW NATOPS during simulated
      emergencies.

  Prerequisite. NAV-233.

4. Qualifications in Model (POQM, IPQM, IOQM)

    a. Purpose. To certify the Payload Operator/Internal Pilot Under
Instruction (POUI, IPUI) as a Payload Operator/Internal Pilot Qualified in
Model (POQM, IPQM).

    b. Prerequisite. Prior to commencement of this stage of training, the
operator must have completed the local course rules exam and Squadron Flight
SOP exam.

    c. Administrative Note

        (1) At the completion of the event, the operator is considered either
a POQM or IPQM (as applicable) and may be designated as such by the
commanding officer.

        (2) All evaluated flights will be pass or fail.

    d. Flight Training. As required.

POQM-250   2.0   A   R   E   (1) UAS   (N)   CREW POSITION   PO

  Goal. Payload Operator (PO) Check.

  Requirement. Be evaluated while conducting a local and range
  flight.

  Performance Standard. Evaluate the conduct of the flight IAW
  NATOPS, course rules, and squadron SOP. Instructor IOI/POI.

  Prerequisite. TFO-220, TFO-221, TFO-222, TFO-224, TFO-226,
  NAV-231.

IPQM-255   2.0   A   R   E   (1) UAS   (N)   CREW POSITION   PO

  Goal. Internal Pilot (IP) Check.

  Requirement. Be evaluated while conducting a local and range
  flight.

  Performance Standard. Evaluate the conduct of the flight IAW
  NATOPS, course rules, and squadron SOP. Instructor IOI/IPI.

(1) Execute IP procedures in all control modes and all methods of navigation.

(2) Perform effective crew resource management during normal operations and simulated emergencies.

(3) Complete a launch and recovery, five simulated emergencies and navigate to a minimum of four specific points.

Prerequisite. TFO-220, TFO-221, TFO-222, TFO-223, TFO-225, TFO-227, NAV-230, NAV-232, NAV-233, NAV-234

207. CORE SKILL ADVANCED TRAINING

1. General

a. This phase of training develops Internal Operator (IO) proficiency and experience in the tactical employment of the UAS. It introduces functions and capabilities a VMU brings to the MAGTF commander, to include: threat recognition, mission planning, portable control station flight, split site operations, and operations in an NBC environment. This phase will produce core competent crewmembers.

b. Prerequisite

(1) The internal operator under training (IOUI) must complete the Core Skill Basic phase of training prior to commencing any training in the Core Skill Advanced phase.

(2) To be trained in this portion of the academic and flight syllabus the operator shall have, at a minimum, an interim secret clearance.

c. Administrative Note. This phase will produce core competent leaders and crewmembers. Personnel trained in this phase are those a commanding officer feels are capable of directing the actions of subordinates during wartime scenarios.

d. Refresher Training. Refresher training is required once a Core Skill Advanced qualified controller has been absent from a VMU billet assignment for more than 365 days. Upon return to a VMU billet, the IO will complete the 300 level R-coded events in the IO syllabus.

e. Core Skill Advanced Stages

(1) Tactical Flight Operations (TFO)
(2) NBC Operations (NBC)
(3) Qualification in Model (IOQM)

2. Tactical Flight Operations (TFO)

a. Purpose. To develop proficiency and experience in threat recognition, tactical UAS mission planning, and in operating from the Portable Control Station (PCS) during split site operations.

b. Ground Training. 3 events, 4.0 hours.

c. Flight Training. 3 flights, 4.0 hours.

TFO-320   2.0   R   (N)   CREW POSITION   IP

Goal. Assess current air and ground threat weapons and vehicle recognition.

Requirement. Attend a threat weapons and vehicle recognition class given by the intelligence section. The class will include friendly as well as enemy weapon/vehicle recognition. Instructor IOI/IPI.

Performance Standard. Pass an exam with a minimum score of 80%.

TFO-321   2.0   A   R   (1) UAS   (N)   CREW POSITION   IP

Goal. Execute a tactical mission.

Requirement

(1) Receive and review a tactical scenario and other requirements needed to conduct mission planning.
(2) Coordinate with the flight crew in order to plan an entire mission.
(3) Execute the planned mission.
(4) During the flight phase, demonstrate airborne mission changes.

Performance Standard. Conduct the mission as planned and be able to react to dynamic retasking locating four specific targets/areas. Instructor IOI/IPI.

Prerequisite. Must complete all 200 level events.

TFO-322   1.0   R   PCS   (N)   CREW POSITION   IP

Goal. Introduce flight operations from the PCS.

Requirement

(1) Discuss differences in operation between GCS and PCS when navigating a flight.
(2) Review appropriate preset menus.
(3) Training should be based on future split site or dual UAS operations.

Performance Standard. Perform IP operations from the PCS IAW NATOPS. Instructor IOI/IPI.

Prerequisite. IPQM-255.

TFO-323   1.0   A   R   PCS   (N)   CREW POSITION   PO

Goal. Conduct flight operation in the PCS.

Requirement. Review, discuss, and demonstrate flight operations from the PCS.

Performance Standard. While conducting a flight operation from the PCS, navigate to a minimum of one check point IAW NATOPS. Instructor IOI/IPI.

Prerequisite. TFO-322.

TFO-324 1.0   R   GCS/PCS   (N)   CREW POSITION   IP

Goal. Introduce Split Site Operations.

Requirement. Introduce UAS split site operations and procedures.

Performance Standard. Pass a verbal exam with 80% accuracy.
Instructor IOI/IPI.

Prerequisite. IPQM-255.

TFO-325 1.0   A   R   GCS/PCS   (N)   CREW POSITION   IP

Goal. Conduct Split Site operations from the GCS/PCS.

Requirement

(1) Demonstrate transferring control between stations with and
    without voice communications.
(2) Discuss Return Home and emergency procedures during split site
    operations.

Performance Standard

(1) Conduct split site operations from the GCS/PCS
(2) Transfer and receive control IAW NATOPS. Instructor IOI/IPI.

Prerequisite. TFO-324.

3. NBC Operations (NBC)

    a. Purpose. To develop proficiency and experience in operating the UAS
in a NBC environment.

    b. Flight Training. 1 event, 1.0 hour.

NBC-330 1.0 A/S   R   (1) UAS   (N)   CREW POSITION   IP/PO

Goal. Operate the UAS from the IP or PO position while in a
simulated NBC environment.

Requirement

(1) Demonstrate ability to operate the UAV or payload while
    occupying the IP/PO position.
(2) Demonstrate crew resource management while wearing NBC
    protective equipment.

Performance Standard. Instructor IOI/IPI/POI.

(1) Operate the UAS/payload IAW NATOPS in MOPP Level 4.
(2) Demonstrate the ability to effectively communicate with the crew
    and perform the function of an IP/PO while in MOPP Level 4.

Prerequisite. POQM-250 and IPQM-255.

4. Qualification in Model (IOQM)

a. Purpose. To certify the Internal Operator Under Instruction (IOUI) as an Internal Operator Qualified in Model (IOQM).

b. Prerequisite. Prior to commencement of this stage of training, the operator must have completed the local course rules exam, Squadron Flight SOP exam, and all 200 and 300 series events.

c. Administrative Note

(1) At the completion of this event, the operator is considered an IOQM and may be designated as such by the commanding officer.

(2) All evaluated flights will be pass or fail.

d. Flight Training. 1 flight, 2.0 hours.

| IOQM-359 | 2.0 | A | | R | E | (1) | UAS | (N) | | CREW POSITION | IO |

Goal. Internal Operator (IO) Check.

Requirement. Be evaluated while conducting a local and range flight.

Performance Standard. Evaluate conduct of the flight IAW NATOPS, course rules, and squadron SOP. Instructor IOI.

Prerequisite. TFO-320, TFO-321, TFO-322, TFO-323, TFO-324, TFO-325, and NBC-330.

208. CORE PLUS TRAINING

1. General

a. This phase of training is reserved for large scale integrated missions and/or events. Personnel that complete this phase are capable of the most demanding combat tasks. In some cases, higher echelon supervisory position training and designations may be reflected where the development of a separate T&R syllabus is not practical or warranted. These personnel are the most experienced personnel within a unit. They are expected to display the maturity and tactical/operational skill commensurate with this status on a daily basis.

b. Prerequisite

(1) The operator has normally completed the Core Skill Advanced phase of training prior to commencing training in the Core Plus phase.

(2) To be trained in this portion of the academic and flight syllabus the operator shall have a secret clearance.

c. Administrative Note. This phase will produce core competent leaders. Personnel trained in this phase are those a commanding officer feels are capable of directing the actions of subordinates during wartime scenarios.

d. <u>Refresher Training</u>. Refresher training is required once a Core Plus qualified controller has been absent from a VMU billet assignment for >365 days. Upon return to a VMU billet, the IO will complete the 400 level R-coded events in the IO syllabus.

e. <u>Core Plus Stages</u>

    (1) Tactical Flight Operations (TFO)
    (2) Fire Coordination (FC)

2. <u>Tactical Flight Operations (TFO)</u>

a. <u>Purpose</u>. To develop proficiency and experience in advanced mission planning and dual UAS operations.

b. <u>Ground Training</u>. 4 events, 4.0 hours.

c. <u>Flight Training</u>. 4 flights, 6.0 hours.

TFO-420 1.0   R   (N)   CREW POSITION   IO

<u>Goal</u>. Introduce advanced mission planning.

<u>Requirement</u>

(1) Introduce selection of UAS deployment site for single and split site operations.
(2) Determine mission requirements from JTAR/S, ACO, ACEOI, and ATO/SPINS.
(3) Determine coordination, communication, and planning requirements needed to effectively integrate with other aircraft and supporting arms.
(4) Introduce and discuss remote video terminal (RVT) employment and operation.

<u>Performance Standard</u>. Conduct advanced mission planning IAW NATOPS and considering the following parameters: communications, intelligence, fire support coordination, aviation schemes of maneuver, ground schemes of maneuver, airspace control measures, aviation tasking, command and control, and joint/combined forces. Instructor IOI/MCI.

<u>Prerequisite</u>. TFO-321.

TFO-421 2.0   A   R   (1) UAS (N)   CREW POSITION   IO

<u>Goal</u>. Conduct advanced mission planning.

<u>Requirement</u>

(1) Conduct mission planning and mission brief of an assigned mission.
(2) After executing the mission, conduct mission debrief.

<u>Performance Standard</u>. Execute the tactical mission as planned IAW NATOPS. Instructor IOI.

Prerequisite. TFO-420.

TFO-425 1.0   R   (N)   CREW POSITION   IO

   Goal. Introduce dual UAS operations.

   Requirement

   (1) Introduce dual UAV operations.
   (2) Discuss and demonstrate procedures for transferring control of
      UAVs to include:
      (a) Checklist
      (b) Frequency requirements
      (c) Specific emergency procedures
      (d) Crew resource management.
   (3) Review NAV Programmer Control mode.

   Performance Standard. Pass a verbal exam with 80% accuracy.
   Instructor IOI.

   Prerequisite. IPQM-255.

TFO-426 1.0   A   R   (1) UAS   (N)   CREW POSITION   IO

   Goal. Conduct dual UAV flight operations.

   Requirement

   (1) Review NATOPS and squadron SOPs.
   (2) Review NAV Programmer Control and emergency procedures unique
      to dual UAS operations.
   (3) Conduct dual UAV flight operations while occupying the IP
      position from either the PCS or GCS.

   Performance Standard. Conduct dual UAV flight operations IAW NATOPS
   and local SOPs. Instructor IOI.

   Prerequisite. TFO-425.

TFO-430 1.0   R   PCS   (N)   CREW POSITION   IO

   Goal. Introduce payload operations from the PCS.

   Requirement

   (1) Discuss differences in payload operation between GCS and PCS
      when navigating on a range flight.
   (2) Review appropriate preset menus and payload control.
   (3) Training should be based on future split site or dual UAV
      operations.

   Performance Standard. Pass a verbal exam with 80% accuracy.
   Instructor IOI.

   Prerequisite. IOQM-359.

TFO-431   1.0   A   R   PCS   (N)   CREW POSITION   IO

   Goal. Conduct payload operations in the PCS.

   Requirement. Review, discuss, and demonstrate payload operation from the PCS.

   Performance Standard. While conducting payload operations from the PCS, locate and identify at a minimum, one target IAW NATOPS. Instructor IOI.

   Prerequisite. IOQM-359, TFO-430.

3. Fires Coordination (FC)

   a. Purpose. To develop proficiency and experience in UAS supporting arms control.

   b. Administrative Note. For this portion of training, the operator may use the Tactical Staff Forward Observer Facility or CAS Trainer Facility to simulate the control of supporting arms (realism is encouraged during this training). This event cannot update any flight events.

FC-435   3.5   R   (N)   CREW POSITION   IO

   Goal. Introduce supporting arms control.

   Requirement

   (1) Introduce and discuss call for fire, using the light pen and/or other methods for:
       (a) Artillery.
       (b) Mortar.
       (c) Naval Surface Fires.
   (2) Introduce and demonstrate communications to fire support agencies/units.

   Performance Standard. Pass a verbal exam with 80% accuracy. Instructor IOI.

   Prerequisite. IOQM-359.

FC-436   2.0   A   R   (1) UAS   (N)   CREW POSITION   IO

   Goal. Conduct call for fire and adjustment of supporting arms utilizing the light pen and/or other methods.

   Requirement. Accurately provide adjustment of fire support to have good effects on a specific target.

   Performance Standard. Complete a minimum of three artillery, mortar, and/or naval surface fires mission. Report BHA upon completion of fires.

   Prerequisite. FC-435.

   Ordnance. Thirty-three (33) M795/M107-155mm HE and three (3) M485-

155mm ILA with M732-variable time fuses and other components required for a complete round. Equivalent mortar/naval surface fire (NSF) ammunition may be substituted.

External Support. Artillery section/mortar section/naval surface fire support (ordnance specific)

209. INSTRUCTOR TRAINING

1. Purpose. To develop standardized training for Internal Operators (IO) with the ability to teach skills requisite to certification as an instructor for the Payload Operator position or the Internal Pilot position.

2. Prerequisite

   a. Core Skill Advanced training shall be completed prior to commencing instructor training. The commanding officer may waive training requirements.

   b. The operator must be experienced enough to be able to instruct others in IO skill set for which trained and supervise functions to include deployment and employment of UAS operations.

3. Administrative Note. Upon completion of this phase of training the instructor under training (IUT) may be designated a POI or IPI.

   a. Completion of the POIUT stage meets the requirements for the IO to be designated a POI. At the discretion of the commanding officer a letter designating the IUT as POI shall be placed in the NATOPS jacket, APR/MPR and tracking code of DESG-623 will be logged.

   b. Completion of the IPIUT stage meets the requirements for the IO to be designated a IPI at the discretion of the commanding officer. A letter designating the IUT as an IPI shall be placed in the NATOPS jacket, individual performance record (APR/MPR) and tracking code of DESG-624 will be logged.

   c. Academic Training. Complete event requirements as prescribed for each instructor qualification.

4. Instructor Under Training (IUT)

   a. Purpose. To introduce principles of instruction and standardization.

   b. Ground Training. 1 event, 1.0 hour.

IUT-520   1.0   R   (N)   CREW POSITION   IUT

   Goal. Introduce principles of instruction and standardization/ training tools.

   Requirement

   (1) Introduce/discuss instruction techniques
   (2) Introduce/discuss instructor duties.
   (3) Discuss training references, to include:
       (a) NATOPS
       (b) Aviation T&R Program Manual

        (c) Local/unit SOPs
  (4) Introduce Aviation T&R Program (policy and requirements).
  (5) Review training documentation requirements.
  (6) Fully understand all system components and their functions.
  (7) Instruction will cover all administrative duties, NATOPS requirements, CRM training and readiness record keeping, and evaluation documentation.

Performance Standard. Pass a verbal exam with 80% accuracy. Instructor IOI/IPI/POI.

Prerequisite. IOQM-359 and nominated by squadron standardization board.

5. Payload Operator Under Training (POIUT)

    a. Purpose. To develop instructor proficiency and experience while undergoing POIUT syllabus. Upon completion, the operator will be Payload Operator Instructor (POI) certified and may be considered by the commanding officer for designation as a POI.

    b. Ground Training. 1 event, 1.0 hour.

    c. Flight Training. 4 events, 6.0 hours.

POIUT-521 1.0 A   R   (1) UAS (N)   CREW POSITION   POIUT

    Goal. Conduct a TFO-221 instruction as a POIUT.

    Requirement

  (1) Conduct a TFO-221 period of instruction.
  (2) Demonstrate the ability to evaluate operator under instruction performance and correct deficiencies.
  (3) Complete an ATF for the operator under instruction.

    Performance Standard. Instructor POI.

  (1) Conduct a TFO-221 period of instruction.
  (2) Identify and evaluate operator performance.
  (3) Correct operator deficiencies in a timely manner.
  (4) Document operator training on the ATF.

    Prerequisite. IUT-520.

POIUT-522 2.0 A   R   (1) UAS (N)   CREW POSITION   POIUT

    Goal. Conduct instruction during a TFO or NAV flight as a POIUT.

    Requirement

  (1) Conduct a class during a TFO or NAV flight.
  (2) Instruct and demonstrate navigation using:
      (a) PDMS.
      (b) Without PDMS.
      (c) Payload graphics.
      (d) Radial maps.

(e) UAV system information.
(3) Demonstrate the ability to evaluate operator performance and correct their deficiencies.
(4) Complete an ATF for the operator under instruction.

Performance Standard. Instructor POI.

(1) Conduct a class during a TFO or NAV flight.
(2) Identify and evaluate operator performance.
(3) Correct operator deficiencies in a timely manner.
(4) Document operator training on the ATF.

Prerequisite. IUT-520.

POIUT-523   1.0   R   (N)   CREW POSITION   POIUT

Goal. Conduct instruction on TFO-222.

Requirement

(1) Demonstrate the ability to conduct a TFO-222 training class.
(2) Demonstrate the ability to evaluate operator performance and correct deficiencies.
(3) Complete an ATF.

Performance Standard. Instructor POI.

(1) Conduct a TFO-222 class.
(2) Identify and evaluate operator performance.
(3) Correct operator deficiencies in a timely manner.
(4) Document operator training on the ATF.

Prerequisite. IUT-520.

POIUT-524   2.0 A   R   (1) UAS (N)   CREW POSITION   POIUT

Goal. Conduct instruction for a TFO-321 flight.

Requirement

(1) Demonstrate the ability to instruct a Payload Operator during a TFO-321 flight.
(2) Supervise all mission planning and mission performance.
(3) Demonstrate the ability to evaluate PO performance and correct deficiencies.
(4) Complete an ATF.

Performance Standard. Instructor POI.

(1) Conduct a TFO-321 class.
(2) Identify and evaluate operator performance.
(3) Correct operator deficiencies in a timely manner.
(4) Document operator training on the ATF.

Prerequisite. IUT-520.

POIUT-525 1.0 A   R   E (1) UAS (N)   CREW POSITION   POIUT

<u>Goal</u>. Certify as a Payload Operator Instructor (POI).

<u>Requirement</u>. Conduct instruction on any Payload Operator flight event.

<u>Performance Standard</u>. Upon successful completion of this event, the POIUT may be designated as a POI by the commanding officer. Instructor POI

(1) Supervise mission planning and briefing.
(2) Supervise the payload operator and correct deficiencies as required.
(3) Debrief and complete ATF for payload operator.

<u>Prerequisite</u>. IUT-520, POIUT-521, POIUT-522, POIUT-523, POIUT-524.

6. <u>Internal Pilot Instructor Under Training (IPIUT)</u>

    a. <u>Purpose</u>. To develop proficiency and experience as an Internal Pilot Instructor (IPI). Upon completion, the operator will be considered qualified to be designated by the commanding officer as an IPI.

    b. <u>Ground Training</u>. 2 events, 2.0 hours.

    c. <u>Flight Training</u>. 4 flights, 7.0 hours.

IPIUT-531 1.0   R   (1) UAS   (N)   CREW POSITION   IPIUT

<u>Goal</u>. Conduct a TFO-221 instruction.

<u>Requirement</u>

(1) Demonstrate how to conduct a TFO-221 period of instruction.
(2) Demonstrate the ability to evaluate operator's performance and correct deficiencies.

<u>Performance Standard</u>. Instructor IPI.

(1) Conduct a TFO-221 period of instruction.
(2) Identify and evaluate operator performance.
(3) Correct operator deficiencies in a timely manner.
(4) Document operator training on the ATF.

<u>Prerequisite</u>. IUT-520.

IPIUT-532 2.0 A   R   (1) UAS   (N)   CREW POSITION   IPIUT

<u>Goal</u>. Conduct instruction during a TFO-200 series flight event as an IPIUT.

<u>Requirement</u>

(1) Demonstrate the ability to provide a period of instruction on a TFO-200 series flight event.

(2) Demonstrate the ability evaluate student performance and correct deficiencies.

Performance Standard. Instructor IPI.

(1) Conduct a class during a TFO-200 series flight.
(2) Identify and evaluate student performance.
(3) Correct student deficiencies in a timely manner.
(4) Document student training on the ATF.

Prerequisite. IUT-520.

IPIUT-533   2.0   A   R   (1) UAS   (N)   CREW POSITION   IPIUT

Goal. Conduct instruction during a NAV flight as an IPIUT.

Requirement

(1) Demonstrate the ability to instruct an IPUI during a NAV flight.
(2) Demonstrate the ability evaluate an IPUI performance and correct deficiencies.

Performance Standard. Instructor IPI.

(1) Conduct a class on a NAV flight event.
(2) Demonstrate navigation techniques using:
    (a) PDMS.
    (b) Without PDMS.
    (c) Payload graphics.
    (d) Radial maps.
    (e) System information.
(3) Identify and evaluate operator performance.
(4) Correct student deficiencies in a timely manner.
(5) Document student training on the ATF.

Prerequisite. IUT-520.

IPIUT-534   1.0   R   (1) UAS   (N)   CREW POSITION   IPIUT

Goal. Conduct TFO-222 instruction as an IPIUT.

Requirement

(1) Demonstrate the ability to instruct a TFO-222 class.
(2) Demonstrate the ability to evaluate operator performance and correct their deficiencies.

Performance Standard. Instructor IPI.

(1) Conduct a TFO-222 class.
(2) Identify and evaluate operator performance.
(3) Correct operator deficiencies in a timely manner.
(4) Document operator training on the ATF.

Prerequisite. IUT-520.

IPIUT-535 2.0 A   R   (1) UAS   (N)   CREW POSITION   IPIUT

Goal. Conduct instruction during a TFO-321 flight as an IPIUT.

Requirement

(1) Demonstrate the ability to instruct an Internal Pilot during a TFO-321 flight.
(2) Demonstrate the ability evaluate operator performance and correct deficiencies.
(3) Supervise all mission planning and mission performance.

Performance Standard. Instructor IPI.

(1) Conduct instruction for a TFO-321 flight.
(2) Identify and evaluate operator performance.
(3) Correct operator deficiencies in a timely manner.
(4) Document operator training on the ATF.

Prerequisite. IUT-520.

IPIUT-536 1.0 A   R   E   (1) UAS   (N)   CREW POSITION   IPIUT

Goal. Certify as an Internal Pilot Instructor (IPI).

Requirement. Conduct instruction on any flight event.

Performance Standard. Instructor IPI.

(1) Supervise mission planning and briefing.
(2) Supervise the IPUI and correct deficiencies as required.
(3) Debrief and complete ATF for IPUI.

Prerequisite. IUT-520, IPIUT-531, IPIUT-532, IPIUT-533, IPIUT-534.

210. REQUIREMENTS, QUALIFICATIONS AND DESIGNATIONS

1. General

    a. This phase contains tracking codes and events designated to facilitate training management. This level also provides community standardization for combat leadership designation. CRP is not awarded for 600 level events.

    b. Once the event to attain the qualification/designation is complete, a letter from the commanding officer (CO) awarding the qualification/designation shall be placed in the NATOPS and individual performance record (APR/MPR) before that qualification/designation can be utilized.

    c. Once the IUT is designated in writing by the CO, training personnel shall log the events with their respective tracking codes.

2. Internal Operator Qualifications

QUAL-650

Goal. Tracking code for Payload Operator (PO) qualification.

Prerequisite. POQM-250, TFO-220, TFO-221, TFO-222, TFO-224, TFO-226, NAV-231.

QUAL-655

Goal. Tracking code for Internal Pilot (IP) qualification.

Prerequisite. IPQM-255, TFO-220, TFO-221, TFO-222, TFO-223, TFO-225, TFO-227, NAV-230, NAV-232, NAV-233, NAV-234.

QUAL-659

Goal. Tracking code for Internal Operator (IO) qualification.

Prerequisite. IOQM-359, TFO-320, TFO-321, TFO-322, TFO-323, TFO-324, TFO-325, NBC-330.

3. Internal Operator Designations

DESG-610

Goal. Tracking code for Weapons and Tactics Instructor (WTI) designation.

Prerequisite. IOQM-359 or EPQM-299; completion of the WTI syllabus and designated by the commanding officer.

DESG-620

Goal. Tracking code for Payload Operator Qualified in Model (POQM) designation.

Prerequisite. POQM-250, recommended by the squadron standardization board (per NATOPS) and designated by the commanding officer.

DESG-621

Goal. Tracking code for Internal Pilot Qualified in Model (IPQM) designation.

Prerequisite. IPQM-255, recommended by the squadron standardization board (per NATOPS) and designated by the commanding officer.

DESG-622

Goal. Tracking code for Internal Operator Qualified in Model (IOQM) designation.

Prerequisite. IOQM-359, recommended by the squadron standardization board (per NATOPS) and designated by the commanding officer.

DESG-623

Goal. Tracking code for Payload Operator Instructor (POI) designation.

Prerequisite. POIUT-525, recommended by the squadron standardization board (per NATOPS) and designated by the commanding officer.

DESG 624

    Goal. Tracking code for Internal Pilot Instructor (IPI) designation.

    Prerequisite. IPIUT-536, recommended by the squadron standardization board (per NATOPS) and designated by the commanding officer.

DESG-626

    Goal. Tracking code for Internal Operator Instructor (IOI) designation.

    Prerequisite. POIUT 525 and IPIUT 536, recommended by squadron standardization board (per NATOPS) and designated by the commanding officer.

DESG-627

    Goal. Tracking code for NATOPS Instructor (NI) designation.

    Prerequisite. Standardization Board recommendation (per NATOPS) and commanding officer approval.

DESG-628

    Goal. Tracking code for Assistant NATOPS Instructor (ANI) designation.

    Prerequisite. Per NATOPS, Standardization Board recommendation (per NATOPS) and commanding officer approval.

DESG-629

    Goal. Tracking code for NATOPS Evaluator (NE) designation.

    Prerequisite. Model Manager's Standardization Board recommendation (per NATOPS) and commanding officer approval.

DESG-630

    Goal. Tracking code for Functional Check Pilot (FCP) designation.

    Prerequisite. POQM-250 or IPQM-255 or IOQM-359; recommended by the squadron standardization board (per NATOPS) and designated by the commanding officer.

4. Requirements (RQD)

    a. Purpose. To ensure operators are evaluated annually per standards, procedures, and requirements of the UAV NATOPS Manual.

    b. Administrative Note

       (1) Written examinations must be completed prior to the flight event and current within 30 days.

       (2) The NATOPS Manual will be used as the reference for these events.

       (3) At the completion of each NATOPS event, the operator will have met the initial/annual requirement in respective crew position.

(4) The Initial NATOPS qualification is received at the entry-level school. Subsequent NATOPS checks shall be conducted by the VMU per NATOPS.

c. <u>Flight Training</u>. 1 flight, 2.0 hours.

<u>RQD-659</u>   2.0 A   R   E (1) UAS   (N)   CREW POSITION   IP/PO/IO

<u>Goal</u>. Annual NATOPS position evaluation.

<u>Requirement</u>. Perform as the IP, PO, or IO on position for which being evaluated during the conduct of this event. Specific launch/recovery type is not required.

<u>Performance Standard</u>. All procedures listed in the NATOPS Manual will be conducted to standard. Pass open/closed book NATOPS exams. NATOPS Instructor.

<u>Prerequisite</u>. POQM-250 or IPQM-255, or IOQM-359 based on the position for which the NATOPS evaluation is being conducted.

211. <u>Ordnance Requirements</u>. Annual ordnance requirements are developed on a "per standard crew" basis per OPNAVNOTE 8010. The chart below captures the ordnance requirement for one standard aircrew that consists of (1) MC, (2) IOs, and (1) EP. The EP is required only for the RQ-2B Pioneer crew.

ORDNANCE	100 SERIES	200 SERIES	300* SERIES	400** SERIES	REFRESHER	IUT	ANNUAL***
155mm HE (1)	0	0	11	33	11	0	11
155mm ILA (2)	0	0	1	3	1	0	1

* Ordnance requirement for 7315 MCs only.
** Ordnance requirement for 7314 IOs only.
*** Annual ordnance requirement maintains aircrews proficient.

Notes:
(1) Fires distribution model is based on one battery mission with five rounds in adjust and six rounds in effect.
(2) Illumination round is supplement in adjusting fires for one mission.

212. <u>EVENT SUMMARY MATRIX</u>

STAGE	TNG CODE	INDV HRS	SUST HRS	FORMAL / INFORMAL	DAY / NIGHT	PRE-REQ	POI	EXAM	CRP	CHAINING
MOS: 7314 UAS INTERNAL OPERATOR
100 LEVEL - CORE SKILL INTRODUCTION
FAM	101	1.0	0.0	*	A				1.0	
FAM	102	1.0	0.0	*	A	101			2.0	
FAM	103	1.0	0.0	*	A	102	R		2.0	'
FAM	104	1.0	0.0	*	A	103			2.0	
FAM	105	1.0	0.0	*	A	104	R	E	2.0	
FAM	106	3.0	0.0	*	A/S	105			3.0	
FAM	107	3.0	0.0	*	A/S	106	R		3.0	
FAM	108	3.0	0.0	*	A/S	107			3.0	
FAM	109	2.0	0.0	*	A	108	R	E	2.0	
NAV	111	3.0	0.0	*	A	109			2.0	
NAV	112	3.0	0.0	*	A/S	111	R		3.0	
NAV	113	3.0	0.0	*	A/S	112			3.0	
NAV	114	3.0	0.0	*	A/S	113			3.0	
NAV	115	3.0	0.0	*	A/S	114			3.0	
NAV	116	3.0	0.0	*	A/S	115	R		3.0	
NAV	117	3.0	0.0	*	A/S	116	R	E	3.0	
EMG	121	3.0	0.0	*	A/S	117			3.0	
EMG	122	3.0	0.0	*	A	121			3.0	
EMG	123	3.0	0.0	*	A/S	122			3.0	
EMG	124	3.0	0.0	*	A/S	123			3.0	
EMG	125	3.0	0.0	*	A/S	124	R		4.0	
EMG	126	3.0	0.0	*	A	125	R	E	4.0	
Phase Totals		55.0	0						60.0	CRP

STAGE	TRNG CODE	SUS HRS	SIM HRS	REPLY INTERVAL	DEVICE	OFFERED	POI	EVAL	CRP	CHAINING
TFO	220	0	0	1095			R		0.5	
TFO	221	0	0	1095			R		0.5	
TFO	222	0	0	1095			R		0.5	
TFO	223	1.0	0	1095	A	220, 221	R		1.0	221
TFO	224	1.0	0	1095	A	223	R		1.0	221, 222
TFO	225	1.0	0	1095	A	224	R		1.0	221, 223
TFO	226	1.0	0	1095	A	225	R		1.0	221, 223
TFO	227	2.0	0	1095	A	226	R		1.0	221, 222, 224
NAV	230	0	0	1095		227	R		0.5	221, 223, 225
NAV	231	1.0	0	1095	A	230	R		1.0	221, 222, 224, 226, 230
NAV	232	1.0	0	1095	A	231	R		1.0	221, 222, 224, 226, 230
NAV	233	1.0	0	1095	A	232	R		1.0	221, 223, 225, 227, 230
NAV	234	1.0	0	1095	A	233	R		1.0	221, 223, 225, 227, 230, 233
POQM	250	2.0	0	1095	A	220, 221 222, 224 226, 231	R	E	2.0	221, 222, 224, 226, 231
IPQM	255	2.0	0	1095	A	220, 221 222, 223 225, 227 230, 232 233, 234	R	E	2.0	221, 222, 223, 225, 227, 230, 232, 233, 234
Phase Totals		14.0	0						15.0	CRP

STAGE	TRNG CODE	FLT HRS	SIM HRS	REPLY INTERVAL	DEVICE	PREREQ	POI	EVAL	CRP	CHAINING
				MOS: 7314 UAS INTERNAL OPERATOR						
				300 LEVEL - CORE SKILL ADVANCED						
TFO	320	0.0	0.0	1095			R		1.0	
TFO	321	1.0	0.0	1095	A	250, 255	R		3.0	
TFO	322	0.0	0.0	1095		255	R		1.5	
TFO	323	1.0	0.0	1095	A	322	R		3.0	322
TFO	324	0.0	0.0	1095		255	R		1.5	
TFO	325	1.0	0.0	1095	A	324	R		3.0	324
NBC	330	1.0	1.0	1095	A/S	250, 255	R		3.0	
IOQM	359	2.0	0.0	1095	A	320,321 322, 323 324, 325 330	R	E	4.0	320, 321, 322, 323, 324, 325
Phase Totals		6.0	1.0						20.0	CRP

STAGE	TRNG CODE	FLT HRS	SIM HRS	REPLY INTERVAL	DEVICE	PREREQ	POI	EVAL	CRP	CHAINING
				MOS: 7314 UAS INTERNAL OPERATOR						
				400 LEVEL - CORE PLUS						
TFO	420	0.0	0.0	1095		321	R		0.25	321
TFO	421	2.0	0.0	1095	A	420	R		0.75	420
TFO	425	0.0	0.0	1095		255	R		0.25	
TFO	426	1.0	0.0	1095	A	425	R		0.75	425
TFO	430	0.0	0.0	1095		359	R		0.5	
TFO	431	1.0	0.0	1095	A	359, 430	R		1.5	430
FC	435	0.0	0.0	1095		359	R		0.25	
FC	436	2.0	0.0	1095	A	435	R		0.75	435
Phase Totals		6.0	0.0						5.0	CRP

213. EVENT CONVERSION MATRIX. Appendix A provides an event conversion matrix for all events in this Internal Operator (IO) syllabus as they correspond to the previous IO syllabus that this chapter replaced.

CHAPTER 3

UNMANNED AERIAL SYSTEM (UAS) EXTERNAL PILOT
MOS 7316

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CHAPTER 3

UNMANNED AERIAL VEHICLE (UAV) EXTERNAL PILOT
MOS 7316

300. <u>MARINE UNMANNED AERIAL VEHICLE SQUADRON (VMU) UNIT CORE COMPETENCY</u>

1. <u>Overview</u>

    a. Marine Aviation plays a crucial role in the MAGTF's ability to conduct Maneuver Warfare. The ultimate goal of Marine Aviation is to attain the highest possible level of combat readiness to support Expeditionary Maneuver Warfare while at the same time preserving and conserving our Marines and equipment. Embedded within our combat readiness is the ability to rapidly, effectively, and efficiently deploy on short notice; to quickly and effectively plan for crises and/or contingency operations thereby ensuring Marine Aviation remains ready for combat when and where the need arises.

    b. This Marine Unmanned Aircraft System (UAS) T&R Directive represents the collaborative effort of UAS Subject Matter Experts who designed training standards to maximize the full combat capabilities of the UAS and its crew. These standards, intrinsic in the core competency section, describe and define unit capabilities and requirements necessary to maintain like-squadron proficiency in core skills and combat leadership. Training events are based on specific requirements and performance standards to ensure aircrew maintain a common base of training and depth of combat capabilities. Together, the T&R comprises a building block approach to ensure that trained aircrews remain ready, relevant, and fully capable of supporting the MAGTF commander.

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

2. <u>Marine Unmanned Aerial Vehicle Squadron (VMU) Mission</u>. Support the MAGTF commander by providing day and night aerial reconnaissance, surveillance, target acquisition (RSTA), indirect fire adjustment, bomb hit assessment (BHA) and support of the rear area security plan during expeditionary operations or joint and combined operations during Visual Meteorological Conditions (VMC).

3. <u>Mission Essential Task List (METL)</u>

    a. MCT 1.1   Provide Forces

    b. MCT 1.6.5   Conduct Tactical Operations

    c. MCT 2.1.1   Conduct Intelligence Functions

    d. MCT 2.1.2   Conduct Intelligence Support

    e. MCT 2.2.5   Conduct Aviation Intelligence Collection Activities

4. <u>Table of Organization (T/O)</u>. Refer to T/O 8890 managed by Total Force Structure, MCCDC, for current authorized organizational structure and personnel strength for VMU units. As of this publication date, a VMU unit is authorized:

Squadron
5 aircraft 05 External Pilots 33 Internal Operators 05 Mission Commanders

5. <u>Core Capability</u>. A core capable squadron is able to sustain four single plane sorties on a daily basis during contingency/combat operations. The above sortie rates are based on a 4.5 hour average sortie duration and assume 80 percent FMC aircraft and 85 percent T/O aircrew on hand. If unit FMC aircraft < 80 percent or T/O aircrew < 85 percent, core capability will be degraded by a like percentage. The extent to which a core capable squadron is able to surge beyond its core capability is situational dependent.

6. <u>METL/Core Skills</u>. Core skills shall be a determining factor in developing T&R training requirements. Core skills abbreviations are listed below. Core skills/core plus training requirements must receive appropriate prioritization and emphasis based on the training need and the likelihood of those types of missions being assigned during operations.

CORE SKILL ABBREVIATIONS	
CORE SKILL	ABBREVIATION
Navigation	NAV
Night Flight Operations	NFO
Tactical Flight Operations	TFO
Short Field Operations	SFO
Fires Coordination	FC

		CORE SKILLS					CORE PLUS		
MISSION ESSENTIAL TASKS		NAV	NFO	TFO	SFO	FC	TFO	SFO	FC
MCT 1.1	Provide Forces	X		X	X	X			
MCT 1.6.5	Conduct Tactical Operations	X	X	X	X	X	X	X	X
MCT 2.1.1	Conduct Intelligence Functions	X		X		X	X		X
MCT 2.1.2	Conduct Intelligence Support	X		X		X	X		
MCT 2.2.5	Conduct Aviation Intelligence Collection Activities	X		X			X		

7. <u>Core Model Minimum Requirements (CMMR)</u>. CMMR is measured in terms of the minimum numbers of Core Skill Proficiency (CSP) crews and minimum numbers of combat leaders. A standard UAS crew consists of two Internal Operators (IO), one External Pilot (EP), and one Mission Commander (MC). A CSP crew consists of individuals representing each crew position who have achieved and maintain individual CSP. In order to be considered proficient in a core skill, a crewmember must attain and maintain proficiency in core skill and core plus events as delineated in paragraphs 7a(1) and 7a(2) below:

    a. <u>Minimum Unit Core Skill Proficiency (CSP) Requirements</u>. At a minimum, in order to be considered core competent, a unit must possess the following numbers of personnel who are proficient in each core skill (unit CSP)

VMU CMMR (Unit CSP Requirements)			
CORE SKILL	Internal Operator	External Pilot	Mission Commander
NAV	21	4	4
NFO	21	4	4
TFO	21	4	4
SFO	21	4	4
FC	21	4	4
CORE PLUS	Internal Operator	External Pilot	Mission Commander
TFO	10	NA	2
SFO	NA	2	NA
FC	NA	NA	2
* Proficiency in Core Plus Skills is not required to obtain unit CSP.			

    (1) <u>Events Required to Attain Individual CSP</u>. To initially attain CSP in a specific core skill, an individual must simultaneously have a proficient status in all 200-300 level T&R events for that core skill:

INDIVIDUAL CSP ATTAIN TABLE			
External Pilot (MOS 7316)	TFO	SFO	NFO
	260R, 261R, 262R 263R, 299R	360R, 361R, 362R, 363R	264R, 265R
R = Refresher Event			

    (2) <u>Events Required to Maintain Individual CSP</u>. To maintain CSP in a specific core skill, an individual must maintain proficiency in all 200-300 level T&R events for that core skill:

INDIVIDUAL CSP MAINTAIN TABLE			
External Pilot (MOS 7316)	TFO	SFO	NFO
	260R, 261R, 262R 263R, 299R	360R, 361R, 362R, 363R	264R, 265R
R = Refresher Event			

(3) <u>Events Required to Attain Individual Proficiency in Core Plus Skills</u>. 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 attain proficiency in a core plus skill, an individual must be proficient status in all T&R events listed for that core plus skill.

INDIVIDUAL CORE PLUS SKILLS ATTAIN TABLE	
External Pilot (MOS 7316)	SEO
	460R, 461R
R = Refresher Event	

(4) <u>Events Required to Maintain Individual Proficiency in Core Plus Skills</u>. To maintain proficiency in a core plus skill, an individual must maintain proficiency in all 400 level T&R events for that core plus skill:

INDIVIDUAL CORE PLUS SKILLS MAINTAIN TABLE	
External Pilot (MOS 7316)	SEO
	460R, 461R
R = Refresher Event	

b. <u>Minimum Combat Leadership Requirements</u>. At a minimum, in order to be considered Core Competent, a VMU squadron must possess the following numbers of crewmembers with the listed combat leadership designations.

CMMR (UNIT COMBAT LEADERSHIP REQUIREMENTS)			
Designation	Internal Operator	External Pilot	Mission Commander
Mission Commander (MC)	NA	NA	4
Functional Check Pilot (FCP)*	4	2	2
* Although not specifically a combat leader, is required to sustain core capability in contingency operations			

8. <u>Qualifications, Designations and Instructor Requirements</u>. The table below delineates T&R events required to be completed to attain initial qualifications, to re-qualify, and to attain designations. All stage lectures, briefs, squadron training and prerequisites shall be complete prior to completing final events. Qualification and designation letters signed by the commanding officer shall be placed in individual NATOPS and individual performance records (APR/MPR).

    a. <u>Qualification</u>. A qualification is a status assigned based on demonstrated proficiency in a specific skill. Specific criteria to achieve qualifications are delineated below, in the MAWTS-1 course catalog, NATOPS, or other governing directives. Upon completion of qualification criteria, commanding officers shall issue a qualification letter for inclusion into individual performance records (APR/MPR). Qualifications are not lost when refreshing events. Loss of proficiency and/or time expiration (delinquent refresh events) for all associated qualification events constitutes loss of the qualification. Re-qualification requires demonstrated proficiency by

successfully completing all R-coded events associated with the qualification (unless waived per the Aviation T&R Program Manual).

MOS 7316 QUALIFICATIONS		
Qualification	Tracking Code	Requirements
External Pilot (EP)	QUAL-670	EPQM-299
Annual NATOPS	RQD-699	EPQM-299

b. Designation. A designation is a status assigned by the commanding officer to an individual based on leadership ability. It is command specific and remains in effect until removed for cause, transferred, or rescinded at the commander's discretion. Commanders are encouraged to consider the individual designation requirements noted below prior to designating an individual. Once an individual is designated, commanders shall issue a designation letter for inclusion into the individual performance record (APR/MPR). Follow-on commands shall repeat the "initial documentation procedure."

MOS 7316 DESIGNATIONS		
Designation	Tracking Code	Requirements
External Pilot (EP)	DESG-660	EPQM-299; squadron standardization board recommendation and CO designated
External Pilot Instructor (EPI)	DESG-661	EPQM-299 and EPIUT-599; squadron standardization board recommendation and CO designated
NATOPS Evaluator (NE)	DESG-662	EPQM-299, EPIUT-599; Model Manager's Standardization board recommendation and CO approval
NATOPS Instructor (NI)	DESG-663	EPQM-299, EPIUT-599; squadron standardization board recommendation and CO designated
Assistant NATOPS Instructor (ANI)	DESG-664	EPQM-299, EPIUT-599, squadron standardization board recommendation and CO approval
Functional Check Pilot (FCP)	DESG-665	EPQM-299, squadron standardization board recommendation and CO designated

c. Instructor Requirements. At a minimum, a VMU squadron should maintain instructor designations to support VMU operations. Instructor designations are outlined in the MAWTS-1 Course Catalog, MCO 3500.12C (WTTP), NATOPS, and applicable directives. Squadron CO/XO instructor designations shall not count toward the following numbers:

UNIT INSTRUCTOR REQUIREMENTS			
Designations	Internal Operator	External Pilot	Mission Commander
NATOPS Instructor (NI)[1]	1	1	1
Assistant NATOPS Instructor (ANI)	1	1	1
External Pilot Instructor (EPI)	NA	1	NA
Internal Operator Instructor (IOI)	1	NA	NA
Mission Commander Instructor (MCI)	NA	NA	1
Weapons Tactics Instructor (WTI)	1[2]	NA	NA
Note 1: NATOPS Evaluator can fulfill this requirement			
Note 2: Although an Internal Operator is noted, any instructor can fill this unit requirement for one WTI.			

9. <u>External Pilot Training Progression Model</u>. The below training progression model provides the UAV community with recommended qualification and designation attainment timelines for the average External Pilot.
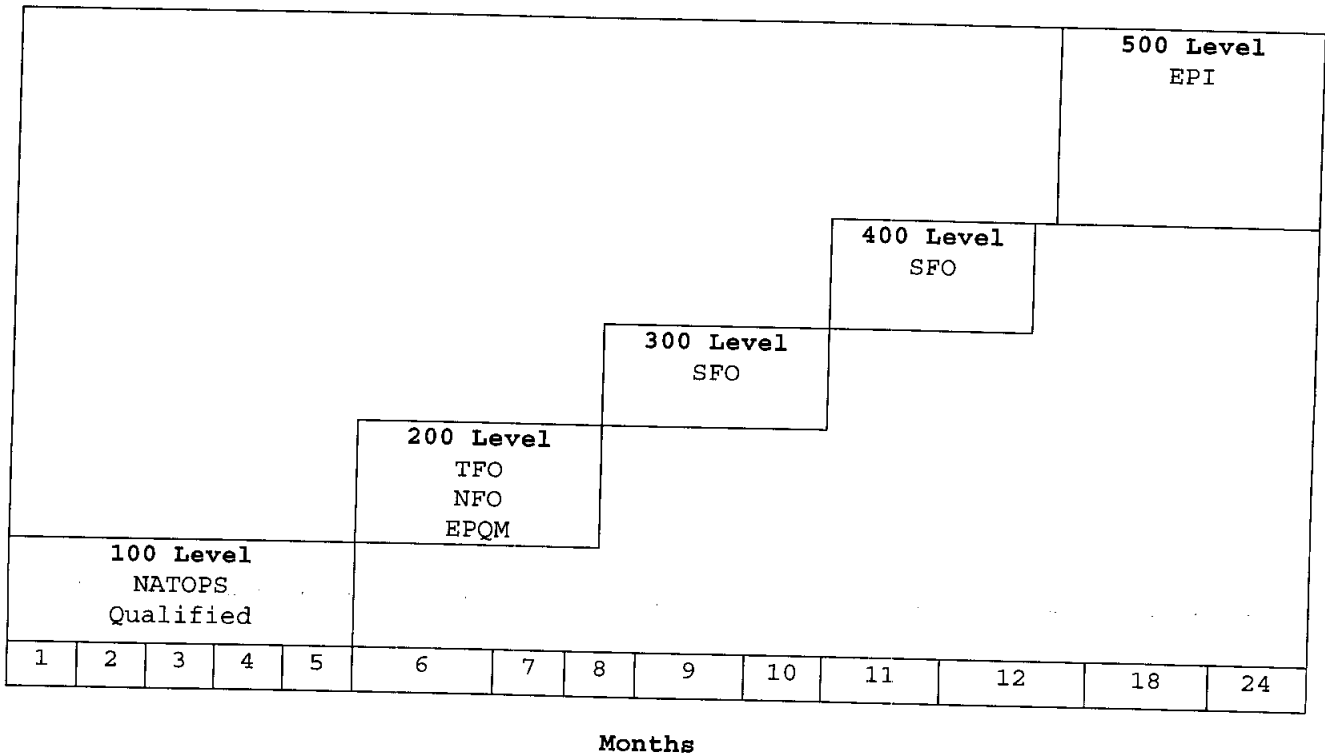

Months

Figure 3-1. External Pilot Training Progression Model

3-8

301. BASIC PROGRAM OF INSTRUCTION (POI) FOR EXTERNAL PILOT

Weeks	Phase	Activity
1-20	Core Skill Introduction	TW-6 UAV DET
21-31	Core Skill Basic	Tactical Squadron
32-40	Core Skill Advanced	Tactical Squadron
41-47	Core Skill Plus	Tactical Squadron

302. REFRESHER POI FOR EXTERNAL PILOT

Weeks	Phase	Activity
1-5	Core Skill Basic	Tactical Squadron
6-8	Core Skill Advanced	Tactical Squadron
9-10	Core Skill Plus	Tactical Squadron

303. ACADEMIC/GROUND TRAINING

1. Academic training shall be conducted for each phase/stage of the syllabus. Commanders are strongly encouraged to incorporate lectures into their training plans. When standardized academic training materials exist they should be obtained from the sponsoring activity.

2. External academic courses of instruction available to complete the syllabus are listed below.

Course	Activity
External Pilot Course	TW-6 UAV DET
Internal Operator (IO) Ground/Flight Syllabus	Tactical Squadron
Military Airspace Management Course	Keesler AFB, MS
Weapons Tactics Instructor (WTI) Course	MAWTS-1
Air and Space Operation Center Initial Qualification	Hurlburt Fld, FL
Training (AOCIQT); Airspace Course	

304. EVENT PERFORMANCE REQUIREMENTS

1. General

    a. The purpose of this section is to provide the commander with a standardized program of instruction for EP personnel. The goal is to develop unit warfighting capabilities, not to measure the proficiency of individuals. Syllabi are based on specific performance standards designed to ensure proficiency in core competencies. An effective T&R program is the first step in providing the MAGTF commander with an Aviation Combat Element (ACE) capable of accomplishing any and all of its stated missions. The T&R program provides the fundamental tools for commanders to build and maintain unit combat readiness. Using these tools, training managers can construct and execute an effective training plan that supports the unit METS.

    b. Unit training management is the application of the Marine Corps Training Principles and the Systems Approach to Training to satisfy the training requirements of commanders at all levels in order to accomplish their wartime mission. Guidance concerning unit training management and the process for establishing effective unit training management programs are contained in MCRP 3-0A, *Unit Training Management Guide*, and formed the basis for the development of this T&R Directive. Familiarity with MCRP 3-0A will

enhance understanding of the Systems Approach to Training used in T&R development and Marine Corps UTM principles.

2. <u>Flight/Simulator Training</u>. This manual generalizes mission guidance to allow for local conditions and to allow this manual to remain unclassified. CMC (A) and CG MCCDC encourage squadrons to use the full range of tactics in the tactical manuals and adopt the latest developed and proven tactics. All events shall terminate with a comprehensive debrief with emphasis on the aircrew's performance using all evaluation techniques.

3. <u>Syllabus Assignment</u>

    a. <u>Basic Syllabus</u>. External Pilots (EPs) will be assigned to fly the entire syllabus.

    b. <u>Refresher Syllabus</u>. The refresher syllabus is predicated on the experience of the refresher EP. An EP in the refresher syllabus should fly all R-coded events in the respective core skill. However, a refresher EP need not fly every event within a stage of training to requalify in that stage. Per NAVMC 3500.14, the commanding officer may tailor the refresher syllabus to fit the experience of the EP. When the R-coded events within a stage of training are complete, the EP may be credited with the CRP for the entire stage of training. This assumes the EP previously attained proficiency in that stage of training. If the EP has no previous proficiency in a stage or particular event, then the entire stage or all events not current or not previously flown must be completed. The EP refresher syllabus applies only to those stages achieved during the individual's prior tour. All other stages not previously completed shall be completed in their entirety.

4. <u>Aircrew Evaluation Flights</u>. All EPs shall have a NATOPS evaluation form filled out annually upon completion of the annual NATOPS check. A designated NATOPS instructor (NI) or an assistant NATOPS instructor (ANI) shall evaluate the annual NATOPS event.

5. <u>Aircrew Training Forms (ATFs)</u>

    a. An ATF is required for any initial flight of any event completed by a Basic, or Refresher EP or as recommended by the squadron standardization board.

    b. If the commanding officer has waived a syllabus event, the squadron training officer shall place a waiver letter in the individual performance records (APR/MPR).

6. <u>Flight Completion</u>. Compliance with the written flight description is mandatory for syllabus flight completion. Times indicated for each flight are only recommendations.

7. <u>Weight and Balance</u>. Weight and balance sheets will be completed per NATOPS guidelines and standard operating procedures (SOPs).

8. <u>Responsibilities</u>

    a. <u>Payload Operator (PO)</u>. Crewmember responsible for operation of the UAS sensor or payload.

    b. <u>Internal Pilot (IP)</u>. Crewmember responsible for the flight operation of the UAS.

c. Internal Operator (IO). Crewmember qualified and designated as a Payload Operator and Internal Pilot.

d. External Pilot (EP). Crewmember responsible for operation of the unmanned aerial vehicle during launch and recovery.

9. Definitions

a. Discuss

(1) The External Pilot Instructor (EPI) shall discuss a procedure or maneuver during the brief, in flight, or debrief.

(2) The External Pilot Under Instruction (EPUI) is responsible for knowledge of the applicable procedures prior to the briefing.

b. Demonstrate

(1) The EPI performs the maneuver with accompanying description.

(2) The EPUI observes the maneuver and is responsible for the knowledge of the procedures prior to the flight.

c. Introduce

(1) At his option, the EPI may perform the maneuver with an accompanying description, or he may coach the EPUI through the maneuver without demonstration.

(2) The EPUI shall perform the maneuver with coaching as necessary and is responsible for knowledge of the procedures prior to the flight.

d. Practice

(1) The EPI observes the maneuver with limited coaching to the EPUI. An airborne critique of the EPUI's performance is at the option of the instructor.

(2) The EPUI shall perform the maneuver with limited coaching as necessary and is responsible for knowledge of procedures prior to the flight.

e. Evaluate

(1) The EPI observes and grades the maneuver without coaching the EPUI. An airborne critique of the EPUI's performance is at the option of the instructor.

(2) The EPUI is expected to perform the maneuver without coaching and devoid of procedural error at a level acceptable to warrant progress into the next stage of training.

305. CORE SKILL INTRODUCTION TRAINING

1. General

a. This phase of training provides ground and flight training to develop proficiency and experience in tactical Unmanned Aircraft System (UAS)

operations as a basic External Pilot (EP). Upon completion of formal Pioneer SR-RPV External Pilot Course at TW-6 UAV DET in Navarre, FL, the EP is NATOPS qualified and eligible to be designated as a squadron EP by the commanding officer.

   b.   Core Skill Introduction Stages

      (1) Familiarization (FAM)
      (2) Touch and Go (T&G)
      (3) Navigation (NAV)
      (4) Emergency Procedures (EMG)
      (5) Night Flight Operations (NFO)
      (6) Supervised Solo Flight (SSF)

2.   Familiarization (FAM), Touch and Go (T&G), Navigation (NAV),, Emergency Procedures (EMG), Night Flight Operations (NFO), and Supervised Solo Flight (SSF)

   a.   Purpose. To develop proficiency and experience in tactical UAS system operations and to emphasize the importance of crew resource management, system operation, touch and go procedures, emergencies, night flight and familiarization with operational terminology and local unit SOPs.

   b.   Prerequisite

      (1) Must meet the physical requirements per NAVMED P-117 (Manual of the Naval Medicine Department, section IV article 15-65, paragraph 1.15.

      (2) The student shall meet all MOS prerequisites.

      (3) Prior to commencement of this stage of training, the operator will have successfully completed the local course rules exam and Squadron Flight SOP exam.

   c.   Ground Training. Ground school classes have been scheduled to augment the flight syllabus requirements. These classes can be executed in conjunction with the flight events. However, the completion of ground school classes prior to the corresponding flight is mandatory. Ground classes cannot update or replace the corresponding flight event.

   d.   Administrative Note. All ground training events are based on a class size of four students; whereas, each syllabus flight scheduled accounts for the training of two students during the allotted time.

   e.   Ground Training. 90 classes.

   f.   Flight Training. 26 flights, 25.5 hours.

FAM-100 1.0 A   (1) UAS   CREW POSITION   EP

      Goal. Introduce the Pocket checklist, preflight of aircraft, flight controls and flight characteristics of the UAS.

      Requirement

      (1) Introduce Pocket checklist, preflight of aircraft, and familiarization of the flight controls and flight characteristics of the UAS.

(2) Fly the UAS taking one control at a time until all flight controls are being used.
(3) Fly straight and level, circles, and figure eights while correcting for winds.

Performance Standard

(1) Airspeed: +/- 8 KIAS of assigned airspeed
(2) Bank Angles: $\leq$ 40 degrees
(3) Altitude: +/- 100' of assigned altitude
(4) Range: $\leq$ 1.2 km

Prerequisite. Complete R/C phase of training. Pass a NATOPS open book examination and a NATOPS quiz.

FAM-101	1.0	A		(1) UAS	CREW POSITION	EP

Goal. Introduce the local flight pattern.

Requirement

(1) Introduce local flight pattern procedures while correcting for winds.
(2) Introduce the required techniques to arrive at prescribed pattern altitudes and airspeeds.
(3) Introduce low approaches.

Performance Standard

(1) Airspeed: +/- 8 KIAS of assigned airspeed
(2) Bank Angles: $\leq$ 40 degrees
(3) Altitude: +/- 100' of assigned altitude
(4) Range: $\leq$ 1.2 km
(5) Waive off altitude: 30'

Prerequisite. FAM-100.

FAM-102	1.0	A	R	(1) UAS	CREW POSITION	EP

Goal. Practice local flight pattern procedures.

Requirement

(1) Practice local flight pattern procedures while correcting for winds.
(2) Practice the required techniques to arrive at prescribed pattern altitudes and airspeeds.
(3) Practice low approaches.

Performance Standard

(1) Airspeed: +/- 8 KIAS of assigned airspeed
(2) Bank Angles: $\leq$ 30 degrees
(3) Altitude: +/- 100' of assigned altitude
(4) Range: $\leq$ 1.2 km
(5) Waive off altitude: 10'

Prerequisite. FAM-101.

FAM-103   1.0   A   R,E   (1) UAS   CREW POSITION   EP

Goal. Evaluate local flight pattern.

Requirement

(1) Review local flight pattern procedures while correcting for winds.
(2) Review the required techniques to arrive at prescribed pattern altitudes and airspeeds.
(3) Review low approaches.
(4) Discuss take-off and landing airspeeds.
(5) Discuss stick control limitations.

Performance Standard

(1) Airspeed: +/- 8 KIAS of assigned airspeed
(2) Bank Angles: ≤ 30 degrees
(3) Altitude: +/- 100' of assigned altitude
(4) Range: ≤ 1.2 km
(5) Waive off altitude: 10'

Prerequisite. FAM-102.

T&G-110   1.0   A   (1) UAS   CREW POSITION   EP

Goal. Demonstrate/Introduce local landing pattern.

Requirement

(1) Introduce steering technique involved with a launch and touch and go landings.
(2) Demonstrate the techniques/limitations with controllability checks.
(3) Introduce landing zone while performing touch and go landings.
(4) Maintain safe altitude and pattern management to include proper glide slope and heading control on final.

Performance Standard

(1) Airspeed: +/- 8 KIAS of assigned airspeed
(2) Range: ≤ 1.2 km
(3) Altitude: +/- 100' of assigned altitude
(4) Heading: +/- 5 degrees on final
(5) Bank Angles: ≤ 30 degrees
(6) Zone: +/- 100'

Prerequisite. FAM-103.

T&G-111   1.0   A   R   (1) UAS   CREW POSITION   EP

Goal. Practice local landing pattern procedures and introduce full stop landing.

Requirement

(1) Introduce techniques involved with controllability procedures.
(2) Introduce steering technique to maintain centerline control within 5 feet on the roll out.
(3) Introduce and practice crosswind landing procedures.
(4) Maintain headings and runway centerline with the correct glide slope and airspeeds required for touch and go landings.
(5) Understand communication procedures involved with full stop landings.

Performance Standard

(1) Airspeed: +/- 10 KIAS of assigned airspeed
(2) Range: $\leq$ 1.2 km
(3) Altitude: +/- 100' of assigned altitude
(4) Heading: +/- 5 degrees
(5) Bank Angles: $\leq$ 30 degrees
(6) Zone: +/- 50'

Prerequisite. T&G-110.

T&G-112   1.0   A   R   (1) UAS   CREW POSITION   EP

Goal. Practice local landing pattern procedures with full stop landing.

Requirement

(1) Maintain headings and runway centerline with the correct glide slope and airspeeds required for touch and go landings.
(2) Execute a full stop landing.

Performance Standard

(1) Airspeed: +/- 5 KIAS of assigned airspeed
(2) Range: $\leq$ 1.2 km
(3) Altitude: +/- 50' of assigned altitude
(4) Heading: +/- 2 degrees
(5) Bank Angles: $\leq$ 30 degrees
(6) Zone: +/- 25'

Prerequisite. T&G-111.

T&G-113   1.0   A   R   (1) UAS   CREW POSITION   EP

Goal. Practice local landing pattern procedures and introduce rolling takeoff.

Requirement

(1) Introduce a rolling takeoff.
(2) Maintain centerline of runway during launch.
(3) Maintain headings and runway centerline with the correct glide slope and airspeeds required for touch and go landings.
(4) Practice a full stop landing.

Performance Standard

(1) Airspeed: +/- 8 KIAS of assigned airspeed
(2) Range: ≤ 1.2 km
(3) Altitude: +/- 50' of assigned altitude
(4) Heading: +/- 5 degrees
(5) Bank Angles: ≤ 30 degrees
(6) Zone: +/- 10'

Prerequisite. T&G-112.

T&G-114   1.0   A   (1) UAS   CREW POSITION   EP

Goal. Practice local landing pattern procedures, crosswind control and introduce slip techniques.

Requirement

(1) Demonstrate a slip.
(2) Understand indicated airspeed relationship while performing a slip.
(3) Understand rate of descent relationship while slipping.
(4) Maintain proper runway tracking while slipping.
(5) Abort the slip at 100' altitude on final.

Performance Standard

(1) Airspeed: +/- 8 KIAS of assigned airspeed
(2) Range: ≤ 1.2 km
(3) Altitude: +/- 50' of assigned altitude
(4) Heading: +/- 2 degrees
(5) Bank Angles: ≤ 30 degrees
(6) Zone: +/- 25'

Prerequisite. T&G-113.

T&G-115   1.0   A   (1) UAS   CREW POSITION   EP

Goal. Practice local landing pattern procedures, crosswind control, and slips.

Requirement

(1) Maintain centerline of runway with the correct glide slope and airspeeds while performing the takeoff, touch and go landings, and the full stop landing.
(2) Maintain proper runway tracking while slipping.
(3) Abort the slip at 50' altitude on final.

Performance Standard

(1) Airspeed: +/- 8 KIAS of assigned airspeed
(2) Range: ≤ 1.2 km
(3) Altitude: +/- 50' of assigned altitude
(4) Heading: +/- 2 degrees
(5) Bank Angles: ≤ 30 degrees

(6) Zone: +/- 10'

Prerequisite. T&G-114.

T&G-116   1.0   A   R   (1) UAS   CREW POSITION   EP

Goal. Practice local landing pattern procedures.

Requirement

(1) Maintain centerline of runway during launch.
(2) Maintain correct glide slopes and airspeeds required to perform touch and go's and a full stop landing.
(3) Maintain proper runway tracking while slipping.
(4) Abort the slip at 50' altitude on final.

Performance Standard

(1) Airspeed: +/- 8 KIAS of assigned airspeed
(2) Range: $\leq$ 1.2 km
(3) Altitude: +/- 50' of assigned altitude
(4) Heading: +/- 2 degrees
(5) Bank Angles: $\leq$ 30 degrees
(6) Zone: +/- 10'

Prerequisite. T&G-115.

T&G-117   1.0   A   R,E   (1) UAS   CREW POSITION   EP

Goal. Evaluate local landing pattern procedures.

Requirement. Perform a local flight, from brief to debrief.

Performance Standard

(1) Airspeed: +/- 8 KIAS of assigned airspeed
(2) Range: $\leq$ 1.2 km
(3) Altitude: +/- 50' of assigned altitude
(4) Heading: +/- 2 degrees
(5) Bank Angles: $\leq$ 30 degrees
(6) Zone: +/- 10'

Prerequisite. T&G-116.

NAV-120   1.0   A   (1) UAS   CREW POSITION   EP

Goal. Introduce range flight mission procedures.

Requirement. Introduce procedures and crew coordination involved with a range flight mission.

Performance Standard

(1) Airspeed: +/- 10 KIAS of assigned airspeed
(2) Range: $\leq$ 1.2 km
(3) Altitude: +/- 100' of assigned altitude
(4) Heading: +/- 5 degrees

(5) Bank Angles: < 30 degrees
(6) Zone: +/- 10'

Prerequisite. T&G-112.

NAV-121   1.0   A   R   (1) UAS   CREW POSITION   EP

Goal. Practice range flight mission procedures.

Requirement. Practice range flight mission procedures.

Performance Standard

(1) Airspeed: +/- 10 KIAS of assigned airspeed
(2) Range: < 1.2 km
(3) Altitude: +/- 100' of assigned altitude
(4) Heading: +/- 5 degrees
(5) Bank Angles: < 30 degrees
(6) Zone: +/- 10'

Prerequisite. NAV-120.

NAV-122   0.5   A   R,E   (1) UAS   CREW POSITION   EP

Goal. Evaluate range flight mission procedures.

Requirement. Perform a range flight from brief to debrief.

Performance Standard

(1) Airspeed: +/- 10 KIAS of assigned airspeed
(2) Range: < 1.2 km
(3) Altitude: +/- 100' of assigned altitude
(4) Heading: +/- 5 degrees
(5) Bank Angles: < 30 degrees
(6) Zone: +/- 10'

Prerequisite. NAV-120.

EMG-130   1.0   A   R   (1) UAS   CREW POSITION   EP

Goal. Demonstrate/introduce simulated emergency procedures.

Requirement

(1) Become familiar with safety precautions and unit SOP with
    performing simulated emergency procedures in the EP position.
(2) Recite and execute from memory the immediate action procedures
    for each simulated emergency.
(3) Introduce crew coordination and headwork involved with simulated
    emergency procedures.

Performance Standard

(1) Airspeed: +/- 10 KIAS of assigned airspeed
(2) Range: < 1.2 km
(3) Altitude: +/- 100' of assigned altitude

    (4) Heading: +/- 5 degrees
    (5) Bank Angles: ≤ 30 degrees
    (6) Zone: +/- 10'

<u>Prerequisite</u>. T&G-117, pass a closed book NATOPS exam.

EMG-131 1.0   A   (1) UAS   CREW POSITION   EP

<u>Goal</u>. Practice simulated no report emergency procedures.

<u>Requirement</u>

(1) Recite and execute the immediate action procedures with each simulated emergency.
(2) Recite the safety precautions and unit SOP restrictions involved with each emergency.
(3) Introduce/practice UAV safe recovery procedures with simulated emergency situations.
(4) Practice crew coordination and headwork involved with simulated emergency procedures.

<u>Performance Standard</u>

(1) Airspeed: +/- 10 KIAS of assigned airspeed
(2) Range: ≤ 1.2 km
(3) Altitude: +/- 100' of assigned altitude
(4) Heading: +/- 5 degrees
(5) Bank Angles: ≤ 30 degrees
(6) Zone: +/- 10'

<u>Prerequisite</u>. EMG-130.

EMG-132 1.0   A   (1) UAS   CREW POSITION   EP

<u>Goal</u>. Practice simulated engine failure emergencies.

<u>Requirement</u>

(1) Recite and execute the immediate action procedures with each simulated emergency.
(2) Recite the safety precautions and unit SOP restrictions involved with each emergency.
(3) Practice UAS safe recovery procedures with simulated emergency situations.
(4) Practice crew coordination and headwork involved with simulated emergency procedures.

<u>Performance Standard</u>

(1) Airspeed: +/- 10 KIAS of assigned airspeed
(2) Range: ≤ 1.2 km
(3) Altitude: +/- 100' of assigned altitude
(4) Heading: +/- 5 degrees
(5) Bank Angles: ≤ 30 degrees
(6) Zone: +/- 10'

<u>Prerequisite</u>. EMG-131.

EMG-133   1.0   A   (1) UAS   CREW POSITION   EP

Goal. Practice simulated generator failure and abnormal engine temperature emergencies.

Requirement

(1) Perform immediate action procedures with each simulated emergency.
(2) Perform UAS safe recovery procedures with simulated emergency situations.
(3) Execute sound crew coordination and headwork involved with simulated emergency procedures.

Performance Standard

(1) Airspeed: +/- 10 KIAS of assigned airspeed
(2) Range: $\leq$ 1.2 km
(3) Altitude: +/- 100' of assigned altitude
(4) Heading: +/- 5 degrees
(5) Bank Angles: $\leq$ 30 degrees
(6) Zone: +/- 10'

Prerequisite. EMG-132.

EMG-134   1.0   A   R   (1) UAS   CREW POSITION   EP

Goal. Practice simulated high idle and stuck throttle emergencies.

Requirement. Perform all aspects of simulated emergencies utilizing sound crew coordination and headwork.

Performance Standard

(1) Airspeed: +/- 10 KIAS of assigned airspeed
(2) Range: $\leq$ 1.2 km
(3) Altitude: +/- 100' of assigned altitude
(4) Heading: +/- 5 degrees
(5) Bank Angles: $\leq$ 30 degrees
(6) Zone: +/- 10'

Prerequisite. EMG-133.

EMG-135   1.0   A   R,E   (1) UAS   CREW POSITION   EP

Goal. Evaluate simulated emergencies procedures.

Requirement. Review all aspects of simulated emergencies utilizing sound crew coordination and headwork.

Performance Standard

(1) Airspeed: +/- 10 KIAS of assigned airspeed
(2) Range: $\leq$ 1.2 km
(3) Altitude: +/- 100' of assigned altitude
(4) Heading: +/- 5 degrees

(5) Bank Angles: $\leq$ 30 degrees
(6) Zone: +/- 10'

Prerequisite. EMG-134.

NFO-140   1.0   A   (1) UAS   N   CREW POSITION   EP

Goal. Demonstrate/Introduce night operations.

Requirement. Perform basic pattern work with low approaches and Touch and Go's at night.

Performance Standard

(1) Airspeed: +/- 10 KIAS of assigned airspeed
(2) Range: $\leq$ 1.2 km
(3) Altitude: +/- 100' of assigned altitude
(4) Heading: +/- 10 degrees
(5) Bank Angles: $\leq$ 30 degrees
(6) Zone: +/- 25'

Prerequisite. T&G-117, EMG-130.

NFO-141   1.0   A   (1) UAS   N   CREW POSITION   EP

Goal. Introduce launch and recovery at night.

Requirement. Introduce rolling takeoff and recover the aircraft at night.

Performance Standard

(1) Airspeed: +/- 10 KIAS of assigned airspeed
(2) Range: $\leq$ 1.2 km
(3) Altitude: +/- 50' of assigned altitude
(4) Heading: +/- 5 degrees
(5) Bank Angles: $\leq$ 30 degrees
(6) Zone: +/- 10'

Prerequisite. NFO-140.

NFO-142   1.0   A   R   (1) UAS   N   CREW POSITION   EP

Goal. Practice night flight operations.

Requirement. Practice rolling takeoff, touch and go's and aircraft recovery at night.

Performance Standard

(1) Airspeed: +/- 10 KIAS of assigned airspeed
(2) Range: $\leq$ 1.2 km
(3) Altitude: +/- 50' of assigned altitude
(4) Heading: +/- 5 degrees
(5) Bank Angles: $\leq$ 30 degrees
(6) Zone: +/- 10'

Prerequisite. NFO-141.

SSF-150   1.0   A   R   (1) UAS   CREW POSITION   EP

Goal. Execute a local flight.

Requirement. Perform a local flight IAW NATOPS and unit SOP from brief to de-brief without instruction.

Performance Standard

(1) Airspeed: +/- 10 KIAS of assigned airspeed
(2) Range: $\leq$ 1.2 km
(3) Altitude: +/- 50' of assigned altitude
(4) Heading: +/- 5 degrees
(5) Bank Angles: $\leq$ 30 degrees
(6) Zone: +/- 10'

Prerequisite. EMG-135, T&G-117, NFO-142.

306. CORE SKILL BASIC TRAINING

1. General

a. This phase provides for External Pilots (EPs) to apply skills and knowledge obtained at the Core Skill Introduction (100-level) while assigned to a VMU squadron. Initial individual core skills are learned and mastered using a mix of ground, live, and simulation training. Training progresses incrementally and includes the UAS and the Marine Air Command and Control System (MACCS). This phase culminates with the EP being Naval Air Training and Operating Procedures Standardization (NATOPS) qualified on the Pioneer Unmanned Aircraft System (RQ-2). Upon completion of this phase of training, the EP will be Qualified-in-Model (EPQM).

b. Prerequisite

(1) The external pilot under training must complete the Core Skill Introduction phase of training prior to commencing training in any of the stages in this phase.

(2) To be trained in this portion of the academic and flight syllabus the EP shall have a secret clearance.

c. Refresher Training. Refresher training is required once a Core Skill Basic qualified operator has been absent from a VMU billet assignment for >365 days. Upon return to a VMU billet, the EP will complete 200 level R-coded events in the EP syllabus.

d. Core Skill Basic Stages

(1) Tactical Flight Operations (TFO)
(2) Night Flight Operations (NFO)
(3) Qualification in Model (QM)

2. <u>Tactical Flight Operations (TFO)</u>

   a. <u>Purpose</u>. To develop proficiency and experience in tactical UAS system operation and to emphasize the importance of crew resource management, common terminology, and familiarization with local SOPs.

   b. <u>Administrative Notes</u>. All events will be proctored by an external pilot instructor. Flight evolutions will be conducted on the student box with external pilot instructor.

   c. <u>Ground Training</u>. 3 events, 3.0 hours.

   d. <u>Flight Training</u>. 3 flights, 3.0 hours.

TFO-260   1.0   R   NA   (N)   CREW POSITION   EP

   <u>Goal</u>. Introduce the area of operation, unit SOP, local course rules and regulations.

   <u>Requirement</u>. Complete the annual course rules exam and squadron SOP exam.

   <u>Performance Standard</u>. Pass an open/closed book written exam with a minimum score of 80%. Instructor EPI.

TFO-261   1.0   R   (1) UAS   (N)   CREW POSITION   EP

   <u>Goal</u>. Review the UAS, crew coordination and system pre-flight/post-flight requirements.

   <u>Requirement</u>. Review/discuss all components of the system, crew coordination, pre-flight of the UAS, all system components and individual responsibilities, RATO/Pneumatic Launch procedures, and post flight procedures.

   <u>Performance Standard</u>. During a practical application, IAW NATOPS and unit SOP, EPUI will conduct all pre and post flight procedures.

   <u>Prerequisite</u>. TFO-260. Instructor EPI.

TFO-262   1.0   A   R   (1) UAS   CREW POSITION   EP

   <u>Goal</u>. Introduce the area of operation, area regulations, and local procedures.

   <u>Requirement</u>

   (1) Introduce the local area of operation.
   (2) Review local rules and regulations.
   (3) Conduct UAV taxi, launch, conduct control checks, dish lock and recovery.

   <u>Performance Standard</u>. IAW NATOPS, the EP must complete a minimum of three Touch and Go's, one successful dish lock and one recovery.

   <u>Prerequisite</u>. TFO-260, TFO-261. Instructor EPI.

TFO-263 1.0   A   R   (1) UAS   CREW POSITION   EP

    Goal. Conduct simulated emergency procedures.

    Requirement

    (1) While operating the Pioneer UAS, conduct simulated emergency procedures.
    (2) Review and demonstrate auto-pilot disengage procedures prior to the student conducting them.

    Performance Standard. The EP will, IAW NATOPS, during simulated emergencies, conduct simulated emergency procedures for engine cut, high idle, stuck throttle and flight control malfunctions. Instructor EPI.

    Prerequisite. TFO-262

3. Night Flight Operations (NFO)

    a. Purpose. To develop proficiency and experience in UAS night operations.

    b. Administrative Notes. Stipulations of the Aviation T&R Program Manual, chapter 4 titled Fixed Wing Rules of Conduct for Night Operations concerning manned aviation do not apply to UAS operations.

    c. Ground Training. 1 Event, 1.0 Hour. Ground training events for this stage can be executed in conjunction with the flight event(s). However, the completion of each ground training event prior to its corresponding flight is mandatory.

NFO-264 1.0   R   NA   (N)   CREW POSITION   EP

    Goal. Introduce UAS night operations.

    Requirement

    (1) Introduce requirements associated with the lighting of the runway and the UAV and launch/recovery site.
    (2) Review and discuss specific emergency procedures that may change during night operations, night operating and safety procedures and area rules and regulations for night UAV operations.

    Performance Standard. Pass an exam with a minimum score of 80%. Instructor EPI.

    Prerequisite. TFO-261.

NFO-265 1.0   A   R   (1) UAS N   CREW POSITION   EP

    Goal. Conduct UAS night operations.

Requirement

(1) Conduct UAS night operations:
    (a) Pre-flight procedures
    (b) Launch procedures
    (c) Control checks
    (d) Flight pattern management
    (e) Dish lock and recovery using night operating procedures.
(2) Conduct emergency procedures during simulated emergencies.

Performance Standard. IAW NATOPS. Instructor EPI.

(1) Complete a launch and five Touch and Go's and recovery.
(2) During simulated emergencies, conduct:
    (a) Correct emergency procedures for engine cut.
    (b) High idle.
    (c) Stuck throttle.
    (d) Flight control malfunctions.

Prerequisite. NFO-264, TFO-263.

4. External Pilot Qualification in Model (EPQM)

    a. Purpose. To certify the External Pilot Under Instruction (EPUI) as an External Pilot Qualified in Model (EPQM).

    b. Prerequisite. The Core Skill Basic phase of training must be completed prior to training in events in this stage.

    c. Administrative Note

        (1) The OPNAVINST 3710.7 - NATOPS will be used as the reference for events in this stage. Ensure standards, procedures, and requirements of the NATOPS Manual are complied with.

        (2) At the completion of EPQM-260 the operator is considered EPQM and may be designated as an EPQM by the commanding officer.

    d. Flight Training. 1 flight, 1.5 hours.

EPQM-299 1.5 A   R,E   (1) UAS (N)   CREW POSITION   EP

    Goal. Certify as an External Pilot.

    Requirement. While conducting a local flight, perform the following:

(1) Pre-flight.
(2) Launch.
(3) Flight pattern management.
(4) Control checks.
(5) Dish lock.
(6) Minimum of 5 Touch and Go's.
(7) Simulated emergency procedures.
(8) Recovery.

Performance Standard. Conduct local flight IAW NATOPS Manual with 100% accuracy. Instructor EPI.

Prerequisite. TFO-260, TFO-261, TFO-262, TFO-263, NFO-264, NFO-265.

307. CORE SKILL ADVANCED TRAINING

1. General

a. This phase progresses the external pilot through the remaining core skills required to be fully qualified on the UAS system. EPs develop proficiency and experience in the tactical employment of the UAS. It introduces functions and capabilities a VMU brings to the MAGTF commander, in specific short field operations and UAS RATO Launch operations.

b. Prerequisite. Must complete the Core Skill Basic phase of training prior to commencing training in any of the stages in this phase.,

c. Administrative Note. This phase will produce core competent leaders and crewmembers. Personnel trained in this phase are those a commanding officer feels are capable of directing the actions of subordinates during wartime scenarios.

d. Refresher Training. Refresher training is required once a Core Skill Advanced qualified operator has been absent from a VMU billet assignment for >365 days. Upon return to a VMU billet, the EP will complete R-coded events in the 300 level.

e. Core Skill Basic Stage. Short Field Operations (SFO)

2. Short Field Operations (SFO)

a. Purpose. To introduce, develop proficiency and experience in the UAS RATO and pneumatic launch operations.

b. Ground Training. 1 event, 0.5 hour.

c. Flight Training. 1 flight, 0.5 hour.

SFO-360 1.0   R   (1) UAS   (N)   CREW POSITION   EP

Goal. Introduce the EP to RATO launch.

Requirement. Discuss RATO launch safety procedures (ground and in-flight), RATO pre-flight procedures, launch sequence, and emergency procedures.

Performance Standard. Pass an exam with a minimum score of 80%. Instructor EPI.

Prerequisite. EPQM-299.

SFO-361 1.0   A   R   (1) UAS   CREW POSITION   EP

Goal. Conduct a RATO launch while occupying the EP position.

Requirement

(1) Prior to conducting the RATO launch, review RATO safety procedures, pre-flight procedures, launch sequence and emergency procedures.

(2) Conduct all RATO pre-flight, and launch events.
(3) Execute emergency procedures for simulated RATO emergencies.

Performance Standard. Successfully conduct, on the student box, all RATO events with 100% accuracy IAW NATOPS. Instructor EPI.

Prerequisite. SFO-360.

Ordnance. One MK125 MOD1 Rocket Motor or equivalent.

SFO-362 1.0   R   CREW POSITION   EP

Goal. Introduce the EP to pneumatic launch.

Requirement. Introduce and discuss pneumatic launcher safety procedures, pneumatic launcher pre-flight procedures, safety considerations, launch sequence of events and related emergency procedures.

Performance Standard. Pass an exam with a minimum score of 80%. Instructor EPI.

Prerequisite. EPQM-299.

SFO-363 1.0   A   R   (1) UAS   (N)   CREW POSITION   EP

Goal. Conduct a pneumatic launch while occupying the EP position.

Requirement

(1) Prior to conducting the pneumatic launch, review pneumatic launch safety procedures, pre-flight procedures, launch sequence and emergency procedures.
(2) Conduct all pneumatic launch pre-flight, launch events
(3) Execute emergency procedures for simulated pneumatic launcher emergencies.

Performance Standard. Successfully conduct, on the student box, all pneumatic events with 100% accuracy IAW NATOPS. Instructor EPI.

Perquisite. SFO-362.

3. NBC OPERATIONS (NBC)

   a. Purpose. To develop proficiency and experience in operating the UAS during NBC conditions.

   b. Flight Training. 1 events, 1.0 hours.

NBC-365 1.0 A/S   R   (1) UAS   (N)   CREW POSITION   EP

Goal. Perform EP function while in an NBC environment.

Requirement

(1) Demonstrate ability to perform EP responsibilities in a simulated NBC environment.
(2) Demonstrate crew resource management while wearing NBC protective equipment.

Performance Standard. Instructor EPI.

(1) Perform EP responsibilities IAW NATOPS in MOPP level 4.
(2) Demonstrate the ability to effectively communicate with the crew and perform the function of a EP while in MOPP level 4.

Prerequisite. EPQM-299.

308. CORE PLUS TRAINING

1. General

    a. This phase of training is reserved for large scale integrated missions and/or events having unique mission tasks supporting core plus skill. Personnel that complete this phase are capable of the most demanding combat tasks. In some cases, higher echelon supervisory position training and designations may be reflected where the development of a separate T&R syllabus is not practical or warranted. These personnel are the most experienced personnel within a unit. They are expected to display the maturity and tactical/operational skill commensurate with this status on a daily basis.

    b. Prerequisite. EPQM-299.

    c. Administrative Note. This phase will produce core competent leaders. Personnel trained in this phase are those a commanding officer feels are capable of directing the actions of crewmembers during wartime scenarios.

    d. Refresher Training. Refresher training is required once a Core Skill Plus qualified operator has been absent from a VMU billet assignment for more than 365 days. Upon return to a VMU billet, the EO will complete the 400 level R-coded events in the EP syllabus.

2. Short Field Operations (SFO)

    a. Purpose. To introduce the EP to advanced UAS operations, to include short field landings.

    b. Ground Training. 1 event, 1.0 hour. This event must be completed prior to execution of the related flight events.

    c. Flight Training. 1 flight, 1.0 hour.

SFO-460 1.0   R   CREW POSITION   EP

    Goal. Introduce the EP to Short Field Landings.

    Requirement. Introduce Short Field Landings. Discussion should emphasize confined locations where preferred runway dimensions are not available.

    Performance Standard. Pass an exam with a minimum score of 80%. Instructor EPI.

    Prerequisite. EPQM-299.

SFO-461   1.0   A   R   (1) UAS   (N)   CREW POSITION   EP

<u>Goal</u>. Conduct a Short Field Landing (SFL) while occupying the EP position.

<u>Requirement</u>. Conduct Short Field Landings with actual or simulated arresting gear.

<u>Performance Standard</u>. IAW NATOPS, conduct one short field landing with 100% accuracy. Instructor EPI.

<u>Prerequisite</u>. SFO-460.

309. <u>INSTRUCTOR TRAINING</u>

1. <u>Purpose</u>. To develop standardized training for External Pilots (EPs) with the ability to teach skills requisite for certification as an instructor for the External Pilot position. This phase progresses the EP towards qualification as an external pilot instructor and towards designation as an EPI, NATOPS evaluator (NE), NATOPS Instructor (NI), or Assistant NATOPS Instructor (ANI). Upon completion, the EP may be considered for NI, NE, or ANI designations by the commanding officer.

2. <u>Prerequisite</u>

    a. Complete the Core Skill Advanced phase of training. The commanding officer may waive training requirements; refer to the Aviation T&R Program Manual for further guidance.

    b. Be nominated by the squadron standardization board with concurrence from the commanding officer.

    c. Instructors must maintain a proficient status in the area in which they are certified to instruct.

3. <u>External Pilot Instructor Under Training (EPIUT)</u>

EPIUT-560   1.0   R   CREW POSITION   EPIUT

<u>Goal</u>. Introduce instruction techniques and review instructor responsibilities.

<u>Requirement</u>

(1) Introduce/discuss instruction techniques
(2) Introduce/discuss instructor duties.
(3) Discuss training references, to include:
    (a) NATOPS
    (b) Aviation T&R Program Manual
    (c) Local/unit SOPs
(4) Introduce Aviation T&R Program policy and requirements.
(5) Review training documentation requirements.
(6) Fully understand all system components and their functions.
(7) Instruction will cover all administrative duties, NATOPS requirements, CRM training and readiness record keeping, and evaluation documentation.

Performance Standard. Pass a verbal exam with 80% accuracy.
Instructor EPI.

EPIUT-561   2.0   A   R   (1) UAS   CREW POSITION   EPIUT

Goal. Conduct instruction during TFO-263.

Requirement

(1) Conduct TFO-263 instruction during flight events.
(2) Evaluate EP's performance and correct deficiencies.
(3) Complete an ATF on EPUI.

Performance Standard. Instructor EPI.

(1) Conduct a period of instruction.
(2) Identify and evaluate student performance.
(3) Correct deficiencies in a timely manner.
(4) Document EPUI training on the ATF.

Prerequisite. EPIUT-560.

EPIUT-562   1.0   A   R   (1) UAS   N   CREW POSITION   EPIUT

Goal. Conduct instruction during TFO-265.

Requirement

(1) Conduct instruction during TFO-265.
(2) Evaluate EPUI performance and correct deficiencies.
(3) Complete an ATF on EPUI.

Performance Standard. Instructor EPI.

(1) Conduct a period of instruction.
(2) Identify and evaluate student performance.
(3) Correct deficiencies in a timely manner.
(4) Document EPUI training on the ATF.

Prerequisite. EPIUT-561.

EPIUT-563   1.0   A   R   (1) UAS   (N)   CREW POSITION   EPIUT

Goal. Conduct instruction during SFO-361 or SFO-363.

Requirement

(1) Conduct instruction during flight training for SFO-361 or SFO-363.
(2) Evaluate student performance and correct deficiencies.
(3) Complete an ATF on EPUI.

Performance Standard. Instructor EPI.

(1) Conduct a period of instruction.
(2) Identify and evaluate student performance.
(3) Correct deficiencies in a timely manner.
(4) Document EPUI training on the ATF.

Prerequisite. EPIUT-561.

EPIUT-564 1.0 A   R   (1) UAS   (N)   CREW POSITION   EPIUT

Goal. Conduct instruction during SFO-461.

Requirement

(1) Conduct instruction during flight training for event SFO-461.
(2) Evaluate EPUI performance and correct deficiencies.
(3) Complete an ATF on EPUI.

Performance Standard. Instructor. EPI.

(1) Conduct a period of instruction.
(2) Identify and evaluate EPUI performance.
(3) Correct deficiencies in a timely manner.
(4) Document EPUI training on the ATF.

Prerequisite. EPIUT-561.

EPIUT-599 1.0 A   R,E   (1) UAS   (N)   CREW POSITION   EPIUT

Goal. Certify as an External Pilot Instructor (EPI).

Requirement. Evaluate a qualified EP while conducting a mock EPQM-299 flight.

Performance Standard. Evaluate flight IAW NATOPS. Upon successful completion of this event, the EPIUT may be designated as an EPI by the commanding officer. Instructor EPI.

Prerequisite. EPIUT-560, EPIUT-561, EPIUT-562, EPIUT-563, and EPIUT-564.

310. REQUIREMENTS, QUALIFICATIONS AND DESIGNATIONS

1. General

    a. This phase contains tracking codes and events designed to facilitate training management. This level also provides community standardization for combat leadership designation. CRP is not awarded for 600 level events.

    b. Once the event to attain the qualification/designation is complete, a letter from the commanding officer (CO) awarding the qualification/designation shall be placed in the NATOPS and the individual performance records (APR/MPR) before that qualification/designation can be utilized.

    c. Once the IUT is designated in writing by the CO, training personnel shall log the events with their respective tracking codes.

2. External Pilot Qualification.

QUAL-670
        Goal. Tracking code for External Pilot (EP) qualification

        Prerequisite. EPQM-299.

3. External Pilot Designations

DESG-660

Goal. Tracking code for External Pilot (EP) qualification.

Prerequisite. EPQM-299; be recommended by the squadron standardization board and designated by the commanding officer.

DESG-661

Goal. Tracking code for External Pilot Instructor (EPI) designation.

Prerequisite. EPQM-299 and EPIUT-599; be recommended by the squadron standardization board and designated by the commanding officer.

DESG-662

Goal. Tracking code for NATOPS Evaluator (NE) designation.

Prerequisite. EPQM-299, EPIUT-599; Model Manager's Standardization board recommendation (per NATOPS) and commanding officer approval.

DESG-663

Goal. Tracking code for NATOPS Instructor (NI) designation.

Prerequisite. EPQM-299 and EPIUT-599; Standardization Board recommendation (per NATOPS) and commanding officer approval.

DESG-664

Goal. Tracking code for Assistant NATOPS Instructor (ANI).

Prerequisite. EPQM-299 and EPIUT-599; Standardization Board recommendation (per NATOPS) and commanding officer approval.

DESG-665

Goal. Tracking code for Functional Check Pilot (FCP) designation.

Prerequisite. EPQM-299, recommended by the squadron standardization board (per NATOS) and CO designated.

3. NATOPS Evaluation

a. Purpose. To ensure operators are evaluated annually per standards, procedures and requirements of the NATOPS Manual.

b. Prerequisites

(1) Written examinations must be completed prior to the flight event and current within 30 days.

(2) The NATOPS Manual will be used as the reference for these events.

(3) At the completion of each NATOPS event, the operator will have met the initial/ annual requirement in respective crew position.

(4) The Initial NATOPS qualification is received at the entry-level school. Subsequent NATOPS checks shall be conducted by the VMU per NATOPS.

c. <u>Refresher Training</u>. Refresher training is required once a qualified operator has been absent from a VMU billet assignment for >365 days.

d. <u>Flight Training</u>. 1 flight, 2.0 hours.

<u>RQD-699</u> 2.0   A   R,E   (1) UAS   (N)   CREW POSITION   EP

 <u>Goal</u>. Annual NATOPS position evaluation.

 <u>Requirement</u>. Perform as the EP during the conduct of this event. Specific launch/recovery type is not required.

 <u>Performance Standard</u>. All procedures listed in the NATOPS Manual will be conducted to standard. Pass an open/closed book NATOPS exams with an accuracy of 80%. NATOPS Instructor.

 <u>Prerequisite</u>. EPQM-299.

311. <u>EVENT SUMMARY TABLES</u>

STAGE	EVENT CODE	FLGHT HRS	SIM HRS	REGULAR WITHDRAWAL	DEVICE	PREREQ	RQN	EVAL	CRP	CHAINING
MOS: 7316 UAS EXTERNAL PILOT										
100 LEVEL - CORE SKILL INTRODUCTION										
FAM	100	1.0	0.0		A				1.0	
FAM	101	1.0	0.0		A	100			1.0	
FAM	102	1.0	0.0		A	101	R		1.0	
FAM	103	1.0	0.0		A	102	R	E	3.0	
T&G	110	1.0	0.0		A	103			2.0	
T&G	111	1.0	0.0		A	110	R		2.0	
T&G	112	1.0	0.0		A	111	R		2.0	
T&G	113	1.0	0.0		A	112	R		2.0	
T&G	114	1.0	0.0		A	113	R		2.0	
T&G	115	1.0	0.0		A	114	R		2.0	
T&G	116	1.0	0.0		A	115	R		2.0	
T&G	117	1.0	0.0		A	116	R		2.0	
NAV	120	1.0	0.0		A	112			2.0	
NAV	121	1.0	0.0		A	120	R		2.0	
NAV	122	0.5	0.0		A	120	R	E	4.0	
EMG	130	1.0	0.0		A	117			2.0	
EMG	131	1.0	0.0		A	130			2.0	
EMG	132	1.0	0.0		A	131			2.0	
EMG	133	1.0	0.0		A	132			2.0	
EMG	134	1.0	0.0		A	133	R		2.0	
EMG	135	1.0	0.0		A	134	R	E	4.0	
NFO	140	1.0	0.0		A	117 130			3.0	
NFO	141	1.0	0.0		A	140			3.0	
NFO	142	1.0	0.0		A	141	R		3.0	
SSF	150	1.0	0.0		A	135 117	R		5.0	
Phase Totals		24.5	0.0						60.0	CRP

STAGE	TRNG CODE	FLT HRS	SIM HRS	RREDY INTERVAL	DEVICE	PREREQ	POI	EVAL	CRP	CHAINING
						MOS: 7316 UAS EXTERNAL PILOT				
						200 LEVEL - CORE SKILL BASIC				
TFO	260	1.0	0.0	1095		CS Intro Complete	R		1.5	
TFO	261	1.0	0.0	1095		260			1.5	
TFO	262	1.0	0.0	1095	A	261			2.0	261
TFO	263	1.0	0.0	1095	A	262	R		2.0	262
TFO	264	1.0	0.0	1095		261			2.5	261
TFO	265	1.0	0.0	1095	A	263, 264	R		2.5	263, 264
EPQM	299	1.5	0	1095	A	260,261 262,263 264,265	R	E	3.0	260,261,262,263 (+264,265 IF NIGHT)
Phase Totals		7.5	0						15.0	CRP

STAGE	TRNG CODE	FLT HRS	SIM HRS	RREDY INTERVAL	DEVICE	PREREQ	POI	EVAL	CRP	CHAINING
						MOS: 7316 UAS EXTERNAL PILOT				
						300 LEVEL - CORE SKILL ADVANCED				
SFO	360	0.0	0	1095		299	R		4.0	
SFO	361	1.0	0	1095	A	360	R		4.0	360
SFO	362	0.0	0	1095		299	R		4.0	
SFO	363	1.0	0	1095	A	362	R		4.0	362
NBC	365	1.0	0	1095	A/S	299	R		4.0	
Phase Totals		3.0	0						20.0	CRP

STAGE	TRNG CODE	FLT HRS	SIM HRS	REFLY INTERVAL	DEVICE	PREREQ	POI	EVAL	GRP	CHAINING
MOS: 7316 UAS EXTERNAL PILOT										
400 LEVEL - CORE SKILL PLUS										
SFO	460	0.0	0	1095		299	R		2.5	
SFO	461	1.0	0	1095	A	460	R		2.5	460
Phase Totals		1.0	0						5.0	GRP

312. <u>EVENT CONVERSION MATRIX</u>. Appendix A provides an event conversion matrix for all events in this External Pilot (EP) syllabus as they correspond to the previous EP syllabus that this chapter replaced.

A-1

APPENDIX A

UAS EVENT CONVERSION MATRIX

UAS EVENT CONVERSION MATRIX

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UAS EVENT CONVERSION MATRIX

7314 EVENT CONVERSION MATRIX

NEW EVENT	GOAL	OLD VOL 6 EVENT	REMARKS
FAM-101	Demonstrate local operations and flight procedures.	FAM-100	RENUMBERED
FAM-102	Introduce local operations and flight procedures.	FAM-101	RENUMBERED
FAM-103	Practice local operations and flight procedures.	FAM-102	RENUMBERED
FAM-104	Practice local operations and flight procedures.	FAM-103	RENUMBERED
		FAM-104	REMOVED
FAM-105	Evaluate student on local operations and flight procedures.	FAM-105	RE-WORDED
		FAM-106	REMOVED
FAM-106	Demonstrate/Introduce dishlock, climb, and descent procedures.	FAM-107	RENUMBERED
FAM-107	Practice dishlock, climb, and descent procedures.	FAM-108	RENUMBERED
FAM-108	Practice dishlock, departure/climb, and RTB/descent procedures.	FAM-109	RENUMBERED
FAM-109	Evaluate dishlock, departure/climb, and RTB/descent procedures, withou assistance from the instructor.	FAM-110	RENUMBERED
NAV-111	Introduce basic fundamentals of range navigation.	NAV-120	RENUMBERED
NAV-112	Practice basic fundamentals of range navigation and payload operations with the focus on full knobs mode.	N/A	NEW
		NAV-121	REMOVED
		NAV-122	REMOVED
		NAV-123	REMOVED
NAV-113	Introduce basic fundamentals of range navigation with focus on mixed mode/sticks procedures and practice payload procedures.	NAV-124	RENUMBERED
NAV-114	Practice basic fundamentals of range navigation with focus on PDMS failure procedures.	N/A	NEW
NAV-115	Practice basic fundamentals of range navigationwith focus on programmer control mode.	PRG-130	RENUMBERED
NAV-116	Practice point to point navigation, orbiting procedures (in all flight modes), camera guide, programmer, and payload operating procedures proficiency.	NAV-125	RENUMBERED
		NAV-126	REMOVED
NAV-117	Evaluate point to point navigation, orbiting procedures (in all flight modes), camera guide, programmer, and payload operating procedures proficiency.	NAV-127	RENUMBERED
		PRG-131	REMOVED
		PRG-132	REMOVED
EMG-121	Introduce engine emergencies.	EMG-140	RENUMBERED
EMG-122	Introduce communications emergencies and practice engine emergencies.	EMG-142	RENUMBERED
EMG-123	Introduce electrical emergencies and practice engine and communications emergencies.	EMG-141	RENUMBERED
EMG-124	Introduce flight control emergencies, engine, communications, and electrical emergencies.	EMG-143	RENUMBERED

		EMG-144	REMOVED
		EMG-145	REMOVED
		EMG-146	REMOVED
		EMG-147	REMOVED
		EMG-148	REMOVED
EMG-125	Practice emergency procedures	EMG-149	RENUMBERED
EMG-126	Evaluate performance of emergency procedures.	EMG-150	RENUMBERED
		RQD-600	REMOVED
TFO-220	Introduce the area of operation, unit SOPs, local course rule, and regulations.	FAM-200	RENUMBERED
TFO-221	Introduce the UAS, crew resource management, pre-flight/presets, post-flight, and emergency procedures.	FAM-201	RE-WORDED
TFO-222	Introduce mission planning.	FAM-202	RE-WORDED
TFO-223	Introduce local flight procedures.	FAM-203	RE-WORDED
TFO-224	Introduce range flight operations.	FAM-204	RENUMBERED
TFO-225	Conduct local flight area procedures.	FAM-205	RENUMBERED
TFO-226	Conduct payload operation during a range flight.	FAM-206	RENUMBERED
TFO-227	Conduct range flight operations.	FAM-207	RENUMBERED
NAV-230	Introduce UAV navigation.	NAV-210	RE-WORDED
NAV-231	Introduce UAV navigation.	NAV-211	RE-WORDED
NAV-232	Introduce UAV navigation.	NAV-212	RE-WORDED
NAV-233	Conduct UAV navigation using knobs and sticks control modes.	NAV-213	RE-WORDED
NAV-234	Conduct a flight utilizing Navigation Programmer Mode.	NAV-214	RE-WORDED
		NAV-220	REMOVED
		NAV-221	REMOVED
POQM-250	Qualify as a Payload Operator.	IOQM-230	RENUMBERED
IPQM-255	Qualify as an Internal Pilot.	IOQM-231	RENUMBERED
TFO-320	Assess current air and ground threat weapons and vehicle recognition.	TREC-300 TREC-301	COMBINED
TFO-321	Execute a tactical mission.	MP-312	RENUMBERED
		MP-310	REMOVED
		MP-311	REMOVED
TFO-322	Introduce flight operations from the PCS.	PCS-330	RENUMBERED
TFO-323	Conduct flight operations from the PCS.	PCS-332	RENUMBERED
TFO-324	Introduce Split Site Operations.	SSO-340	RENUMBERED
TFO-325	Conduct Split Site Operations from the GCS/PCS.	SSO-341 SSO-342	COMBINED
NBC-330	Operate the UAV from the IP or PO position while in a simulated NBC environment.	NBC-350 NBC-351	COMBINED
IOQM-359	Qualify as an Internal Operator	N/A	NEW
TFO-420	Conduct advanced mission planning.	AMP-400 AMP-401	COMBINED
TFO-425	Introduce dual UAV operations.	OPS-410	RENUMBERED
TFO-426	Conduct dual UAV flight operations.	OPS-411	RENUMBERED
TFO-430	Introduce payload operations from the PCS.	N/A	NEW
TFO-431	Conduct payload operations from the PCS.	PCS-331	RENUMBERED
FC-435	Introduce supporting arms control.	SAC-320	RENUMBERED

		SAC-321	REMOVED
FC-436	Conduct call for fire and adjustment of supporting arms utilizing the light pen and/or other methods.	SAC-322	RENUMBERED
IUT-520	Introduce principles of instruction and standardization/ training tools.	IUT-500	RENUMBERED
POIUT-521	Conduct a TFO-221 instruction as a POIUT.	IUT-501	RENUMBERED/ REWORDED
POIUT-522	Conduct instruction during a TFO or NAV flight as a POIUT.	IUT-502	RENUMBERED/ REWORDED
POIUT-523	Conduct instruction on TFO-222.	IUT-503	RENUMBERED/ REWORDED
POIUT-524	Conduct instruction for a TFO-321 flight.	IUT-504'	RENUMBERED/ REWORDED
POIUT-525	Qualify as a Payload Operator Instructor.	IUT-505	RENUMBERED/ REWORDED
		IUT-510	REMOVED
IPIUT-531	Conduct a TFO-221 instruction.	IUT-511	RENUMBERED/ REWORDED
IPIUT-532	Conduct instruction during a TFO-200 series flight event as an IPIUT.	IUT-512	RENUMBERED/ REWORDED
IPIUT-533	Conduct instruction during a NAV flight as an IPIUT.	IUT-513	RENUMBERED
IPIUT-534	Conduct TFO-222 instruction as an IPIUT.	IUT-514	RENUMBERED/ REWORDED
IPIUT-535	Conduct instruction during a TFO-321 flight as an IPIUT.	IUT-515	RENUMBERED/ REWORDED
IPIUT-536	Qualify as an Internal Pilot Instructor (IPI).	IUT-516	RENUMBERED
		IUT-520	REMOVED
		IUT-521	REMOVED
DESG-620	Designate as a Payload Operator Qualified in Model (POQM)	N/A	NEW
DESG-621	Designate as an Internal Pilot Qualified in Model (IPQM)	N/A	NEW
DESG-622	Designate as an Internal Operator Qualified in Model (IOQM)	N/A	NEW
DESG-623	Designate as a Payload Operator Instructor (POI).	N/A	NEW
DESG-624	Designate as an Internal Pilot Instructor (IPI).	N/A	NEW
DESG-626	Designate as an Internal Operator Instructor (IOI).	N/A	NEW
DESG-627	Designate as a NATOPS Instructor (NI).	N/A	NEW
DESG-628	Designate as Assistant NATOPS Instructor (ANI).	N/A	NEW
DESG-629	Designate as NATOPS Evaluator (NE).	N/A	NEW
DESG-630	Designate as Functional Check Flight (FCF) qualified.	N/A	NEW
RQD-659	Annual NATOPS position evaluation.	RQD-600	RENUMBERED
		RQD-601	REMOVED
		FCF-602	REMOVED
		SBO-610	REMOVED
		SBO-611	REMOVED
		SBO-612	REMOVED

7315 EVENT CONVERSION MATRIX

NEW EVENT	GOAL	OLD VOL 6 EVENT	REMARKS
FAM-100	Introduce the Mission Commander (MC) to a flight mission.	FAM-100 FAM-101	COMBINED/ REWORDED
NAV-101	Introduce a range flight mission.	NAV-110	RENUMBERED/ REWORDED
NAV-102	Practice a range flight mission.	NAV-111	RENUMBERED/ REWORDED
EMG-103	Introduce emergency procedures.	EMG-120	RENUMBERED/ REWORDED
EMG-104	Perform emergency procedures for ground emergencies, launch and recovery emergencies, and in-flight emergencies.	EMG-121	RENUMBERED/ REWORDED
TFO-200	Introduce area of operation, squadron SOPs, local course rules and regulations.	FAM-200	RENUMBERED/ REWORDED
TFO-201	Introduce the UAS, crew coordination and pre-flight and post-flight procedures.	FAM-201	RENUMBERED/ REWORDED
TFO-202	Introduce the local flight pattern.	FAM-202	RENUMBERED/ REWORDED
TFO-203	Introduce range flight operations.	FAM-203	RENUMBERED/ REWORDED
TFO-204	Introduce in-flight emergency procedures.	FAM-204	RENUMBERED/ REWORDED
TFO-205	Introduce mission planning, briefing, and debriefing.	FAM-205	RENUMBERED/ REWORDED
NAV-210	Introduce the MC to UAV navigation.	NAV-210	RENUMBERED/ REWORDED
NAV-211	Conduct UAV navigation.	NAV-211	RENUMBERED/ REWORDED
NFO-215	Introduce the MC to UAV night operations.	NITE-220	RENUMBERED/ REWORDED
NFO-216	Conduct UAV night operations.	NITE-221	RENUMBERED/ REWORDED
MCQM-219	Qualify as a Mission Commander.	MCQM-230	RENUMBERED/ REWORDED
TFO-300	Assess current air and ground threat weapons and vehicle recognition.	TREC-300 TREC-301	COMBINED/ RENUMBERED/ REWORDED
TFO-301	In a threat scenario, conduct pre-flight, tactical mission planning, briefing, execution, and debriefing.	MP-310	RENUMBERED/ REWORDED
TFO-302	Conduct advanced tactical mission planning.	MP-311	RENUMBERED/ REWORDED
TFO-303	Conduct advanced tactical mission planning, briefing, execution, and debriefing.	MP-312	RENUMBERED/ REWORDED
TFO-304	Introduce split site operations.	SSO-330	RENUMBERED/ REWORDED
TFO-305	Conduct split site operations.	SSO-331	RENUMBERED/ REWORDED
FC-306	Introduce observation of fires, fire suppport coordination and supporting arms control.	SAC-320	RENUMBERED/ REWORDED

FC-307	Conduct call for fire and adjustment of indirect fire.	SAC-321/-322	COMBINED/ RENUMBERED/ REWORDED
NBC-308	Perform MC function while in an NBC environment.	NBC-340	RENUMBERED/ REWORDED
TFO-400	Introduce dual UAV operations.	OPS-400	RENUMBERED
TFO-401	Conduct dual UAV flight operations.	OPS-401	RENUMBERED
MCIUT-500	Introduce principles of instruction and standardization/training tools.	IUT-500	RENUMBERED/ REWORDED
MCIUT-501	Conduct TFO-201 instruction.	IUT-501	RENUMBERED/ REWORDED
MCIUT-502	Conduct instruction during a mission commander TFO flight event.	IUT-502	RENUMBERED/ REWORDED
MCIUT-503	Conduct instruction during a NAV flight.	IUT-503	RENUMBERED/ REWORDED
MCIUT-504	Conduct instruction during a TFO-302 event.	IUT-504	RENUMBERED/ REWORDED
MCIUT-505	Conduct instruction during a TFO-303 flight.	IUT-505	RENUMBERED/ REWORDED
MCIUT-506	Conduct instruction during a FC-306 event.	IUT-506	RENUMBERED/ REWORDED
MCIUT-507	Conduct instruction during a FC-307 event.	IUT-507	RENUMBERED/ REWORDED
MCIUT-508	Qualify as a Mission Commander Instructor (MCI).	IUT-508	RENUMBERED/ REWORDED
DESG-600	Designate as a Mission Commander.	N/A	NEW
DESG-601	Designate as a Mission Commander Instructor (MCI).	N/A	NEW
DESG-602	Designate as a NATOPS Instructor (NI).	N/A	NEW
DESG-603	Designate as an Assistant NATOPS Instructor (ANI).	N/A	NEW
DESG-604	Designate as NATOPS Evaluator (NE).	RQD-601	RENUMBERED
DESG-605	Designate as Functional Check Pilot (FCP).	N/A	NEW
RQD-619	Annual NATOPS MC Evaluation.	RQD-600	RENUMBERED
		FCF-602	REMOVED

NEW EVENT	GOAL	OLD VOL 6 EVENT	REMARKS
FAM-100	Introduce the Pocket checklist, preflight of aircraft, flight controls and flight characteristics of RQ-2.	FAM-100	REWORDED
		FAM-101	REMOVED
		FAM-102	REMOVED
FAM-101	Demonstrate/Introduce the local flight pattern.	N/A	NEW
FAM-102	Practice local flight pattern procedures.	N/A	NEW
FAM-103	Evaluate local flight pattern.	N/A	NEW
T&G-110	Demonstrate/Introduce local landing pattern.	T&G-110	REWORDED
		T&G-111	REMOVED
		T&G-112	REMOVED
		T&G-113	REMOVED
		T&G-114	REMOVED
		T&G-115	REMOVED
		T&G-116	REMOVED
T&G-111	Practice local landing pattern procedures and introduce full stop landing.	N/A	NEW
T&G-112	Practice local landing pattern procedures with full stop landing.	N/A	NEW
T&G-113	Practice local landing pattern procedures and introduce rolling takeoff.	N/A	NEW
T&G-114	Practice local landing pattern procedures, crosswind control and slips.	N/A	NEW
T&G-115	Practice local landing pattern procedures, crosswind control, and slips.	N/A	NEW
T&G-116	Practice local landing pattern procedures.	N/A	NEW
T&G-117	Evaluate local landing pattern procedures.	N/A	NEW
NAV-120	Introduce range flight mission procedures.	NAV-120	REWORDED
NAV-121	Practice range flight mission procedures.	N/A	NEW
NAV-122	Evaluate range flight mission procedures.	N/A	NEW
		TOC-130	REMOVED
EMG-130	Demonstrate/Introduce simulated emergency procedures.	EMG-140	RENUMBERED/ REWORDED
EMG-131	Practice simulated no report procedures.	EMG-141	RENUMBERED/ REWORDED
EMG-132	Practice simulated engine failure emergencies.	EMG-142	RENUMBERED/ REWORDED
		EMG-143	REMOVED
		EMG-144	REMOVED
		EMG-145	REMOVED

		EMG-146	REMOVED
		EMG-147	REMOVED
		EMG-148	REMOVED
		EMG-149	REMOVED
EMG-133	Practice simulated generator failure and abnormal engine temperature emergencies.	N/A	NEW
EMG-134	Practice simulated high idle and stuck throttle emergencies.	N/A	NEW
EMG-135	Evaluate simulated emergencies procedures.	N/A	NEW
NFO-140	Demonstrate/Introduce night operations.	NTO-150	RENUMBERED/ REWORDED
NFO-141	Introduce launch and recovery at night.	NTO-151	RENUMBERED/ REWORDED
NFO-142	Practice night flight operations.	NTO-152	RENUMBERED/ REWORDED
SSF-150	Execute a local flight.	SSF-160	RENUMBERED/ REWORDED
TFO-260	Introduce the area of operation, unit SOP, local course rules and regulations.	FAM-200	RENUMBERED/ REWORDED
TFO-261	Review the UAV system, crew coordination and system pre-flight/post-flight requirements.	FAM-201	RENUMBERED/ REWORDED
		FAM-202	REMOVED
		FAM-203	REMOVED
TFO-262	Introduce the area of operation, area regulations, and local procedures.	FAM-204	RENUMBERED/ REWORDED
TFO-263	Conduct simulated emergency procedures.	FAM-205	RENUMBERED/ REWORDED
TFO-264	Introduce UAV night operations.	FAM-206	RENUMBERED/ REWORDED
TFO-265	Introduce UAV night operations.	FAM-207	RENUMBERED/ REWORDED
EPQM-299	Qualify as External Pilot.	EOQM-210	RENUMBERED/ REWORDED
SFO-360	Introduce the EP to RATO launch.	RATO-300	RENUMBERED/ REWORDED
SFO-361	Conduct a RATO launch while occupying the EP position.	RATO-301	RENUMBERED/ REWORDED
SFO-362	Introduce the EP to pneumatic launch.	PL-310	RENUMBERED/ REWORDED
SFO-363	Conduct a pneumatic launch while occupying the EP position.	PL-311	RENUMBERED/ REWORDED
NBC-365	Perform EP function while in an NBC environment.	NBC-330	RENUMBERED/ REWORDED
SFO-460	Introduce the EP to Short Field Landings.	SFL-320	RENUMBERED/ REWORDED
SFO-461	Conduct a Short Field Landing (SFL) while occupying the EP position.	SFL-321	RENUMBERED/ REWORDED

EPI-560	Introduce instruction techniques and review instructor responsibilities.	IUT-500	RENUMBERED
EPI-561	Conduct instruction during TFO-263.	IUT-501	RENUMBERED/ REWORDED
EPI-562	Conduct instruction during TFO-265.	IUT-502	RENUMBERED/ REWORDED
EPI-563	Conduct instruction during SFO-361 or SFO-363.	IUT-503	RENUMBERED/ REWORDED
EPI-564	Conduct instruction during SFO-461.	IUT-504	RENUMBERED/ REWORDED
EPI-599	Qualify as an External Pilot Instructor (EPI).	N/A	NEW
DESG-660	Designate as an External Pilot Qualified in Model (EPQM).	N/A	NEW
DESG-661	Designate as an External Pilot Instructor (EPI)	N/A	NEW
DESG-662	Designate as NATOPS Evaluator (NE).	N/A	NEW
DESG-663	Designate as a NATOPS Instructor (NI).	N/A	NEW
DESG-664	Designate as an Assistant NATOPS Instructor (ANI).	N/A	NEW
DESG-665	Designate on Functional Check Flight (FCF).	N/A	NEW
RQD-699	Annual NATOPS position evaluation.	RQD-600	RENUMBERED
		RQD-601	REMOVED
		FCF-602	REMOVED
		SBO-610	REMOVED
		SBO-611	REMOVED