From: Commandant of the Marine Corps
To: Distribution List

Subj: GROUP 1 UNMANNED AIRCRAFT SYSTEMS TRAINING AND READINESS MANUAL

Ref: (a) NAVMC 3500.14C

Encl: (1) Group 1 UAS T&R Manual

1. Purpose. In accordance with reference (a), this Training and Readiness Manual contained in enclosure (1), contains revised standards and regulations regarding the training of Group 1 Unmanned Aircraft System (UAS) operators.

2. Cancellation. NAVMC 3500.107

3. Scope. Highlights of major Training and Readiness planning considerations included in this Group 1 UAS Training and Readiness Manual are as follows:

   a. Additional information on the Navy Training and Logistics Support Activity that conducts training for all Group 1 UAS platforms in the Marine Corps including locations and scheduling.

   b. Deleted Program of Instruction (POI) for the WASP III Small Unmanned Aircraft System, as it has been removed from the inventory.

   c. Added new POIs for the RQ-12A and RQ-20A platforms, and an All Environment (AE) POI. The AE POI is tailored to train units in both RQ-12A and RQ-20A platforms in one course.

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.
4. **Information.** Recommended changes to this Manual should be submitted via the syllabus sponsor and the appropriate chain of command to: Commanding General (CG), Training and Education Command (TECOM), Marine Air Ground Task Force Training and Education (MTESD) (C 465), Aviation Standards Branch, using standard Naval correspondence or the Automated Message Handling System plain language address: CG TECOM MTESD.

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

6. **Certification.** Reviewed and approved this date.

[Signature]

T. M. MURRAY

**DISTRIBUTION:** PCN 10031982900
# CHAPTER 1

**GROUP 1 UNMANNED AIRCRAFT SYSTEMS (UAS) TRAINING AND READINESS**

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CHAPTER 1
GROUP 1 UNMANNED AIRCRAFT SYSTEMS (UAS)
TRAINING AND READINESS

100. INTRODUCTION.

1. Training Marines to perform as a cohesive unit in combat lies at the heart of the T&R program. Unit readiness and individual readiness are directly related; individual proficiency serves as the building block for unit combat readiness. The Training and Readiness (T&R) Program is the Corps’ primary tool for planning, conducting and evaluating training, and assessing readiness. This syllabus is mandated for all personnel assigned to operate, instruct, evaluate, or manage small unmanned aircraft systems.

2. This T&R Manual contains the minimum individual training standards required for a Marine to initially attain and maintain currency in Group 1 Unmanned Aircraft Systems (UAS) operations. It is a fundamental planning tool for commanders to construct and execute an effective training plan that builds and maintains unmanned aircraft systems personnel readiness to support the unit mission.

3. CJCSI 3255.01, Joint Unmanned Aircraft Systems Minimum Training Standards (JUMTS), defines UAS groups, with small unmanned aircraft systems classified as Group 1 UAS. Per CJCSI 3255.01, a Group 1 UAS weighs 20 pounds or less. It normally operates Visual Flight Rules (VFR) in Class E, G, and Restricted or Uncontrolled airspace below 1200’ above ground level (AGL) at speeds less than 100 knots.

   Note: For the purpose of this T&R Manual, from here forward Group 1 UAS will be referred to as Small Unmanned Aircraft System (SUAS).

101. T&R SUPPORT.

1. Training and Logistics Support Activity (TALSA).

   a. Background. Since the approval of the USMC’s Small Unit Remote Scouting System (SURSS) ORD dated 9 Aug 2004, SUASs like the RQ-11B DDL, RQ-12A WASP IV, and RQ-20A PUMA AE were added to the inventory to meet emerging operational requirements. This growth has resulted in a significant increase in total training requirements. Initially, training for these systems was contracted through various sources but as identified during numerous UAS Operational Advisory Groups (OAGs), this approach proved to be costly and unresponsive to meeting warfighter training needs. In order to support the Marine Expeditionary Forces (MEFs) and Marine Corps Special Operations Command (MARSOC) in a more responsive manner, Navy and Marine Corps Small Tactical Unmanned Aircraft Systems (PMA-263) consolidated all SUAS training requirements at two Training and Logistics Support Activity (TALSA) locations that provide centralized, flexible new equipment and sustainment training for all SUAS systems to ensure training requirements for MEF, MARSOC, and the Reserves are met. The TALSA are located aboard Marine Corps Bases Camp Lejeune, NC and Camp Pendleton, CA.
b. **Locations**

(1) **TALSA East**
- Address: East N Street Bldg 510, Camp Lejeune, NC 28542
- Phone Numbers: 910-450-8098/9903
- Email: PMA263TALSAEast@eri-engineering.com

(2) **TALSA West**
- Address: Bldg 13144, 14th Street, Camp Pendleton, CA 92055
- Phone Numbers: 760-725-4565/4575
- Email: PMA263TALSAWest@eri-engineering.com

(3) **Field Service Representative (FSR).** FSRs support MEF requirements and are capable of providing limited training for RQ-11B DDL (RAVEN) and RQ-20A (PUMA AE), and logistics support. FSRs may be established by the Navy and Marine Corp Small Tactical Unmanned Aircraft Systems (PMA-263) at the request of the Operating Forces. Information on FSR locations and capabilities can be obtained from the TALSA sites or email, PMA-263TALSAFSR@eri-engineering.com.

(4) **Mobile Training Teams (MTTs).** Although instructors are located at fixed TALSA sites, SUAS courses can be conducted using Mobile Training Teams (MTTs) anywhere required training resources are available.

c. **Services.** TALSAs are centralized locations that offer scheduling and execution entry-level SUAS courses that provide initial qualification training (IQT) for SUASs currently in use by the Marine Corps and MARSOC. Each TALSA is capable of assisting units with: SUAS logistics and maintenance support, SUAS currency requirements in this T&R Manual, advising personnel on SUAS integration (mission planning and employment), and providing subject matter expertise at various venues when requested.

d. **SUAS Initial Qualification Training (IQT) Courses.** IQT courses focus primarily on the basic operation of a SUASs. The TALSA offers standardized IQT that meet USMC and Joint training requirements and ensure students are trained to operate SUASs during contingencies and combat operations. Graduates of these courses are certified as SUAS-Operators (SUAS-Os) for the system instructed in. The SUAS IQT courses offered by the TALSA are:

(1) RQ-11B DDL Course.

(2) RQ-12A Course.

(3) RQ-20A Course.

(4) **All Environment Course.** The RQ-20A and RQ-12A platforms are operationally identical in nature once airborne and thus lend themselves to combined training for Special Operations units operating both types of air vehicles. This course is currently restricted to special operations personnel.

(5) **SUAS Accelerated Courses.** This course is restricted to designated Naval Aviators and UAS air vehicle operators. Their in-depth training satisfies portions of the program of instruction for IQT courses; therefore, an abridged course for
each SUAS was developed to certify them as SUAS-Os in compliance with this T&R Manual.

e. Other SUAS Training. The TALSA offers other courses and seminars to assist units to meet and maintain T&R requirements, to include:

(1) SUAS-PM Seminar. This seminar reviews T&R requirements and provides guidance on how to establish and maintain a unit SUAS Program.

(2) SUAS-Instructor and Evaluator Courses. The SUAS-Instructor course provides instruction to experienced SUAS Operators on how to conduct the duties of an unit SUAS-Instructor. SUAS Evaluator course provides instruction to experienced SUAS Operators or SUAS Instructors on how to conduct the duties of a SUAS Evaluator and assist the unit SUAS-Program Manager. These courses may be conducted separately or combined.

f. Course Scheduling. Units requiring IQT should contact the nearest TALSA to schedule a course. When training is conducted at a TALSA facility, classroom and flight training resources necessary to conduct IQT are normally provided. However, units must be prepared provide training resources the TALSA is unable to provide. These resources may include frequencies, training areas, airspace, classroom, vehicles and personnel to meet local range requirements. When the TALSA supports with an MTT at the requesting unit location, that unit must ensure necessary training resources are made available for the duration of the course to ensure the course can be conducted in its entirety.

2. Syllabus Sponsor. A syllabus sponsor is a unit that coordinates T&R changes on behalf of the SUAS community in coordination with Aviation Standards Branch (ASB). The Syllabus Sponsor shall maintain close liaison with the respective SUAS user community representatives. CG TECOM has assigned syllabus sponsorship for this T&R Manual to MARSOC per NAVMC 3500.14C, chapter 5. The syllabus sponsor may be contacted via e-mail at MARSOC.UAS@SOCOM.MIL.

3. T&R Documents. Unless otherwise noted, supporting and required documents referred to in this T&R Manual can be found at the respective SharePoint websites as noted below


   b. Marine Corps Forces Special Operations Command (MARSOC). Instructions for application of and amplification for the execution of this T&R Manual to support MARSOC SUAS training are contained in the MARSOC Order 3500.1_. Supporting documentation for the implementation of this T&R Manual is contained on the MARSOC SharePoint, https://eis.usmc.mil/sites/marsoc/default.aspx. MARSOC SUAS personnel may contact the MARSOC SUAS-Program Manager (SUAS-PM) for assistance in accessing this site.

   c. The syllabus sponsor, in coordination with ASB, will ensure the content located on the websites noted above is maintained current.
102. EXPLANATION OF SPECIFIC TERMS. The concept of word usage and intended meaning that has been adhered to in preparing this T&R Manual is as follows:

1. “Shall” is used only when application of a procedure is mandatory.

2. “Should” is used only when application of a procedure is recommended.

3. “May” and “need not” is used only when application of a procedure is optional.

103. SAFETY. Conducting SUAS operations in a safe manner is the responsibility of all personnel from operators through unit commanding officers. Conducting operations in a safe manner ensures the preservation of a critical war fighting capability through the prevention of SUAS related mishaps, injuries or fatalities. Unit commanding officers shall ensure the unit establishes SUAS safety procedures that address preventive and emergency procedures. SUAS personnel shall be aware of the unique operational challenges and shall adhere to all safety requirements.

104. OPERATIONAL RISK MANAGEMENT (ORM).

1. The fundamental goal of risk management is to enhance operational capabilities and mission accomplishment. Identification and assessment of hazards and their associated risks, implementing controls, and supervising operations are all critical steps to safely execute any SUAS mission. Commanders shall integrate ORM fundamentals into the planning and execution process of SUAS operations to the maximum extent practicable. The risk management process begins at mission planning and continues until the SUAS mission is complete. The process is applied with the goal of eliminating hazards where possible and reducing residual risks to acceptable levels.

2. Air Vehicle Recovery. While not disposable, SUAS air vehicles are designed to be expendable in support of operations. If an air vehicle is lost during training every reasonable effort should be made to recover it. If an unmanned air vehicle is lost during combat operations a recovery may be attempted if it is tactically prudent and the environment is permissive enough to execute a recovery without undue risk to personnel. Specific requirements for recovering downed unmanned air vehicles may be addressed by theater or higher headquarters directives. A loss of an unmanned air vehicle during training or combat shall be properly documented according to command policy.

3. Falcon Tracker / Tracking Beacon Use. Use of an external radio tracking beacon device for SUAS training flights is strongly recommended (required for MARSOC units) in order to maximize the chance of recovering a downed air vehicle. These devices are not designed for, but are not prohibited from operational use.
105. OPERATIONAL AWARENESS. External factors like weather, emergency situations, changing environments, etc., are unpredictable by nature and require proper mission planning, detailed mission briefings, and adherence to checklists, procedures and established standards will minimize their impact on SUAS operations and personnel. Unlike manned systems, SUASs are unable to provide operators with sufficient peripheral visual, auditory, and tactical cueing. This sensory deprivation requires the SUAS operator to exercise greater vigilance and maintain a high level of situational awareness.

106. LOSS OF LINK (LOL). If a LOL condition occurs and cannot be re-established according to SUAS Emergency Procedures (EP), contact the controlling agency immediately per Naval Air Training and Operating Procedures Standardization (NATOPS), OPNAVINST 3710.7U, chapter 14.5, and local procedures.

107. REPORTING REQUIREMENTS.

1. Reporting and recording of incidents, deviations and violations of flying regulations and mishap information shall be made using the SUAS Incident/Mishap Report Form. See paragraph 101.3 of this chapter for the location of a SUAS Incident/Mishap Report Form. To facilitate mishap reporting, all SUAS flights should be recorded using the ground control station’s recording capability. Recordings and binary (BIN) files should be preserved following an incident or mishap to assist with reviews or investigations. Although there is no requirement to maintain recordings, it is highly encouraged as they can also be used as training aids. Instructions for downloading BIN files can be found in the applicable SUAS operator’s manual.

2. Unit commanders or unit delegated representatives, shall maintain a monthly summary of SUAS flight operations and monthly SUAS rosters to record training activities per OPNAVINST 3710.7U, chapter 14.10. A Local Unit Monthly SUAS Summary Report shall be approved by the unit commander and retained locally in a binder labeled “Local Unit SUAS Reports” that shall be maintained by the unit SUAS-PM. A Monthly SUAS Status Report shall be submitted via SUAS-PM chain of command to the applicable Marine Expeditionary Force (MEF)/MARSOC/Marine Forces Reserve (MARFORRES) SUAS-PM who will consolidate these reports and forward them to the NAVAIR/PMA-263 Group 1 UAS organizational email box at pma263_groupluas@navy.mil. See paragraph 101.3 of this chapter for the location of the sample letters and forms for these reports and the SUAS Monthly Reports Flowchart that guides how the monthly report is managed and submitted to the MEF/MARFORRES/MARSOC SUAS-PM.

108. MEDICAL STATUS AND REQUIREMENTS. In addition to the Aeromedical requirements for SUAS Operators (SUAS-Os) delineated in OPNAVINST 3710.7U, paragraph 14.8, SUAS-Os must not be on a light or limited duty status and shall meet the Class III standards for visual acuity, color vision and depth perception as defined per the MANMED (Article 15-85). Verification of SUAS-O medical qualification shall be documented through written verification of medical qualification from a surgeon. See paragraph 101.3 for location of the Verification of Medical Qualification sample letter. A summary of Class III Medical requirements is as follows:
1. **Visual Acuity, Distant and Near.** Must correct to 20/20 or better each eye. If the AFVT or Goodlite letters are used, a score of 7/10 on the 20/20 line constitutes meeting visual acuity requirements. Must have color vision ability to perceive those colors necessary for safe performance of operator duties.

2. **Hearing.** Demonstrate hearing of an average conversational voice in a quiet room, using both ears at six feet, with the back turned to the examiner or pass an audiometric test. Audiology – Audiometric speech discrimination test, pure tone audiometric test, unaided, with thresholds no worse than: (for the worst ear) 35Db at 500Hz, 50Db at 1,000Hz, 50Db at 2,000Hz, 60Db at 3,000Hz.

3. **Ear, Nose and Throat.** No ear, nose or throat disease or condition that may reasonably be expected to be manifested by vertigo or a disturbance of speech or equilibrium.

4. **Blood Pressure.** While no specific values have been stated in the standards, 155/95 (systolic/diastolic) have been the maximum allowed.

5. **Electro-Cardiogram.** Not normally required.

6. **Mental.** No diagnosis of psychosis, bipolar disorder, or any other severe personality disorder.

109. **JOINT UNMANNED AIRCRAFT SYSTEMS MINIMUM TRAINING STANDARDS (JUMTS)** (CJCSI 3255.01). The purpose of JUMTS is to identify the minimum knowledge required for unmanned aircraft system operators to support joint force commander (JFC) objectives.

1. **Basic UAS Qualification Level 1 (BUQ-1).** There are four levels of BUQ training. SUAS-Os are required only to achieve BUQ-1. BUQ-1 was developed to give the SUAS-O the required aviation and SUAS knowledge-based skills to fly Visual Flight Rules (VFR) in Class E and G, and restricted/combat airspace <1200’ above ground level (AGL).

2. **Joint Mission Qualification A (JMQ-A).** There are three JMQ levels. SUAS-Os are required only to achieve JMQ-A. JMQ-A provides general knowledge of the SUAS mission. This is critical to ensure SUAS-Os understand their role in accomplishing a larger joint military objective.

3. This T&R Manual complies with BUQ-I and JMQ-A requirements.

110. **NATO STANDARDIZED AGREEMENT (STANAG) 4670.** The STANAG 4670, dated 28 April 2009, is a ratified NATO Standardization Agreement that provides recommended guidance for the training of designated unmanned aerial vehicle operators. The aim of this agreement is to establish a broad set of training guidelines and to define the skills required of UAS operators. This T&R Manual complies with STANAG 4670 requirements.
111. AIRSPACE AND FREQUENCY COORDINATION.

1. SUAS personnel and planners shall utilize local procedures to coordinate and deconflict the use of airspace. SUAS operations are normally conducted in Special Use Airspace (SUA) (Warning and Restricted areas) but can also be conducted in the National Airspace under a Certificate of Authorization (COA) or Class G notification.

2. It is the responsibility of planners and SUAS-Os to coordinate the use of frequencies required to conduct SUAS operations. Frequency approval occurs at the local level and requires submission through the unit S-6/G-6. There may be long lead times to coordinate and finalize a frequency plan, therefore, it is recommended frequency requests be submitted in sufficient time to receive approval prior to SUAS operations. Refer to the applicable operator’s manual for the frequency range of a specific SUAS.

3. SUAS operations shall remain within the boundaries of the scheduled / assigned airspace and maintain radio contact with the controlling agency (i.e., Range Control). If operations spill out of the assigned airspace or an emergency occurs where the air vehicle does not return to the designated return home point, contact the controlling agency immediately. If a mission deviates from the planned schedule, notify the airspace controlling agency.

4. Personnel engaged in the operation of a SUAS shall comply with Federal Aviation Regulations (FAR), International Civil Aviation Organization (ICAO) regulations, Host country regulations, laws and rules, military regulations, DOD Flight Information Publications (e.g., General Planning Guides, Area Planning Guides), published airspace control policy, and SUAS operator’s manuals, checklists and standard operating procedures, as applicable.

112. Unit SUAS Allowance. A unit’s Table of Equipment (T/E) defines its allowance for a particular type of SUAS. Unit SUAS-PMs should coordinate with their unit S-4s to determine the status of their SUAS equipment. SUAS equipment data is noted at Table 1-1.

Table 1-1. SUAS Equipment Data.

<table>
<thead>
<tr>
<th>SUAS Type</th>
<th>NSN</th>
<th>TAMCN</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ-11B (RAVEN) DDL</td>
<td>1550-01-578-0205</td>
<td>A0321</td>
</tr>
<tr>
<td>RQ-12A (WASP IV)</td>
<td>Not Yet Assigned</td>
<td>A03987G</td>
</tr>
<tr>
<td>RQ-20A (PUMA AE)</td>
<td>1550-01-585-1596</td>
<td>SFA54¹</td>
</tr>
</tbody>
</table>

Note 1: SF TAMCNs are for MARSOC only. USMC has not yet assigned a TAMCN to this item.

113. SYSTEM MANNING REQUIREMENTS. SUASs shall be manned as noted in Table 1-2 below. In certain circumstances when a commander deems it necessary, systems may be manned with one designated SUAS-O and one Untrained Assistant (as defined by applicable SUAS Operator’s Manual) during operations. Untrained Assistants shall not be used during event training or evaluations unless the T&R Manual specifically directs their use.
Table 1-2. Minimum Manning Requirements.

<table>
<thead>
<tr>
<th>SUAS Type</th>
<th>System Min Manning</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ-11B DDL (RAVEN)</td>
<td>2</td>
</tr>
<tr>
<td>RQ-12A (WASP AE)</td>
<td>1</td>
</tr>
<tr>
<td>RQ-20A (PUMA AE)</td>
<td>2</td>
</tr>
</tbody>
</table>

114. SUAS MISSION CAPABLE STATUS. The SUAS must be full or partial mission capable per Table 1-3 for training. For Table 1-3, the following definitions apply:

1. **Full Mission Capable (FMC)**. All baseline components are present and functional. Entire System is FMC if the quantity in the subsystem column in Table 1-3 is all present and functional. A FMC example is an RQ-11B DDL with three functional air vehicles, one functional GCS, three functional EO payloads, and three functional IR payloads.

2. **Partial Mission Capable (PMC)**. Some baseline components are either missing or not functional, but system is capable of completing a full mission profile. Entire System is PMC if the quantity of each subsystem column in Table 1-3 is less than FMC, but greater than or equal to the PMC column. A PMC example is an RQ-12A with one functional air vehicle, one functional ground control station (GCS), two functional electro optical (EO) payloads and one functional infrared (IR) payload.

3. **Non-Mission Capable (NMC)**. Critical baseline components are missing or non-functional, rendering the system incapable of completing a full mission profile. Entire System is NMC if functional quantity of each subsystem is less than the PMC column. A NMC example is an RQ-11B DDL with three functional air vehicles, one functional GCS, three functional IR payloads, but no functional EO payloads.

Table 1-3. Mission Capable Requirements.

<table>
<thead>
<tr>
<th>Subsystem</th>
<th>Asset Name</th>
<th>Baseline Qty</th>
<th>FMC Qty</th>
<th>PMC Qty</th>
<th>NMC Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Vehicle</td>
<td>Fuselage</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>GCS</td>
<td>GCS and RSTA Laptop</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Payload</td>
<td>Electro-Optical (EO) Day</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Payload</td>
<td>Infrared (IR), Forward Looking</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Payload</td>
<td>IR, Side Looking</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Payload</td>
<td>Gimbaled*</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

* Applies when Gimbaled payload fielded.
115. SIMULATOR TRAINING.

1. Simulators allow operators the opportunity to perform most SUAS tasks without conducting live flights. Simulators are useful for practicing procedures and tactics. Simulation technology provides an effective training capability while reducing resource requirements and costs. The SUAS simulator with Vampire database loaded on the SUAS RSTA laptop shall be used to conduct training and maintain currency per this T&R Manual to the maximum extent possible, excluding SUAS Evaluation flights.

2. Evaluation flights shall be conducted as live flights only. All flights (live or simulator) shall be logged in the SUAS-O Flight Log per paragraph 118.4 of this chapter.

116. SUAS TRAINING PROGRAM ROLES AND RESPONSIBILITIES

1. NATOPS Model Manager. ASB is assigned as the NATOPS Model Manager until such time as an operational unit can be designated. A NATOPS Model Manager administers the NATOPS program for SUAS and is responsible for the currency of all assigned NATOPS publications and SUAS crews; OPNAVINST 3710.7 defines roles and responsibilities.

2. SUAS Program. Commanders are responsible for establishing and maintaining a SUAS training program that includes integral and essential personnel to facilitate the functional and operational aspects of the program. Unit personnel assigned to serve in the billets listed below shall be designated in writing, see paragraph 207 of this T&R Manual for designation requirements. Personnel may be designated for more than one SUAS program billet provided requirements for each are met.

   a. SUAS-Program Manager (SUAS-PM) Requirements for Units without SUAS. Units that do not have SUASs on their Table of Equipment (T/E) but who are assigned subordinate units that do are required to have a staff noncommissioned officer (SNCO) or officer designated as the Unit SUAS-PM; the

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### RQ-12A (WASP IV)

<table>
<thead>
<tr>
<th>Sub System</th>
<th>Asset Name</th>
<th>Baseline Qty</th>
<th>FMC Qty</th>
<th>PMC Qty</th>
<th>NMC Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Vehicle</td>
<td>Fuselage</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>GCS</td>
<td>GCS and RSTA Laptop</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Payload</td>
<td>Gimbaled EO/IR</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

### RQ-20A (PUMA AE)

<table>
<thead>
<tr>
<th>Sub System</th>
<th>Asset Name</th>
<th>Baseline Qty</th>
<th>FMC Qty</th>
<th>PMC Qty</th>
<th>NMC Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Vehicle</td>
<td>Fuselage</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>GCS</td>
<td>GCS and RSTA Laptop</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Payload</td>
<td>Gimbaled EO/IR</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
individual should be assigned for a minimum of 12 months. The SUAS-PM shall attend a formal SUAS-PM seminar offered through a PMA-263 Group 1 UAS TALSA within 90 days of being designated as a unit SUAS-PM. Responsibilities shall include:

(1) Oversee the administration of the overall SUAS Program and ensure all subordinate commands' SUAS training programs are standardized

(2) Assist subordinate commands in the administration of their unit programs to ensure all deploying unit SUAS operators, instructors, and evaluators (SUAS-O/I/Es) are properly trained, current and designated.

(3) Conduct a SUAS staff assist visit (SAV) to each subordinate unit to determine effectiveness of programs, compliance with governing directives, and efficiency of resource expenditures. Brief the unit commanding officer of the assessment results and provide recommendations as needed. See paragraph 101.3 of this chapter for the location of the SUAS Training Program Assessment Checklist. See paragraph 117.17 for more details on SAVs.

(4) Ensure incidents, deviations and violations of flying regulations and mishap information are reported per OPNAVINST 3710.7, chapter 3.11 and command directives using the SUAS Incident/Mishap Report, review the reports as needed. See paragraph 101.3 for the location of the SUAS Incident/Mishap Report Form.

(5) In coordination with subordinate units and the SUAS syllabus sponsor, develop standard operating procedures (SOP) to support the unit’s local area SUAS activities. Review lessons learned and like documents and submit recommended changes to the SOP as needed.

(6) Assist the unit commanding officer in preparing Monthly SUAS reports for submission, as applicable.

b. **SUAS-Program Manager (SUAS-PM) Requirements for Units with SUAS.**

Units that have SUASs on their T/E shall designate a staff noncommissioned officer (SNCO) or officer as the Unit SUAS-PM, the individual should be a SUAS-O. The SUAS-PM shall attend a formal SUAS-PM seminar offered through a PMA-263 Group 1 UAS TALSA within 90 days of being designated as a unit SUAS-PM. Responsibilities shall include:

(1) Identify personnel requiring SUAS training and schedule SUAS Initial Qualification Training (IQT) and other courses through the a PMA-263 Group 1 UAS Training and Logistics Support Activity (TALSA), see paragraph 101.1; courses offered by the TALSA meet requirements as set forth in this T&R Manual.

(2) Administer the unit SUAS Training Program, to include Individual Training Records (ITRs), Marine Corps Training Information Management System (MCTIMS), flight logs, and other required documentation.

(3) Assist the commanding officer with the accountability and maintenance status of SUAS equipment.

(4) Monitor and track currency training and designation of all unit SUAS-O/I/Es.
(5) Ensure the unit is identifying SUAS pre-deployment training requirements and integrating them into mission planning.

(6) Assist the unit commanding officer in preparing Monthly SUAS reports for submission.

(7) Notify SUAS-O/I/Es of their training status to include lapse in currency and schedule them for training. Ensure they are allotted adequate training time, especially prior to deployments.

(8) Identify SUAS personnel who are failing to maintain designation standards and make recommendations concerning revocation to the unit commanding officer. Administratively process any SUAS-O/I/E for revocation, when directed by the unit commanding officer.

(9) Support the collection and reporting of operational lessons learned and submit recommended changes to the unit SUAS-PM as needed.

c. SUAS-Operator (SUAS-O). A SUAS-O is a certified individual, designated by the commanding officer to operate SUASs in accordance with paragraphs 203 and 207 of this T&R Manual. A SUAS-O may be certified and designated in more than one SUAS simultaneously. Responsibilities shall include:

(1) Ensure airspace and frequency usage is approved prior to operating a SUAS.

(2) Report incidents, mishaps, and SUAS losses to the Unit SUAS-PM immediately upon occurrence using the SUAS Incident/Mishap Report Form, and provide a copy of the BIN file(s) and video log(s) if flight was recorded.

(3) Provide the Unit SUAS-PM with a copy of the BUQ-I and applicable course completion certificates.

(4) Maintain system and operator logbooks and provide copies to Unit SUAS-PM on a monthly basis for inclusion into the ITRs.

(5) Maintain own individual currency and evaluation requirements to maintain SUAS-O designation(s). Notify the Unit SUAS-PM if recertification training is required.

d. SUAS-Instructor (SUAS-I). Units that have SUAS systems on their T/E shall designate at least one E-4 or above as a SUAS-I in accordance with paragraph 205 and 207 of this T&R Manual. The SUAS-I shall be highly experienced as a SUAS-O. Responsibilities shall include:

(1) Train SUAS-Os on currency and mission qualification training (MQT) events for SUAS(s) in which designated to instruct.

(2) Conduct refresh training for SUAS-Os who have fallen out of currency.

Note: SUAS-Is/Es/PMs are prohibited from conducting IQT for the purpose of certifying personnel as first time SUAS-Os in any SUAS. Only formally trained IQT instructors (known as IQT-Is) are certified and approved to instruct IQT courses (currently at a TALSA
or a recognized formal learning center) for the purpose of certifying SUAS-Os for the first time or recertifying SUAS-Os who have gone out of currency for greater than 720 days.

(3) Perform the duties of a SUAS-O, as needed.

(4) Maintain own individual currency and evaluation requirements to maintain SUAS-O and SUAS-I designations. Notify the Unit SUAS-PM if refresh or recertification training is required.

(5) Assist the Unit SUAS-PM as needed.

e. Unit SUAS-Evaluator (SUAS-E). Units that have SUASs on their T/E shall designate at least one E-5 or above as a SUAS-E in accordance with paragraphs 206 and 207 of this T&R Manual. SUAS-E shall be highly experienced as a SUAS-I. Responsibilities shall include:

(1) Manage the unit SUAS Evaluation program and serve as the technical advisor on all levels of SUAS standardization within the command.

(2) Conduct SUAS-O/I/Es evaluations on the SUAS(s) in which designated to evaluate.

(3) Train and evaluate unit SUAS-O/I/Es.

(4) Recommend SUAS-I candidates for IUT based on superior operator knowledge, experience and maturity.

(5) Maintain own individual currency and evaluation requirements for SUAS billets in which designated. Notify the Unit SUAS-PM if refresh or recertification training is required. SUAS evaluations may be conducted by an SUAS-E from another command.

(6) Assist the Unit SUAS-PM as needed.

117. TRAINING TERMS AND POLICY. The policies and terms provided below apply specifically to this document and are provided for clarification to eliminate ambiguity.

1. Initial Qualification Training (IQT). The purpose of IQT is to train individuals on entry level operations of SUASs. Marine Corps IQT requirements are listed as 1000 numbered events, per paragraph 203 of this T&R Manual. IQT is conducted by IQT-Is using approved programs of instruction (POI). IQT-Is shall complete approved formal instructor training, meet certification requirements of the formal learning activity, and be very experienced and knowledgeable in SUAS operations, principles of instruction and flight training. SUAS-I are not to be confused with IQT-Is.

2. Mission Qualification Training (MQT). MQT is focused on supporting unit mission requirements using a SUAS. The purpose of MQT is to train SUAS-Os in the employment of assigned SUASs using relevant Tactics, Techniques, and Procedures (TTPs). These TTPs are not taught or emphasized during IQT. Units should complete MQT events necessary to support mission tasks. For a SUAS-O to be considered “full mission ready,” all MQT events may be completed using any applicable SUAS. MQT events are independent of SUAS type. MQT requirements are delineated in paragraph 204 of this T&R Manual.
3. **Prerequisite.** Prerequisites are requirements that shall be completed prior to commencing training in the event or designation for which specified.

4. **Initial.** An event is considered to be “Initial” if the individual has never completed the event before. Events in this T&R Manual coded as “I” are considered Initial. Individuals shall complete all I-coded events for a specific SUAS as delineated in Core Skill Introduction Training in order to become certified in the specific SUAS and eligible for designation. I-coded events are first completed during IQT at a formal training activity.

5. **Multiple Event Logging.** There may be opportunities for SUAS operators to accomplish the requirements for more than one T&R coded event during a single training evolution. Units are encouraged to take advantage of opportunities that allow for multiple event completion. Multiple event logging is permitted if the requirement and performance standard for each event are accomplished, to include the minimum required flight time for each event.

6. **Designation.**
   
a. A designation is unit specific and remains in effect for the duration of an individual’s tenure in a command unless removed for cause. When transferred to another command, SUAS-O/I/E designations are suspended until the commanding officer of the receiving unit designates the individual in writing. See paragraph 101.3 for location of the SUAS Designation Letter sample.

   b. When an individual completes IQT, that individual is considered to be a certified SUAS-O who is proficient to operate the system in which trained. However, that individual may not serve as a SUAS-O in a unit until designated in writing by the unit commanding officer.

   c. Designations covered by this T&R Manual include SUAS-O/I/E and Unit SUAS-PM. SUAS personnel are designated based on appropriate level of training and currency per this T&R Manual.

7. **Individual Evaluations.** SUAS Evaluations are required for all SUAS-O/I/Es.

   a. Occasions when SUAS-O/I/E shall undergo a SUAS Evaluation:

      (1) **Annually.** Not to exceed 12 months from date of designation or the last SUAS Evaluation, whichever is most recent.

      (2) **Lapse in Currency.** A SUAS-O/I/E fails to maintain currency within 365 days per Table 1-4. If currency lapses beyond 365 days, then events noted in Table 1-4 for the SUAS type shall be completed prior to conducting a SUAS Evaluation.

      (3) **Re-designation.** A SUAS-O/I/E may be re-designated after having had a designation revoked in accordance with paragraph 117.11. Individuals with a revoked designation may regain that designation upon successfully completing a remedial syllabus (see paragraph 117.12) and a SUAS Evaluation, and being recommended by the SUAS-E. The unit commanding officer must approve the recommendation in writing before it can be in effect.
b. The SUAS Evaluation Guide provides the standardized direction and
guidance on how to conduct a SUAS Evaluation. Only a SUAS-E may conduct
these evaluations. See paragraph 101.3 of this chapter for location of the
SUAS Evaluation Guide and SUAS Evaluation Form.

c. When a unit does not have an SUAS-I or SUAS-E, or a unit’s SUAS-I/Es
have fallen out of currency, units shall regain currency by completing
event(s) with SUAS-I/Es from another unit (higher then adjacent). If no
SUAS-I/E is available from a higher or adjacent unit, the TALSA may provide
SUAS-I/E support. Remember that an SUAS-I or SUAS-E can only conduct
training on T&R events for the SUASs in which they are designated and
current. Only a SUAS-E can conduct SUAS evaluations.

d. Evaluation Exams. The Emergency Procedures (EP) study guides and
quizzes, SUAS Evaluation study guides, and written exams shall be maintained
for standardization by the syllabus sponsor. See paragraph 101.3 of this
chapter for location of the EP quizzes and study guides approved by the
syllabus sponsor. Units that require SUAS Evaluation Exams should contact
the syllabus sponsor.

e. Evaluation Process.

   (1) The Unit SUAS-PM and SUAS personnel have joint responsibility to
ensure evaluations are conducted as required. As a rule of thumb, planning
for an evaluation should begin 60 days from the projected evaluation date.
The 60 day window will provide adequate time to obtain required range and
airspace, frequencies and equipment, and to schedule required personnel
(SUAS-E, Range OIC, Range Safety Officer, etc.).

   (2) The Unit SUAS-PM will work with the unit operations/training
section and SUAS-E to coordinate support for the evaluation.

   (3) The SUAS-E should contact the evaluee NLT 24 hours prior to the
event. It is recommended the evaluee be provided a copy of the SUAS
Evaluation Guide. The SUAS Evaluation Guide provides a detailed agenda for
the day of the evaluation which is composed of two closed book assessments -
a SUAS written exam and an emergency procedures (EP) quiz; a mission brief,
an evaluation live flight; and a formal debrief. The SUAS-E shall select any
one of the MQT events with a scenario to conduct an evaluation.

   (4) The evaluee must achieve a minimum grade of 80% on the closed
book exam and 100% on the EP quiz before progressing to the flight portion.

   (5) At the completion of the evaluation, the SUAS-E shall submit the
completed evaluation form, graded written exam and EP quiz to the SUAS-PM.
If the evaluation results in a recommendation for a designation (e.g. SUAS-I,
SUAS-E, or to regain currency), then the SUAS-PM shall route all evaluation
documentation provided with the appropriate designation letter for the unit
commanding officer’s signature.

f. All SUAS Evaluation Forms and written examinations shall be filed in
Part VI of the ITR.

8. Event Training Forms (ETF). ETFs shall be used to document event
training. Every time an event is conducted an ETF shall be completed for
that event, see paragraph 101.3 of this chapter for location of blank ETFs.
ETFs serve to document and track progress as well as to guide the student in correcting deficiencies. Completed ETFs shall be filed in Part V of the ITR, see paragraph 118 in this chapter. The TALSAs will document IQT per their local standard operating procedures and provide each student a course completion certificate to affirm T&R requirements were trained to standard.

9. Currency. Currency is a frequency requirement measured in time between SUAS sorties/flights or training requirements. Currency minimum training requirements are derived from the date of the initial SUAS-O designation, upon regaining currency if that refresh requires a SUAS Evaluation flight (366 - 720 day lapse), or from the last SUAS Evaluation, whichever is most recent. A SUAS-O/I/E maintains currency by achieving the established minimum training and assessment requirements. Failure to maintain currency will result in the SUAS-O/I/E losing authorization to operate, train, or evaluate the system(s) until currency is regained. In cases where a currency lapse exceeds 365 days, designations shall be revoked.

a. SUAS-O Currency Minimums. SUAS-Os shall meet the following currency minimums and those noted in Table 1-4. SUAS-Os who fail to meet currency requirement shall not be authorized to operate the system(s) until currency is regained per Table 1-4.

(1) 365 Days. Within 365 days preceding the date of the SUAS Evaluation, a total of 12 flight events must be completed, of which a minimum of two must be live flights. For systems requiring two SUAS-Os, half of an individual's flights should be as the Vehicle Operator (VO) and half should be as the Mission Operator (MO).

(2) 180 Days. Within 180 days preceding the date of the SUAS Evaluation a total of six flight events are required, of which at a minimum one must be a live flight. For systems requiring two SUAS-Os, half of an individual's flights should be as the VO and half should be as the MO.

(3) 90 Days. Within 90 days preceding the date of the SUAS Evaluation, 1 event is required (live or simulated).

b. Live events logged in conjunction with an annual SUAS Evaluation cannot be counted towards the currency requirements for that evaluation. Events conducted as part of a previous evaluation flight may be applied to currency minimums if that flight occurred within the period specified in Table 1-4. In order to ensure operators retain currency requirements to operate a specific SUAS, a SUAS Evaluation flight shall be conducted “live” within 12 months from the most recent SUAS Evaluation date.

Note: In summary, a total of 13 flight events are required in a twelve month interval. Twelve flight events are for currency, two of which shall be live. The thirteenth event is the SUAS evaluation that shall be conducted live.

c. SUAS-I/Es currency minimums. SUAS-I/Es shall maintain currency on the SUAS in which they will be instructing or evaluating. Currency shall be maintained as noted in Table 1-4.

d. Currency Lapse.
(1) SUAS personnel who fail to meet currency requirements shall not be authorized to operate, or train/evaluate personnel on the system(s) until currency is regained through refresher training per Table 1-4. Refresher requirements are per designation type and based on the duration of currency lapse, see Table 1-4.

(2) In order to regain currency, SUAS personnel shall complete or fly the indicated events under the observation of a designated and current SUAS-I/E, as applicable. An Event Training Form (ETF) for each refresher event shall be completed and filed in Part V of the ITR of the person regaining currency. Evaluation flights shall be flown with a SUAS-E.

Note: Events indicated with device code “L/S” can be flown using the approved simulator as an alternate means of accomplishing the currency flight. If a currency lapse exceeds 365 days, the designation letter shall be revoked. Once currency is regained, a new designation letter signed by the unit commanding officer will be issued.
Table 1-4. Currency Lapse (Durations in Days).

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<th>Duration Of Currency Lapse</th>
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<td>91-180</td>
<td>181-365</td>
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10. **Refresh.** When a SUAS-O/I/E fails to meet minimum training requirements, that individual is no longer authorized to operate SUASs until currency is regained. An individual can regain currency through the refresh process by completing the events specified in Table 1-4 under the supervision of a current SUAS-I/E, as applicable. There is no limit to the number of times an individual can refresh at a unit as long as it is done before the 721st day of currency lapse. If lapse is 721 days or greater, currency cannot be regained until the applicable SUAS IQT Course is completed at a formal training activity.

11. **Designation Revocation.** Unit commanding officers have the discretion to revoke a designation. Personnel removed from the SUAS training program shall be notified with a revocation letter signed by the unit commanding officer and removed immediately by the Unit SUAS-PM. Instances that may lead to removal from a SUAS program are flagrant violations, disregard to procedures, a trend of substandard performance, failure to refresh per Table 1-4. Unit commanding officers must approve revoked individuals for re-entry into the SUAS training program through the approval of a Remedial Syllabus letter. See paragraph 101.3 for location of the SUAS Remedial Syllabus and Revocation Letter samples.

12. **Remedial Syllabus.** A remedial syllabus is a series of training events selected by a SUAS-E and reviewed by the SUAS-PM for the purpose of correcting identified training deficiencies. This syllabus shall be approved in writing by the unit commanding officer and shall include an SUAS evaluation flight. An occasion of when a remedial syllabus would be required is in the case of a reinstatement of an individual to the SUAS Training Program following designation revocation. For example, if an individual's SUAS-O designation was revoked for repeated airspace violations, specific events from the T&R would be selected to retrain the SUAS-O on the use of airspace and on how to maintain the air vehicle within airspace boundaries.

13. **Waiver.** An event or prerequisite is determined, in exceptional circumstances, to be exempt for a SUAS-O/I/E and does not need to be completed. If granted in writing by the commanding officer, the signed waiver is valid only for the event or prerequisite noted in the waiver as it applies to the specific SUAS being trained. Waivers may remain in effect during the current tour of duty. Upon transfer, the joining commander shall review waivers and make a determination upon the validity of previous waivers. If a waiver is validated a new waiver letter shall be issued by the commanding officer and included in Part II of the ITR.
14. **Deferral.** Events may only be deferred when the lack of logistical support or training assets prevents timely event completion. For example, events may be deferred when training resources such as a training area or frequencies are not available for an extended period, or training systems lack the capability listed in the event description. For all deferrals, a letter describing the deferral, explaining the reason for it, and listing the events being deferred must be signed by the commanding officer. Deferrals remain in effect until the training resources become available or current tour of duty ends. Commanders may authorize the conduct of deferred live events using the system simulator.

15. **Deviations.**

   a. CG TECOM is the approval authority for deviations from training policy delineated in this T&R Manual. However, commander, COMMARFORSOC is the approval authority for deviations from training policy for MARSOC.

   b. Requests for T&R policy deviation shall be requested via message to CG TECOM MTESD, through the operational chain of command SUAS Program Manager (SUAS-PM) at the respective MEF/MARFORRES/MARSOC with notification to the syllabus sponsor. See paragraph 101.3 for location of the SUAS Deviation Request Message sample.

   c. For time-sensitive requests, chain of command endorsements may be obtained by phone conference. If this method is chosen, the requester shall ensure that the endorsement(s) obtained via phone are included in the message as references.

   d. During contingency or combat operations, battalion/squadron commanders or higher may deviate from this T&R Manual at their discretion. Deviations shall not constitute compliance with training requirements to be certified as SUAS-O/I/E. SUAS-O/I/E shall complete all training requirements at first opportunity in order to comply with this T&R Manual.

16. **Deployments.** SUAS-O/I/Es must be current and designated per this T&R Manual before deployment. A SUAS-O/I/E shall make every attempt to maintain currency. Once deployed, SUAS-O/I/Es will be considered current and designated for the duration of the deployment. Upon return from deployment, SUAS-O/I/Es who did not maintain their currency have 120 days to complete the refresh training requirements per Table 1-4; time lapse for refreshing is measured from date of last live flight event. Commanders shall issue a waiver letter noting a by-date when currency must be refreshed before the SUAS-O/I/E lapses in currency. See paragraph 101.3 for location of the SUAS Deployment Currency Waiver Letter sample.

17. **Unit SUAS Staff Assist Visit (SAV).** The Unit SUAS-PM at each command echelon shall conduct annual SAVs for each immediate subordinate command maintaining a SUAS Training Program. SUAS SAVs shall be conducted in accordance with the SUAS training Program assessment checklist (see paragraph 101.3 of this chapter for location of the SUAS Training Program Assessment Checklist). The purpose of these visits is to ensure proper program administration and standardization and to provide assistance and guidance for programs that do not meet standards. These visits can be in conjunction with other unit exercises or operations and are encouraged to be conducted during real world operations.
118. TRAINING ADMINISTRATION.

1. Individual Training Record (ITR).

   a. The ITR contains all documents and records for a SUAS-O/I/E. An
      updated and accurate ITR is critical to tracking and documenting SUAS-O/I/E
      currency and designations. Only the commanding officer or designated
      representative (the SUAS-PM) is authorized to review and attest the accuracy
      of an ITR.

   b. The Unit SUAS-PM is responsible for ensuring each SUAS-O/I/E has an
      ITR. SUAS-O/I/Es are responsible for providing the Unit SUAS-PM with SUAS
      training documents such as course completion certificates and copies of
      flight logbook entries.

   c. The ITR will be physically located with the Unit SUAS-PM, unless
      signed out by the individual. When signed out, will be completed and filed
      as a place holder until the ITR is returned.

   d. ITRs shall be constructed and organized into six parts per Table 1-5
      using a common brown DOD six part folder. The syllabus sponsor will be
      responsible for ensuring standardization of the SUAS ITR, and shall maintain
      a master file of all SUAS-O ITRs with updated documentation, see paragraph
      101.3 of this chapter for location of the SUAS ITR cover sheets and training
      forms.

   e. The ITR shall be audited at a minimum annually or when one of the
      following occasions occurs:

      (1) Upon reporting to a unit.

      (2) Upon designation or recertification.

      (3) Prior to a SUAS evaluation.

      (4) Upon transferring to another unit.

      (5) During a SAV, ITRs may be randomly reviewed.

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Table 1-5. ITR Organization.

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<th>ITEMS</th>
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<tr>
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<td>B: Record of Audit</td>
</tr>
<tr>
<td></td>
<td>C: Medical Documentation</td>
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See paragraph 101.3 of this chapter for location of the SUAS ITR cover sheets and training forms.
f. The ITR (in its entirety) shall be maintained as a permanent record.

2. **T&R Event Tracking.** Once completed, T&R events shall be tracked using a SUAS T&R Event Tracking Form that shall be placed in Part V of the ITR. When an event is completed, the event number, date completed and instructor or evaluator signature shall be documented on the form. See paragraph 101.3 of this chapter for location of the SUAS T&R Event Tracking Form.

3. **Training Management System (TMS).** Marine Corps Training Information Management System (MCTIMS) is an automated, web-based database. MCTIMS is the primary database system that shall be used to track all SUAS training to include flights, simulator events, and currency requirements. MCTIMS does not replace the requirement to maintain hard copy ITRs.

4. **SUAS Flight Logbooks.**
   
a. SUAS-Os shall maintain an individual flight log book. Each individual flight event, live or simulated, shall be documented using a flight log. Flight logging starts with the first flight in an IQT course and is maintained throughout a SUAS-O/I/E’s career. Flight logs shall be standardized by the syllabus sponsor and accessible in electronic format. Flight logs shall be reviewed monthly by the Unit SUAS-PM who will date and sign in the row immediately following the last entry. See paragraph 101.3 of this chapter for location of the SUAS Flight Log Form.

   b. All flights shall be logged to reflect the position of the duties being performed:
      
      (1) SUAS-Os will log operator time as MO or VO as appropriate.
      
      (2) SUAS-Is will log instructor time only if performing instructor duties.
      
      (3) SUAS-Es will log evaluator time only if performing evaluator duties.

      Note: Flight hour computation starts when an air vehicle (AV) is launched and ends when it has landed.

   c. SUAS-O/I/E s shall personally maintain their logbooks updated and in their custody. On a monthly basis and prior to a deployment, the Unit SUAS-PM shall inspect individual logbooks and maintain a copy in the ITR. SUAS-O/I/E s will deploy with their logbooks to ensure timely and accurate entry of flight data.
## CHAPTER 2
GROUP 1 UNMANNED AIRCRAFT SYSTEM (UAS)
INDIVIDUAL TRAINING AND READINESS

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CHAPTER 2
GROUP 1 UNMANNED AIRCRAFT SYSTEM (UAS)
INDIVIDUAL TRAINING AND READINESS

200. TRAINING PROGRESSION MODEL. SUAS personnel shall follow the training progression model as depicted below. The Model is broken into four phases. As a prerequisite to beginning the first phase the student must complete the BUQ-I course offered through Joint Knowledge Online (JKO), this training may be accomplished at the student’s home station. See paragraph 101.3 for location of “BUQ-1 Registration Instructions” to access the course either on Joint Knowledge Online (JKO) or the Small Unmanned Aircraft System Manager (SUASMAN) system.

1. Core Skill Introduction Training (1000 numbered events) provides Initial Qualification Training (IQT) requirements. IQT is conducted by the Training and Logistics Support Activity (TALSA) or other recognized formal learning activities authorized by TECOM or USSOCOM J-7/9. Upon completion of IQT requirements, a student is certified as a SUAS-O and eligible to be designated in writing by the unit commanding officer. Select events in Core Skills Introduction training are also used during unit level training to maintain or regain currency per Table 1-4. These select events may be conducted by unit SUAS-Is after an individual has completed these events during IQT for the SUAS assigned to operate/employ.

2. Core Skill Training (2000–2799 numbered events) provides Mission Qualification Training (MQT) requirements that are conducted at the unit by a SUAS-I. Units should complete MQT events necessary to support mission tasks. However, for a SUAS-O to be considered “full mission ready,” all MQT events may be completed using any SUAS. MQT events are independent of SUAS type.

3. Instructor and Evaluator Under Training (IUT and EUT) (2800-2899 numbered events) provide training required to be designated as either an SUAS-Instructor (SUAS-I) or a SUAS-Evaluator (SUAS-E). This training is conducted by unit SUAS-Is or SUAS-Es as noted for each event.

4. Designations and Requirements (2900-2999 numbered events) delineate requirements for SUAS-O/I/E and SUAS-PM designations and annual requirements.
Figure 2-1. SUAS TRAINING PROGRESSION MODEL.
201. **T&R EVENT STRUCTURE.** The T&R event structure is provided below. The superscript numerals in the header section correspond to the explanation provided in the notes section below the example. The body sections contain embedded descriptions.

RQ11-1220¹ 0.4² I,R³ L/S⁴ (N)⁵ SUAS-I⁶

**Task.** States what is to be accomplished.

**Additional Tasks.** Only applies to 2000 numbered events. They are tasks related in scope and nature to the primary requirements of the event but are not required to complete the event. These tasks may be included during training to optimize event training benefits.

**Requirement.** Provides the condition in which the event will be conducted and lists performance steps that shall be completed.

**Performance Standard.** Directly tied to an event and indicates the level of competence that shall be achieved for the event to be considered satisfactorily completed.

**Initial System Condition.** State of the SUAS when presented to the trainee prior to officially commencing training on the event. As the syllabus progresses the initial system condition will require more setup on the part of the trainee.

**System Configuration.** Physical configuration of the SUAS required for the trainee to successfully complete the event. This section will contain information for both the air vehicle (AV) and Ground Control Station (GCS).

**Prerequisite.** Actions/items that shall be completed prior to starting the event.

**Range Training Area.** Range training area dimensions required to accomplish the event requirements.

**References.** Applicable references that can assist the trainee to satisfy the event performance standard, or the instructor to conduct and evaluate effectiveness of task completion.

**Applicable SUAS.** SUAS type(s) that can be used when completing the event.

**EVENT HEADER NOTES:**

1. **Event Code.** This number is used to log completed events in MCTIMS and the ITR SUAS T&R Event Tracking Form. An event number is a unique alphanumeric event code that has two parts. The first part is an alphanumeric sequence that describes the event type, be it a common core event that applies to all SUASs (MQT) or specific platform(s) event (e.g. RQ-11B DDL, RQ12A, RQ-20A). The second part is a four digit number unique to that event (e.g.
1010) which cannot be used again for any other event in this T&R Manual.

2. Flight Duration. This is the minimum duration for the conduct of the event. The duration is expressed in tenths of a minute - 1/10\textsuperscript{th} of an hour is equal to six minutes, see Table 2-1 below. Flight duration shall be logged based on the "minute interval" in which the flight time falls. For example, if flight duration is 15 minutes, the decimal time will be 0.3.

Table 2-1. Time Conversion

<table>
<thead>
<tr>
<th>DECIMAL</th>
<th>MINUTE INTERVAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1</td>
<td>1-6</td>
</tr>
<tr>
<td>0.2</td>
<td>7-12</td>
</tr>
<tr>
<td>0.3</td>
<td>13-18</td>
</tr>
<tr>
<td>0.4</td>
<td>19-24</td>
</tr>
<tr>
<td>0.5</td>
<td>25-30</td>
</tr>
<tr>
<td>0.6</td>
<td>31-36</td>
</tr>
<tr>
<td>0.7</td>
<td>37-42</td>
</tr>
<tr>
<td>0.8</td>
<td>43-48</td>
</tr>
<tr>
<td>0.9</td>
<td>49-54</td>
</tr>
<tr>
<td>1.0</td>
<td>55-60</td>
</tr>
</tbody>
</table>

3. Program of Instruction (POI) Code. A POI is a set of training events that an individual is required to complete. Individuals undergoing training are required to complete a specific POI. POI type codes include I (initial) or R (refresher). Once I-coded events have been completed and they are also R-coded, then they are to be subsequently flown per Table 1-4, Currency Lapse.

4. Event Device Code. The device or equipment required to complete the event, see Table 2-2 below. Non-flight events are noted as "Classroom". All I-coded events shall be conducted live; IQT events shall be conducted Live (L). Events that are also R-coded may be conducted live or use a simulator. Events coded "I, R" are device coded "L then L/S" to indicate initial conducted live and refresh conducted either live or simulator (L/S).

Table 2-2. Event Device Codes.

<table>
<thead>
<tr>
<th>DEVICE CODE</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>Live flight only</td>
</tr>
<tr>
<td>S</td>
<td>Simulator flight only</td>
</tr>
<tr>
<td>L/S</td>
<td>Live flight preferred, Simulator flight optional</td>
</tr>
</tbody>
</table>

Event shall only be completed using the approved simulator for the SUAS.

5. Time of Day. When the event may be flown. Possible codes are D (Day), N (Night) or (N) (Night optional). An (N) coded flight can be flown day or night.
6. Instructor Required. This code will specify who can conduct training for this event (i.e., SUAS-I or SUAS-E).

202. EVENT ACRONYMS. Table 2-3 provides a list of acronyms found throughout events in the IQT and MQT syllabus.

Table 2-3. Event Acronyms List.

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACA</td>
<td>Airspace Control Authority</td>
</tr>
<tr>
<td>ACM</td>
<td>Airspace Coordination Measure</td>
</tr>
<tr>
<td>AGL</td>
<td>Above Ground Level</td>
</tr>
<tr>
<td>ALT</td>
<td>Altitude</td>
</tr>
<tr>
<td>AV</td>
<td>Air Vehicle</td>
</tr>
<tr>
<td>BDA</td>
<td>Battle Damage Assessment</td>
</tr>
<tr>
<td>DTED</td>
<td>Digital Terrain Elevation Data</td>
</tr>
<tr>
<td>EO</td>
<td>Electro-Optical</td>
</tr>
<tr>
<td>EP</td>
<td>Emergency Procedures</td>
</tr>
<tr>
<td>ETF</td>
<td>Event Training Form</td>
</tr>
<tr>
<td>FO</td>
<td>Forward Observer</td>
</tr>
<tr>
<td>FSCM</td>
<td>Fire Support Coordination Measure</td>
</tr>
<tr>
<td>GCS</td>
<td>Ground Control Station</td>
</tr>
<tr>
<td>IAW</td>
<td>In Accordance With</td>
</tr>
<tr>
<td>IDF</td>
<td>Indirect Fire</td>
</tr>
<tr>
<td>IPB</td>
<td>Intelligence Preparation of the Battlefield</td>
</tr>
<tr>
<td>IR</td>
<td>Infrared</td>
</tr>
<tr>
<td>JTAC</td>
<td>Joint Terminal Attack Controller</td>
</tr>
<tr>
<td>LAT</td>
<td>Latitude</td>
</tr>
<tr>
<td>LOL</td>
<td>Loss of Link</td>
</tr>
<tr>
<td>LONG</td>
<td>Longitude</td>
</tr>
<tr>
<td>LOS</td>
<td>Line of Sight</td>
</tr>
<tr>
<td>LZ</td>
<td>Landing Zone</td>
</tr>
<tr>
<td>MGRS</td>
<td>Military Grid Reference System</td>
</tr>
<tr>
<td>MO</td>
<td>Mission Operator</td>
</tr>
<tr>
<td>NAI</td>
<td>Named Areas of Interest</td>
</tr>
<tr>
<td>NLT</td>
<td>No Lower Than</td>
</tr>
<tr>
<td>NVD</td>
<td>Night Vision Device</td>
</tr>
<tr>
<td>PID</td>
<td>Positive Identification</td>
</tr>
<tr>
<td>POO</td>
<td>Point of Origin</td>
</tr>
<tr>
<td>RSTA</td>
<td>Reconnaissance Surveillance and Target Acquisition</td>
</tr>
<tr>
<td>RVT</td>
<td>Remote Video Terminal</td>
</tr>
<tr>
<td>SOP</td>
<td>Standard Operating Procedure</td>
</tr>
<tr>
<td>SUA</td>
<td>Special Use Airspace</td>
</tr>
<tr>
<td>TAI</td>
<td>Target Areas of Interest</td>
</tr>
<tr>
<td>TD</td>
<td>Technical Directive</td>
</tr>
<tr>
<td>UAV</td>
<td>Unmanned Aerial Vehicle</td>
</tr>
<tr>
<td>VO</td>
<td>Vehicle Operator</td>
</tr>
</tbody>
</table>

Acronyms for SUAS Modes are not included.
203. CORE SKILL INTRODUCTION TRAINING (1000).

1. General.

   a. Purpose. To provide entry-level instruction and develop expertise in the basic operation of the SUAS, and to emphasize systems knowledge, emergency procedures, and operational terminology. This training builds upon the academic information learned in the BUQ-I course. Core Skill Introduction training fulfills the requirements of IQT for specific SUASs. Upon successful completion of this training, the student is certified as a SUAS-O and may be designated as such in writing by the unit commanding officer.

   b. Prerequisite.

      (1) Meet the medical requirements per paragraph 108 of this T&R.

      (2) Complete BUQ-I Course in its entirety, see paragraph 101.3 for location of “BUQ-1 Registration Instructions.” Naval Aviators and UAS air vehicle operators are not required to complete the BUQ-1 course.

   c. Conduct. Every attempt should be made to fly the IQT events in numerical order. Events may be flown out of sequence to maximize training efficiency and account for environmental and operational conditions, except in cases where prerequisite events are required. An event shall not be flown unless the event prerequisites have been successfully accomplished. IQT should be conducted with a student to instructor ratio that is in accordance with the approved program of instruction (POI).

   d. Administration Notes.

      (1) Upon completion of IQT, all IQT event codes shall be documented in the ITR and logged in MCTIMS per paragraph 118.3 of this chapter and annotate completion dates and the name of the formal training center who conducted the event training.

      (2) For each T&R event, the SUAS-O student shall demonstrate proficiency in each task in its entirety before the task is considered complete for that student.

      (3) If SUAS personnel go out of currency for 721 days or more, they shall refresh by completing the applicable IQT course again.

      (4) In order to receive full credit for an event, an individual must personally complete all event requirements (for both VO and MO) and perform the event performance standard to a proficient level before being given full credit for the event.

Note: Unit SUAS-Is/Es are prohibited from conducting initial qualification training (IQT) for the purpose of certifying personnel as first time operators for any SUAS. Only personnel who have completed formal SUAS instructor training (known as IQT-Is) are authorized to conduct IQT for the purpose of certifying SUAS-Os for the first time on any platform or recertifying SUAS-Os who have lapsed in currency for greater than 720 days.
e. **Stages.** A SUAS-O student shall train in one of the below stages, as directed.

1. IQT for RQ-11B DDL - (RQ11)
2. IQT for RQ-12A AE - (RQ12)
3. IQT for RQ-20A AE - (RQ20)

2. IQT Event numbers 1000 through 1199 are reserved for future use.

3. **IQT for RQ-11B DDL.**

   a. **Purpose.** To develop proficiency and build experience in the basic operation of the RQ-11B DDL SUAS.

   b. **Admin Notes.** The RQ-11B DDL IQT syllabus shall be supplemented with essential academic / classroom instruction necessary to operate the system properly, plan for and conduct flight operations while adhering to regulations and ensuring safety of flight. Academic / classroom training shall include as the minimum the following subject areas:

   1. **Introductory Skills.**
      (a) Demonstrate publications knowledge.
      (b) Demonstrate prohibited activities knowledge.
      (c) Demonstrate system description knowledge.
      (d) Perform system assembly/disassembly.
      (e) Conduct preflight, launch, and recovery operations.
      (f) Demonstrate knowledge of controls and indicators.
      (g) Conduct flight operations and flight training using the system simulator.
      (h) Demonstrate knowledge of flight log maintenance requirements

   2. **Intermediate Skills.**
      (a) Demonstrate knowledge of mapping and GPS.
      (b) Demonstrate knowledge of airspace management.
      (c) Demonstrate how to use FalconView, RPUAV Tool Bar, and Image Processing software.
      (d) Operate range and bearing tool.
      (e) Conduct mission planning / crew mission briefing.
      (f) Conduct flight operations and target acquisition.
      (g) Conduct covert approach.
      (h) Conduct emergency procedures.
      (i) Perform system maintenance and troubleshooting.

   3. **Advanced Skills.**
      (a) Conduct advanced flight operations.
      (b) Perform incident and readiness reporting procedures.
      (c) Conduct mobile, night, relay, and handoff operations.
      (d) Operate RQ-11B DDL using an Untrained Assistant.

   c. **Conduct.** Flight events are conducted as specified. All I-coded events shall be conducted live; RQ-11B DDL IQT events shall be conducted Live (L). Events that are also R-coded may be subsequently conducted live or with the use of the system simulator. Events coded "I,R" are device coded "L then
L/S” to indicate initial conducted live and refresh conducted either live or simulator (L/S).

d. **Total Flight Training.** 10 flights, 5.6 hours. Additionally, a student must complete a minimum of 5 successful launches and 5 successful landings with each SUAS to satisfactorily complete the RQ-11B DDL syllabus.

RQ11-1200 0.6 I,R L then L D IQT-I/SUAS-I

**Task.** Conduct heads up/heads down flight.

**Requirement.** Complete initial flight using all system flight modes IAW the references, checklists, ETF, and given a functional RQ-11B DDL. Instructor will demonstrate first flight.

**Instructor will demonstrate:**

1. GCS setup.
2. How to plan a mission and how to load mission information and RSTA setup.
3. How to assemble, stage, launch, and recover AV.

**Student will conduct the following:**

1. Assemble and stage the system.
2. Launch in MAN mode, enter ALT mode when operating altitude is established.
3. Conduct timed turns, box pattern, orbit, and teardrop approach.
4. Conduct dashes.
5. Enter LOIT mode and navigate AV.
7. Use NAV and HOME modes.
8. Land the AV from ALT mode by manually initiating AUTOLAND.
9. Recover AV and render it safe.

**Performance Standard.** Conduct heads up/heads down flight IAW the references, checklists, ETF, and given a functional RQ-11B DDL. The student will demonstrate the ability to:

1. Assemble AV.
2. Assist with GCS setup.
3. Observe set up of the RSTA laptop, mission planning and loading a mission.
4. MO launch AV.
5. Switch between all flight modes.
6. Fly both heads up and heads down (with MO assistance) and keep the AV oriented and on altitude during timed turns, box patterns, orbit and a teardrop approach.
7. Control the speed of the AV (dash/hold).
8. Establish a loiter point using LOIT mode.
9. Navigate AV to various points and bring AV to HOME waypoint.
10. With instructor assistance, manually navigate the AV to the landing area and establish a proper landing position/altitude profile.
11. Land the AV from ALT mode by manually initiating AUTOLAND.
12. Recover AV and render it safe.

Initial System Condition. GCS/AV assembled and RSTA powered and configured by the instructor. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO Payload, FalconView, RSTA.

Prerequisite. Complete BUQ-I Course.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-11B DDL.

Task. Manually edit waypoints and reroute AV, Low Level (LL) flight, and LL AUTOLAND.

Note: This event helps develop proficiency in precision landing to a spot.

Requirement. Instructor will demonstrate LL AUTOLAND during this event. IAW the references, checklists, ETF, and given a functional RQ-11B DDL, the student will:

1. Set up GCS.
2. Plan and load mission information.
3. Assemble, stage and launch AV in MAN mode.
4. Enter ALT mode at briefed altitude.
5. Enter NAV mode and fly at least one complete orbit of diamond default.
6. In NAV mode, MO will redirect AV to specified orbit points.
7. MO switch waypoints by MGSR and using range and bearing.
8. Conduct security looking outward and inward.

Note: Disconnect MO hand controller for LL portion of flight

9. Conduct LL flying in ALT mode beginning at 100’AGL and stepping down to 20-30’ AGL.
10. Conduct LL flying in MAN mode beginning at 100’AGL and stepping down to 20-30’ AGL.
11. Conduct LL VO initiated AUTOLAND between 3-6’ AGL
12. Recover AV and render it safe.

Note: Required to maintain a video log, recommend use of a second GCS or an external digital video recording device connected to the HUB.

Performance Standard. Manually edit waypoints and reroute AV, LL flight and LL AUTOLAND IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble AV.
2. Set up the GCS.
3. Plan a mission and load mission to AV using hand controller.
4. MO launch AV.
5. Switch between all flight modes.
6. Fly the diamond default pattern in NAV mode.
7. Manipulate position of orbit points in hand controller, and route AV to those orbit points.
8. Conduct LL flight and traffic pattern navigation in ALT mode.
9. Conduct LL flight and traffic pattern navigation in NAV mode. Hard deck for this profile shall be 10’ AGL until landing.
10. Conduct a LL AUTOLAND between 3’-6’ AGL.
11. Recover AV and render it safe.

Note: Required to maintain a video log, recommend use of a second GCS or an external digital video recording device connected to the HUB.

Initial System Condition. GCS powered down. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO Payload for day flight and two hand controller configuration. 1:50K map of operating area to navigate from.

Prerequisite. RQ11-1200.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
Applicable SUAS. RQ-11B DDL.

RQ11-1220 0.7 I,R L then L/S (N) IQT-I/SUAS-I

Task. Conduct target acquisition using the RQ-11B DDL.

Note: This event helps develop proficiency in high level silent AUTOLAND recovery.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-11B DDL, the student will:

1. Plan and load mission information.
2. Assemble, stage and launch AV in MAN mode.
3. Enter ALT mode at briefed altitude, conduct remainder of flight heads down, except landing.
4. Navigate around target using front and side cameras in NAV, ALT and LOIT modes.
5. MO change coordinate format on RSTA from MGRS to LAT/LONG and back to MGRS.
6. MO drag waypoints to change payload view in order to maintain contact with target and to change AV orbit from clockwise to counterclockwise.
7. MO leapfrog diamond waypoints to allow AV to search and navigate along a linear feature.
8. MO use Mission Altitude Control to adjust waypoint altitudes while AV is in NAV mode.
9. MO capture images from RSTA laptop.
10. MO pull and delete captured images from the HUB.
11. MO process imagery off RSTA laptop.
12. Position AV for High Level AUTOLAND NLT 800’ AGL.
13. Navigate heads up to bring AV into the wind for a high level landing.

Performance Standard. Conduct target acquisition using the RQ-11B DDL IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble AV.
2. Set up the GCS and launch.
3. MO will plan and load a mission using the RSTA laptop.
4. Complete specified requirements, demonstrating the ability to navigate to and conduct reconnaissance of a target.
5. Manipulate imagery obtained during reconnaissance.
6. Manually initiate AUTOLAND and subsequently pilot the AV during deep stall in order to land at the desired point.
7. Strive to land within 20 meters of desired landing point.
8. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO Payload for day flight or IR Side Payload for night flight, FalconView, RSTA.
Prerequisite. RQ11-1210. RQ11-1250 is only required when this event is conducted at night.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-11B DDL.

RQ11-1230 0.5 I L (N) ______IQT-I

Task. Conduct silent (covert) target area surveillance.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-11B DDL, the student will:

1. Assemble and launch the AV in MAN mode.
2. Establish ALT mode at briefed altitude (NLT 800’ AGL).
3. Ingress to target using both MAN and ALT modes.
4. Initiate covert approach no closer than 500m from target (preferably upwind) with emphasis on use of winds and awareness of winds.
5. Demonstrate proper technique to achieve at least 270° of observation prior to egress.
6. Initiate egress in MAN mode (preferably downwind) no closer than 300 meters and NLT 300’ AGL, ensuring adequate obstacle clearance on the egress route.
7. Conduct manual approach or NAV E to L and AUTOLAND.
8. Recover AV and render it safe.

Performance Standard. Conduct silent (covert) target area surveillance IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Correlate winds aloft with target area in order to develop a sound covert approach plan. Covert approach plan shall include ingress direction/altitude, egress point and altitude, flight mode (MAN or ALT), and ensure obstacle clearance throughout entire profile.
2. Enter a covert profile by entering MAN mode and gliding to target.
3. Use teardrop entry into a surveillance profile and provide a minimum of 270° of observation prior to egress.
4. Egress target area without compromising the AV. A helpful technique is to conduct the covert approach to the GCS so operators can listen for the AV and judge the effectiveness of their planned profile.
5. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed.
Load DTED, "UAV Origin"; and 500m diamond default.

System Configuration. EO Payload for day flight or IR Side Payload for night flight, FalconView, RSTA.

Prerequisite. RQ11-1220. RQ11-1250 is only required when this event is conducted at night.

Range Training Area. Minimum requirements:
1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.
1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-11B DDL.

Task. Conduct day mobile operations from a moving vehicle.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-11B DDL, the student will:
1. Set up GCS in mobile configuration.
2. Plan and load mission information.
3. Assemble, stage, and launch AV in MAN mode.
4. Enter ALT mode at briefed altitude.
5. NAV to Home or enter HOME mode or park the AV at a pre-briefed orbit point while entering vehicle.
6. Use forward and side payload cameras to track a moving vehicle from a stationary vehicle.
7. Use forward and side payload cameras to track a moving vehicle from a moving vehicle.
8. Use the range and bearing tool to measure the distance between two objects or two locations or a combination of both.
9. Heads up approach to landing area with AUTOLAND.
10. Recover AV and render it safe.

Performance Standard. Conduct day mobile operations from a moving vehicle IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Configure GCS for mobile operations inside a vehicle.
2. Launch AV, then transition to operations from inside a vehicle.
3. Track a moving vehicle from a stationary and moving vehicle using side and forward cameras.
4. Reposition HOME waypoint at least twice during the flight.
5. Maintain situational awareness on position of target vehicle during mobile operations.
6. Conduct heads up approach to landing area and manually initiate AUTOLAND.
7. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO Payload, FalconView, RSTA. Configure system on a vehicle for mobile operations using mobile mount.

Prerequisite. RQ11-1210.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-11B DDL.

RQ11-1250  0.3  I  L  N  ______IQT-I

Task. Introduction to basic night flight skills.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-11B DDL, the student will:

1. Plan and load mission information.
2. Assemble, stage, and launch AV in MAN mode.
3. Enter ALT mode at briefed altitude.
4. Track a linear feature.
5. Conduct reconnaissance of a point feature.
6. Use IR Illuminator.
7. NAV E to L for heads down approach and landing.
8. Recover AV and render it safe.

Performance Standard. Conduct a basic night flight IAW the references, checklists, and ETF. The student will demonstrate ability to:

1. Assemble GCS and AV at night.
2. Launch AV at night.
3. Use IR payload to track a linear target.
4. Use IR payload to conduct reconnaissance of a point target.
5. Use IR Illuminator.
7. Recover AV at night and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. IR Side Payload, FalconView, RSTA.

Prerequisite. RQ11-1210, RQ11-1240.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-11B DDL.

RQ11-1260 0.7 I L N IQT-I

Task. Introduction to advanced night flight skills.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-11B DDL, the student will:

1. Plan and load mission information.
2. Assemble, stage, launch AV in MAN mode.
3. Enter ALT mode at briefed altitude.
4. Enter NAV mode.
5. MO route AV to programmed waypoints and targets.
6. Conduct reconnaissance of an area; identify TAIs or items of interest.
7. MO pull/delete captured images from the HUB.
8. MO process imagery off RSTA laptop.
9. VO conduct heads down approach to landing area.
10. MO vector AV to landing area to manually AUTOLAND.
11. Recover AV and render it safe.

Performance Standard. Conduct an advanced night flight IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble GCS and AV at night.
2. Launch AV at night.
3. Use RSTA laptop to remain oriented.
4. Use RSTA laptop to reroute AV to specific waypoints or targets.
5. Use IR payload to conduct reconnaissance of a point target.
6. Pull imagery off the HUB and RSTA laptop, and process that imagery into a JPEG.
7. Detect orientation of AV visually using beacons.
8. Conduct a night heads up landing.
9. Manually AUTOLAND AV.
10. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. IR Side Payload, FalconView, RSTA.

Prerequisite. RQ11-1250.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-11B DDL.

RQ11-1270 0.5 I,R L then L/S (N) IQT-I/SUAS-I

Task. Conduct AV hand-offs during area/point/zone reconnaissance mobile operations.
Note: Flying this event at night is preferred. It reinforces mobile operations.

Requirement. Operate from GCS A and hand off to a secondary GCS, GCS B. Conduct a minimum of two full AV exchanges for a total of four hand offs (two handing off, two receiving AV); can be conducted from either stationary or mobile GCS. IAW the references, checklists, ETF, and given a functional RQ-11B DDL, the student will:

GCS A (Ground Crew)

1. Review and discuss hand off procedures prior to conducting flight.
2. Plan and load mission information.
3. Assemble, stage, and launch AV in MAN mode.
4. Communicate AV Channel, ALT and AV Number to GCS B.
5. Enter ALT mode at briefed altitude NLT 200’ AGL.
6. Conduct briefed mission profile.
7. At planned hand-off point, initiate hand-off sequence with GCS B.
9. NAV E to L for heads down approach and landing.
10. Recover AV and render it safe.

GCS B (Mobile Crew)

1. Set up GCS in mobile configuration.
2. Receive AV Channel, ALT, AV serial number from GCS A.
3. Receive AV from GCS A.
4. Use payload camera to track a moving vehicle from a moving/stationary vehicle.
5. Hand AV back to GCS A.

Performance Standard. Conduct AV hand-offs during point reconnaissance night mobile operations IAW the references, checklists, and ETF. The student will demonstrate the ability to:

GCS A (Ground Crew)

1. Launch AV on an area/point/zone reconnaissance mission profile and vector to briefed hand off point.
2. Demonstrate effective communication procedures to initiate hand off to GCS B.
3. When GCS B is ready, hand AV off.
4. When directed by GCS B, receive AV and regain control.
5. Use a wing rock, text or voice message to confirm to GCS B that AV control has been regained after hand off.
6. Safely land AV heads down using NAV mode, E to L.
7. Recover AV and render it safe.

GCS B (Mobile Crew)

1. Configure GCS for mobile operations inside a vehicle.
2. Demonstrate effective communication procedures to initiate hand off from GCS A.
3. When directed by GCS A, VO will receive AV and regain control.
4. Track a moving vehicle from a moving vehicle using IR side camera.
5. MO will reposition HOME waypoint at least twice during flight.
6. Maintain situational awareness on position of target vehicle during mobile operations.
7. When GCS A is ready, hand AV off.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration.
1. GCS A - Hand Controller, IR Side Payload, FalconView, RSTA.
2. GCS B – Hand Controller, IR Side Payload, FalconView, RSTA.

Prerequisite. RQ11-1240. RQ11-1250 is only required when this event is conducted at night.

Range Training Area. Minimum requirements:
1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.
1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-11B DDL.

Task. Operate the RQ-11B DDL using an Untrained Assistant.

Requirement. With instructor oversight and one Untrained Assistant, the student shall be responsible for all aspects of flight coordination and conduct of flight IAW the references, checklists, and ETF. Given a functional RQ-11B DDL, the student will conduct tasks as noted in the matrix below:
### SUAS-O Tasks

#### Mission
- Plan Mission

#### Pre-flight
- Set waypoints in Mission Hand Controller
- Run pre-flight check on VO controller: change LOL mode back to "Rally Point" on Mission Hand Controller

#### Launch
- Launch AV
- Take control of VO Controller once airborne

#### Flight
- Operate VO Controller

#### Post-Flight
- Inspect equipment

### Untrained Assistant Tasks

#### Mission
- Secure launch site
- Provide airspace surveillance
- Conduct time hack

#### Pre-flight
- Transport equipment
- Hold AV for pre-flight checks

#### Launch
- Advance throttle to 100% for launch
- Hold VO Controller during launch, be prepared to engage AUTOLAND if required

#### Flight
- Monitor RSTA laptop
- Come heads-up for landing

#### Post-Flight
- Recover AV
- Pack and transport equipment

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**Performance Standard.** Operate RQ-11B DDL using an Untrained Assistant IAW the references, checklists, and ETF. The student will demonstrate the ability to conduct all required tasks listed in the above matrix (both SUAS-O and Untrained Assistance), without assistance from the instructor. Student must demonstrate the ability to guide and direct the actions of the Untrained Assistant.

**Initial System Condition.** GCS powered down, FalconView closed. Load DTED, "UAV Origin", and 500m diamond default.

**System Configuration.** EO payload, FalconView, RSTA.

**Prerequisite.** RQ11-1210.

**Range Training Area.** Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

**References.**

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-11B DDL.

RQ11-1290 0.6 I L (N) IQT-I

Task. Culmination Flight for RQ-11B DDL.

Requirement. Student is responsible for all aspects of flight coordination and conduct. IAW the references, checklists, ETF, and given a functional RQ-11B DDL, the student will:

1. Power up GCS.
2. Plan and conduct full mission brief and load mission information.
3. Assemble and stage AV.
4. Coordinate with Airspace Control Authority (ACA) or range control (simulate call to instructor) for conduct of flight operations.
5. Launch in MAN mode, enter ALT mode at briefed altitude.
6. NAV to preprogrammed waypoints.
7. Conduct area and point reconnaissance. Use orbit points to control profile of AV.
8. Respond accurately and precisely to simulated emergency conditions.
9. Use MAN mode or NAV E to L for heads down approach and landing.
10. Recover AV and render it safe.

Performance Standard. IAW the references, checklists, and ETF, the student will demonstrate ability to conduct the culmination flight without assistance from the instructor.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO Payload for day flight or IR Side Payload for night flight, FalconView, RSTA.

Prerequisite. RQ11-1200, RQ11-1210, RQ11-1220, RQ11-1230, RQ11-1240, RQ11-1250, RQ11-1260, RQ11-1270, RQ11-1280.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of
Designated Unmanned Aerial Vehicle Operator (DUO)

3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)


Applicable SUAS. RQ-11B DDL.

4. IQT for RQ-12A (WASP AE).

   a. Purpose. To develop proficiency and build experience in the basic operation of the RQ-12A SUAS platform.

   b. Admin Notes. The RQ-12A IQT syllabus shall be supplemented with essential academic / classroom instruction necessary to operate the systems properly, plan for and conduct flight operations while adhering to regulations and ensuring safety of flight. Academic / classroom training shall include as the minimum the following subject areas:

   (1) Introductory Skills.
       (a) Demonstrate publications knowledge.
       (b) Demonstrate prohibited activities knowledge.
       (c) Demonstrate system description knowledge.
       (d) Demonstrate knowledge of flight log maintenance requirements
       (e) Perform system assembly/disassembly.
       (f) Conduct preflight, launch, and recovery operations.
       (g) Demonstrate knowledge of controls and indicators.
       (h) Conduct flight operations and flight training using the system simulator.

   (2) Intermediate Skills.
       (a) Demonstrate knowledge of mapping and GPS.
       (b) Demonstrate knowledge of airspace management.
       (c) Demonstrate how to use FalconView, RP UAV Tool Bar, and Image Processing software.
       (d) Operate range and bearing tool.
       (e) Conduct basic mission planning / crew mission briefing.
       (f) Conduct basic flight operations and target acquisition.
       (g) Perform enhanced reconnaissance, surveillance, and launch/recovery techniques.
       (h) Conduct water landings and recovery.
       (i) Conduct emergency procedures.
       (j) Perform system maintenance and troubleshooting.

   (3) Advanced Skills.
       (a) Perform incident and readiness reporting procedures.
       (b) Conduct mobile, night, relay, and handoff operations.
       (c) Conduct advanced reconnaissance techniques.
       (d) Conduct point precision landings.
       (e) Demonstrate knowledge of using an Untrained Assistant.
       (f) Operate RQ-12A with a single operator.

   c. Conduct. Flight events are conducted as specified. All I-coded events shall be conducted live; IQT events shall be conducted Live (L). Events that are also R-coded may be subsequently conducted live or with the use of the system simulator. Events coded “I,R” are device coded “L then
L/S” to indicate initial conducted live and refresh conducted either live or simulator (L/S).

d. **Total Flight Training.** 11 flights, 4.6 hours. Additionally, a student must complete a minimum of 5 successful launches and 5 successful landings to satisfactorily complete the RQ-12A syllabus.

RQ12-1300 0.4 I,R L then L D IQT-I/SUAS-I

**Task.** Conduct heads up/heads down flight.

**Requirement.** Complete initial flight using all system flight modes IAW the references, checklists, ETF, and given a functional RQ-12A. Instructor will demonstrate first flight.

**Instructor will demonstrate:**

1. GCS setup.
2. How to plan a mission and how to load mission information and RSTA setup.
3. How to assemble, stage, launch, and recover AV.

**Student will conduct the following:**

1. Assemble and stage the system.
2. Launch AV in MAN mode, enter ALT mode when operating altitude is established.
3. Conduct timed turns, box pattern, orbit, and teardrop approach.
4. Conduct dashes.
5. Enter LOIT mode and navigate the AV.
7. Use NAV and HOME modes.
8. Land the AV automatically by routing it to the E Waypoint.
9. Recover AV and render it safe.

**Performance Standard.** Conduct heads up/heads down flight IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble and stage AV.
2. Assist with GCS setup.
3. Observe set up of the RSTA laptop, mission planning and loading a mission.
4. Launch AV.
5. Switch between all flight modes.
6. Fly both heads up and heads down (with MO assistance) and keep the AV oriented and on altitude during timed turns, box patterns, orbit and a teardrop approach.
7. Control the speed of the AV (dash/hold).
8. Enter LOIT mode and navigate the AV to various points.
10. With instructor assistance, manually navigate AV to landing area and establish a proper landing position/altitude profile.
11. Land AV from NAV mode by routing the vehicle to the E Waypoint.
12. Recover AV and render it safe.

Initial System Condition. GCS/AV assembled and RSTA powered and configured by the instructor. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. Complete BUQ-I Course.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-12A.


Note: This event helps develop proficiency in precision landing to a spot.

Requirement. Instructor will demonstrate Manual Landing profile. IAW the references, checklists, ETF, and given a functional RQ-12A, the student will:

1. Set up GCS.
2. Plan and load mission information.
3. Assemble, stage and launch AV in MAN mode.
4. Enter ALT mode at briefed altitude.
5. Enter NAV mode and fly at least one complete orbit of diamond default.
6. In NAV mode, redirect AV to specified orbit points.
7. Switch waypoints by MGRS and using range and bearing.
8. Conduct security looking outward and inward using the Gimbaled payload.

Note: Disconnect MO hand controller for LL portion of flight.
9. Conduct LL flying in ALT mode beginning at 100’AGL and stepping down to 20-30’ AGL.
10. Conduct LL flying in MAN mode beginning at 100’AGL and stepping down to 20-30’ AGL.
11. Return to minimum of 300’ AGL, land AV visually by VO initiated AUTOLAND.
12. Recover AV and render it safe.

Note: Required to maintain a video log; recommend use of a second GCS or an external digital video recording device connected to the HUB.

Performance Standard. Manually edit waypoints and reroute AV, LL flight and manual landing IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble AV.
2. Set up the GCS.
3. Plan a mission, and load mission to AV using hand controller.
4. Launch AV while serving as MO for another student.
5. Switch between all flight modes.
6. Fly the diamond default pattern in NAV mode.
7. Manipulate position of orbit points in hand controller, and route AV to those orbit points.
8. Conduct LL flight and traffic pattern navigation in ALT mode.
9. Conduct LL flight and traffic pattern navigation in MAN mode. Hard deck for this profile shall be 10’ AGL until landing.
10. Return to minimum of 300’ AGL, land AV visually by VO initiated AUTOLAND.
11. Recover AV and render it safe.

Note: Required to maintain a video log, recommend use of a second GCS or an external digital video recording device connected to the HUB.

Initial System Condition. GCS powered down. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, and two hand controller configuration. 1:50K map of operating area to navigate from.

Prerequisite. RQ12-1300. RQ12-1350 is only required when this event is conducted at night.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-12A.

RQ12-1320 0.5 I,R L then L/S (N) IQT-I/SUAS-I

Task. Conduct in depth familiarization of all flight modes.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-12A, the student will:

1. Assemble and launch the AV in MAN mode.
2. Establish ALT mode at briefed altitude.
3. Enter ALT mode and navigate the AV using front and side camera modes.
4. Enter LOIT Mode. Ensure payload is extended. Demonstrate use of payload to navigate the AV.
5. Enter NAV mode and navigate using orbit points and system waypoints. Maneuver payload, slave payload to navigation point, control altitude.
6. Enter HOME mode. Maneuver payload, control altitude.
7. While in LOIT, NAV, or HOME use all modes of the Speed submenu (Long, Slow, Far, Fast).
8. Conduct manual approach or NAV E to L and AUTOLAND.
9. Recover AV and render it safe.

Performance Standard. Operate in all flight modes while remaining in the training airspace IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble the AV/GCS and program a mission into the RSTA laptop.
2. Launch the AV and operate in MAN and ALT modes. Extend and retract the Gimbaled payload.
3. Operate the AV in LOIT, NAV, and Home modes.
4. Use payload to conduct reconnaissance while maintaining the AV in the training airspace.
5. Transition through all modes of the Speed submenu.
6. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. RQ12-1310. RQ12-1350 is only required when this event is conducted at night.

Range Training Area. Minimum requirements:
1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.

2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS: RQ-12A.

RQ12-1330 0.4 I L (N) ______ IQT-I

Task. Conduct target acquisition using the RQ-12A.

Note: This event helps develop proficiency in high level silent AUTOLAND recovery.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-12A, the student will:

1. Plan and load mission information.
2. Assemble, stage and launch AV in MAN mode.
3. Enter ALT mode at briefed altitude, conduct remainder of flight heads down, except landing.
4. Navigate around target using ALT and LOIT modes.
5. MO change coordinate format on RSTA from MGRS to LAT/LONG and back to MGRS.
6. MO drag waypoints to establish an offset holding pattern from which to observe the target with the Gimbaled payload while in NAV mode.
7. MO leapfrog diamond waypoints to allow AV to search and navigate along a linear feature.
8. MO use Mission Altitude Control to adjust waypoint altitudes while AV is in NAV mode.
9. MO track stationary and moving targets from the RSTA laptop using AV Tracker.
10. MO use pushpins to track captured images and fix points of interest for the AV to hold on.
11. MO capture HD images from RSTA laptop.
12. MO pull and delete captured images from the HUB.
13. MO process imagery off RSTA laptop.
14. Position AV for High Level AUTOLAND NLT 800’ AGL.
15. Navigate heads up to bring AV into the wind for a high level landing.
16. Recover AV and render it safe.

Performance Standard. Conduct target acquisition using the RQ-12A IAW the references, checklists, and ETF. The student will demonstrate the ability to:
1. Set up the GCS and assemble AV.
2. MO will plan and load a mission using the RSTA laptop.
3. MO launch AV.
4. Complete specified requirements, demonstrating the ability to navigate to and conduct reconnaissance of a target.
5. Manipulate imagery obtained during reconnaissance.
6. Manually initiate AUTOLAND and subsequently pilot the AV during deep stall in order to land at the desired point.
7. Strive to land within 20 meters of desired landing point.
8. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. RQ12-1310. RQ12-1350 is only required when this event is conducted at night.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-12A.

RQ12-1340 0.5 I L D IQT-I

Task. Conduct day mobile operations from a moving vehicle.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-12A, the student will:

1. Set up GCS in mobile configuration.
2. Plan and load mission information. MO shall configure GCS follow mode on RSTA laptop.
3. Assemble, stage and launch AV in MAN mode.
4. Enter ALT mode at briefed altitude.
5. NAV to Home or enter HOME mode, or park the AV at a pre-briefed orbit point while entering vehicle.
6. Use Gimbaled payload to track a moving vehicle from a stationary vehicle.
7. Use Gimbaled payload to track a moving vehicle from a moving vehicle.
8. Use the range and bearing tool to measure the distance between two objects or two locations or a combination of both.
9. Heads up approach to landing area with AUTOLAND.
10. Recover AV and render it safe.

Performance Standard. Conduct day mobile operations from a moving vehicle IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Configure GCS for mobile operations inside a vehicle.
2. Launch AV, then transition to operations from inside a vehicle.
3. Track a moving vehicle from a stationary and moving vehicle using the VO controller and AV Tracker.
4. Ensure GCS GPS and GCS Follow mode are properly configured to support mission.
5. Maintain situational awareness on position of target vehicle during mobile operations.
6. Conduct heads up approach to landing area and manually initiate AUTOLAND.
7. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, "UAV Origin", and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA. Configure system on a vehicle for mobile operations using mobile mount.

Prerequisite. RQ12-1310.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-12A.

RQ12-1350 0.3 I L N IQT-I

Task. Introduction to basic night flight skills.
Requirement. IAW the references, checklists, ETF, and given a functional RQ-12A, the student will:

1. Plan and load mission information.
2. Assemble, stage and launch AV in MAN mode.
3. Enter ALT mode at briefed altitude.
4. Track a linear feature.
5. Conduct reconnaissance of a point feature.
6. NAV E to L for heads down approach and landing.
7. Recover AV and render it safe.

Performance Standard. Conduct a basic night flight IAW the references, checklists, and ETF. The student will demonstrate ability to:

1. Assemble GCS and AV at night.
2. Launch AV at night.
3. Use IR payload mode to track a linear target.
4. Use IR payload mode to conduct reconnaissance of a point target.
5. Detect orientation of AV visually using beacons.
6. Recover AV at night and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. RQ12-1310, RQ12-1340.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-12A.

Task. Introduction to advanced night flight skills.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-12A, the student will:
1. Plan and load mission information.
2. Assemble, stage and launch AV in MAN mode.
3. Enter ALT mode at briefed altitude.
4. Enter NAV mode. MO route AV to programmed waypoints and targets.
5. Conduct reconnaissance of an area in NAV or LOIT mode; identify TAIs or items of interest.
6. MO pull and delete captured images from the HUB.
7. MO process imagery off RSTA laptop.
8. VO conduct heads down approach to landing area.
9. MO vectors AV to landing area to manually AUTOLAND.
10. Recover AV and render it safe.

Performance Standard. Conduct an advanced night flight IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble GCS and AV at night.
2. Launch AV at night.
3. Use RSTA laptop to remain oriented.
4. Use RSTA laptop to reroute AV to specific waypoints or targets.
5. Use IR payload camera to conduct reconnaissance of a point target.
6. MO pull imagery off the HUB and RSTA laptop, and process that imagery into a JPEG; delete when completed.
7. Detect orientation of AV visually using beacons.
8. Conduct a night heads up landing.
9. Manually AUTOLAND AV.
10. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. RQ12-1350.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
Applicable SUAS.  RQ-12A.

Task.  Conduct AV hand-offs during area/point/zone reconnaissance mobile operations.

Note:  Flying this event at night is preferred.  It reinforces mobile operations.

Requirement.  Operate from GCS A and hand off to a secondary GCS, GCS B.  Conduct a minimum of two full AV exchanges for a total of four hand offs (two handing off, two receiving AV); can be conducted from either stationary or mobile GCS.  IAW the references, checklists, ETF and given a functional RQ-12A, the student will:

GCS A (Ground Crew)

1. Review and discuss hand off procedures prior to conducting flight.
2. Plan and load mission information.
3. Assemble, stage, and launch AV in MAN mode.
4. Communicate AV Channel, ALT and AV Number d to GCS B.
5. Conduct briefed mission profile.
6. At planned hand-off point, initiate hand-off sequence with GCS B.
7. Conduct second AV hand-off and reception.
8. NAV E to L for heads down approach and landing.
9. Recover AV and render it safe.

GCS B (Mobile Crew)

1. Set up GCS in mobile configuration.
2. Receive AV Channel, ALT, AV Number from GCS A.
3. Receive AV from GCS A.
4. Use payload camera to track a moving vehicle from a moving/stationary vehicle.
5. Hand AV back to GCS A.

Performance Standard.  Conduct AV hand-offs during area/point/zone reconnaissance mobile operations IAW the references, checklists, and ETF.  The student will demonstrate the ability to:

GCS A (Ground Crew)

1. Launch AV on an area/point/zone reconnaissance mission profile and vector to briefed hand off point.
2. Demonstrate effective communication procedures to initiate hand off to GCS B.
3. When GCS B is ready, hand AV off.
4. When directed by GCS B, receive AV and regain control.
5. Use a wing rock, text, or voice message to confirm to GCS B that AV control has been regained after hand off.
6. Safely land AV heads down using NAV mode, E to L.
7. Recover AV and render it safe.

**GCS B (Mobile Crew)**

1. Configure GCS for mobile operations inside a vehicle.
2. Demonstrate effective communication procedures to initiate hand off from GCS A.
3. When directed by GCS A, receive AV and regain control.
4. Track a moving vehicle from a moving vehicle using EO or IR camera.
5. Maintain situational awareness on position of target vehicle during mobile operations.
6. When GCS A is ready, hand AV off.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration.

1. GCS A – Hand Controller, EO/IR Gimbaled Payload, FalconView, RSTA.
2. GCS B – Hand Controller, EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. RQ12-1340. RQ12-1350 is only required when this event is conducted at night.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. RQ-12A.

**RQ12-1380** 0.4 I L D IQT-I

Task. Introduce operating the RQ-12A using an Untrained Assistant, and conduct Single Operator Operations.

Requirement.

1. Student will brief instructor on Untrained Assistant duties per the matrix below.
### SUAS-O Tasks

- **Mission**
  - Plan Mission
- **Pre-flight**
  - Set waypoints in Mission Hand Controller
  - Run pre-flight check on VO controller: change LOL mode back to “Rally Point” on Mission Hand Controller
- **Launch**
  - Launch AV
  - Take control of VO Controller once airborne
- **Flight**
  - Operate VO Controller
- **Post-Flight**
  - Inspect equipment

### Untrained Assistant Tasks

- **Mission**
  - Secure launch site
  - Provide airspace surveillance
  - Conduct time hack
- **Pre-flight**
  - Transport equipment
  - Hold AV for pre-flight checks
- **Launch**
  - Advance throttle to 100% for launch
  - Hold VO Controller during launch, be prepared to engage AUTOLAND if required
- **Flight**
  - Monitor RSTA laptop
  - Come heads-up for landing
- **Post-Flight**
  - Recover AV
  - Pack and transport equipment

2. Student will perform the requirement as a single operator. Set up, launch, fly, and recover AV as a single operator. Instructor will supervise event and be prepared to serve as an Untrained Assistant. IAW the references, checklists, ETF, and given a functional RQ-12A, demonstrate the following.

   a. Plan and load mission information.
   b. Assemble, stage and launch AV in MAN mode.
   c. Operate AV in ALT, MAN, NAV, LOIT and HOME modes.
   d. Using RSTA, reroute the AV to at least one orbit point.
   e. Cycle through all payload camera modes and magnifications.
   f. Capture an image using hand controller. Capture HD image using RSTA laptop.
   g. NAV to HOME heads down.
   h. Transition to heads up and land manually.
   i. Recover AV and render it safe.

Performance Standard. Conduct requirement as a single operator by conducting flight as a VO and MO. IAW the references, checklists, and ETF, the student will demonstrate the ability to:

1. Explain the duties of an Untrained Assistant.
2. Assemble vehicle and set up RSTA.
3. Conduct preflight checks.
4. Launch the AV.
5. Use hand controller to fly in ALT, MAN, NAV, LOIT, and HOME modes.
6. Use RSTA to navigate the AV, edit waypoints, and drag orbit points.
7. Capture images with hand controller and RSTA laptop.
8. Cycle through all payload camera options and maintain contact with a target.
9. Reroute AV to HOME heads down.
10. Transition to heads up and land manually.
11. Recover AV and render it safe.

Initial System Condition. Load DTED, "UAV Origin", and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. RQ12-1310.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-12A.

RQ12-1390 0.4 I L D IQT-I/SUAS-I

Task. Alternate Launch and Recovery Techniques.

Requirement. With instructor oversight, student will utilize alternate techniques for launching and recovering the AV to maximize the flexibility of the RQ-12A platform in a variety of potential operational scenarios. These techniques will be pre-briefed and discussed in an Operational Risk Management (ORM) Brief from a completed ORM form. The ability to complete all techniques is dependent upon the training area environment and regulations, unit regulations, and availability of appropriate safety equipment and materials. The ETF should reflect in detail which techniques were demonstrated. Those that were not demonstrated should be briefed in detail. IAW the references, checklists, ETF, and given a functional RQ-12A, the student will:

1. Plan and load mission information.
2. VO assemble and stage the AV.
3. MO launch in MAN mode from a moving vehicle (boat or ground vehicle) with appropriate safety controls implemented to prevent injury and/or equipment damage.
4. Heads down, NAV to HOME.
5. Transition to heads up and land manually.
6. Using a combination of techniques, land the AV within a 10m x 10m area to replicate a roof top or compound.
7. Land the AV in the water.
8. Land the AV into a cargo net or similar trapping device to limit impact damage to AV on hard or treacherous terrain.
9. Recover AV and render it safe.

Performance Standard. Safely conduct alternate launch and recovery techniques IAW the references, checklists, and ETF. With instructor oversight the student will demonstrate the ability to execute the alternate launch and recovery techniques within the operational limitations of the AV operator’s manual and according to the pre-mission Operational Risk Management form and brief.

Initial System Condition. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload (RQ-20A), dummy payload (RQ-12A, if available), FalconView, RSTA.

Prerequisite. RQ12-1310.

Range Training Area. Minimum requirements:
1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.
1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-12A.

Task. Culmination Flight for RQ-12A.

Requirement. With instructor oversight, the student shall be responsible for all aspects of flight coordination and conduct. IAW the references, checklists, ETF and given a functional RQ-12A, the student will:
1. Power up GCS.
2. Plan and conduct full mission brief and load mission information.
3. Assemble and stage AV.
4. Coordinate with Airspace Control Authority (ACA) or range control (simulate call to instructor) for conduct of flight operations.
5. Launch in MAN mode then enter ALT mode at briefed altitude.
6. NAV to MO preprogrammed waypoints.
7. Conduct area and point reconnaissance.
8. Use orbit points to control profile of AV.
9. Respond accurately and precisely to simulated emergency conditions.
10. Use MAN mode or NAV E to L for heads down approach and landing.
11. Recover AV and render it safe.

Performance Standard. IAW the references, checklists, and ETF, the student will demonstrate ability to conduct the culmination flight for the RQ-12A without assistance from the instructor.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. RQ12-1300, RQ12-1310, RQ12-1320, RQ12-1330, RQ12-1340, RQ12-1350, RQ12-1360, RQ12-1370, RQ12-1380.

Range Training Area. Minimum requirements:
1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.
1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. RQ-12A.

5. IQT for RQ-20A PUMA AE DDL.
   a. Purpose. To develop proficiency and build experience in the basic operation of the RQ-20A SUAS platform.
   b. Admin Notes. The RQ-20A IQT syllabus shall be supplemented with essential academic / classroom instruction necessary to operate the systems properly, plan for and conduct flight operations while adhering to
regulations and ensuring safety of flight. Academic / classroom training shall include as the minimum the following subject areas:

(1) Introductory Skills.
   (a) Demonstrate publications knowledge.
   (b) Demonstrate prohibited activities knowledge.
   (c) Demonstrate system description knowledge.
   (d) Demonstrate knowledge of flight log maintenance requirements
   (e) Perform system assembly/disassembly.
   (f) Conduct preflight, launch, and recovery operations.
   (g) Demonstrate knowledge of controls and indicators.
   (h) Conduct flight operations and flight training using the system simulator.

(2) Intermediate Skills.
   (a) Demonstrate knowledge of mapping and GPS.
   (b) Demonstrate knowledge of airspace management.
   (c) Demonstrate how to use FalconView, RP UAV Tool Bar, and Image Processing software.
   (d) Operate range and bearing tool.
   (e) Conduct basic mission planning / crew mission briefing.
   (f) Conduct basic flight operations and target acquisition.
   (g) Perform enhanced reconnaissance, surveillance, and launch/recovery techniques.
   (h) Conduct water landings and recovery.
   (i) Conduct emergency procedures.
   (j) Perform system maintenance and troubleshooting.

(3) Advanced Skills.
   (a) Perform incident and readiness reporting procedures.
   (b) Conduct mobile, night, relay, and handoff operations.
   (c) Conduct advanced reconnaissance techniques.
   (d) Conduct point precision landings.
   (e) Operate using an Untrained Assistant.

   c. Conduct. Flight events are conducted as specified. All I-coded events shall be conducted live; IQT events shall be conducted Live (L). Events that are also R-coded may be subsequently conducted live or with the use the system simulator. Events coded “I,R” are device coded “L then L/S” to indicate initial conducted live and refresh conducted either live or simulator (L/S).

   d. Total Flight Training. 11 flights, 5.1 hours. Additionally, a student must complete a minimum of 5 successful launches and 5 successful landings with each SUAS to satisfactorily complete the AE syllabus.

   RQ20-1400 0.5  I,R  L then L  D  IQT-I/SUAS-I

   Task. Conduct heads up/heads down flight using the RQ-20A.

   Requirement. Complete initial flight using all system flight modes IAW the references, checklists, ETF, and given a functional RQ-20A. Instructor will demonstrate first flight.

   Instructor will demonstrate:
1. GCS setup.
2. How to plan a mission and how to load mission information and RSTA setup.
3. How to assemble, stage, launch, and recover AV.

**Student will conduct the following:**

1. Assemble and stage the system.
2. Launch in MAN mode, enter ALT mode when operating altitude is established.
3. Conduct timed turns, box pattern, orbit, and teardrop approach.
4. Conduct dashes.
5. Enter LOIT mode and navigate the AV.
7. Use NAV and HOME modes.
8. Land the AV from ALT mode by manually initiating AUTOLAND.
9. Recover AV and render it safe.

**Performance Standard.** Conduct heads up/heads down flight IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble AV.
2. Assist with GCS setup.
3. Observe set up of the RSTA laptop, mission planning and loading a mission.
4. MO launch AV.
5. Switch between all flight modes.
6. Fly both heads up and heads down (with MO assistance) and keep the AV oriented and on altitude during timed turns, box patterns, orbit and a teardrop approach.
7. Control the speed of the AV (dash/hold).
8. Enter LOIT mode and navigate the AV to various points.
10. With instructor assistance, manually navigate the AV to the landing area and establish a proper landing position/altitude profile.
11. Land AV from ALT mode by manually initiating AUTOLAND.
12. Recover AV and render it safe.

**Initial System Condition.** GCS/AV assembled and RSTA powered and configured by the instructor. Load DTED, “UAV Origin”, and 500m diamond default.

**System Configuration.** EO/IR Gimbaled Payload, FalconView, RSTA.

**Prerequisite.** Complete BUQ-I Course.

**Range Training Area.** Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.
References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of
   Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and
   Operating Instructions (UAS Policies and Operations)

Applicable SUAS.  RQ-20A.

RQ20-1410 0.5    I,R    L then L    (N)    IQT-I/SUAS-I


   Note:  This event helps develop proficiency in precision landing to a spot.

Requirement.  Instructor will demonstrate Manual Landing profile.
   IAW the references, checklists, ETF, and given a functional RQ-20A, the student will:

1. Set up GCS.
2. Plan and load mission information.
3. Assemble, stage and launch AV in MAN mode.
4. Enter ALT mode at briefed altitude.
5. Enter NAV mode and fly at least one complete orbit of diamond default.
6. In NAV mode, MO redirect AV to specified orbit points.
7. MO switch waypoints by MGRS and using range and bearing.
8. Conduct security looking outward and inward using the Gimbaled payload.

   Note:  Disconnect MO hand controller for LL portion of flight
9. Conduct LL flying in ALT mode beginning at 100’AGL and stepping down to 20-30’ AGL.
10. Conduct LL flying in MAN mode beginning at 100’AGL and stepping down to 20-30’ AGL.
11. Return to minimum of 300’ AGL, land AV visually by VO initiated AUTOLAND.
12. Recover AV and render it safe.

   Note:  Maintain a video log; recommend use of a second GCS or an external digital video recording device connected to the HUB.

Performance Standard.  Manually edit waypoints and reroute AV, LL flight and manual landing IAW the references, checklists, and ETF.  The student will demonstrate the ability to:

1. Assemble AV.
2. Set up the GCS.
3. Plan a mission, and load mission to AV using hand controller.
4. MO launch AV.
5. Switch between all flight modes.
6. Fly the diamond default pattern in NAV mode.
7. Manipulate position of orbit points in hand controller, and route AV to those orbit points.
8. Conduct LL flight and traffic pattern navigation in ALT mode.
9. Conduct LL flight and traffic pattern navigation in MAN mode. Hard deck for this profile shall be 10’ AGL until landing.
10. Return to minimum of 300’ AGL, land AV visually by VO initiated AUTOLAND.
11. Recover AV and render it safe.

Note: Maintain a video log; recommend use of a second GCS or an external digital video recording device connected to the HUB.

Initial System Condition. GCS powered down. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, and two hand controller configuration. 1:50K map of operating area to navigate from.

Prerequisite. RQ20-1400. RQ20-1450 is only required when this event is conducted at night.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-20A.

RQ20-1420 0.5 I,R L then L/S (N) IQT-I/SUAS-I

Task. Conduct in depth familiarization of all flight modes.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-20A, the student will:

1. Assemble and launch the AV in MAN mode.
2. Establish ALT mode at briefed altitude.
3. Enter ALT mode and navigate AV using front and side camera modes.
4. Enter LOIT Mode and demonstrate use of payload to navigate the AV. Ensure payload is extended.
5. Enter NAV mode and navigate using orbit points and system waypoints. Maneuver payload, slave payload to navigation point, control altitude.
6. Enter HOME mode and maneuver payload, be sure to control altitude.
7. While in LOIT, NAV, or HOME use all modes of the Speed submenu (Long, Slow, Far, Fast).
8. Conduct manual approach or NAV E to L and AUTOLAND.
9. Recover AV and render it safe.

Performance Standard. Operate in all flight modes while remaining in the training airspace IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble the AV/GCS, and program a mission into the RSTA laptop.
2. Launch the AV and operate in MAN and ALT modes.
3. Extend and retract the Gimbaled payload.
4. Operate the AV in LOIT, NAV, and Home modes.
5. Use payload to conduct reconnaissance while maintaining the AV in the training airspace.
6. Transition through all modes of the Speed submenu.
7. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. RQ20-1410. RQ20-1450 is only required when this event is conducted at night.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-20A.
RQ20-1430 0.5  I  L  (N)  IQT-I

Task. Conduct target acquisition using the RQ-20A.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-20A, the student will:

1. Plan and load mission information.
2. Assemble, stage and launch AV in MAN mode.
3. Enter ALT mode at briefed altitude, conduct remainder of flight heads down, except landing.
4. Navigate around target using ALT and LOIT modes.
5. MO change coordinate format on RSTA from MGRS to LAT/LONG and back to MGRS.
6. MO drag waypoints to establish an offset holding pattern from which to observe the target with the Gimbaled payload while in NAV mode.
7. MO leapfrog diamond waypoints to allow AV to search and navigate along a linear feature.
8. MO use Mission Altitude Control to adjust waypoint altitudes while AV is in NAV mode.
9. MO track stationary and moving targets from the RSTA laptop using AV Tracker.
10. MO use pushpins to track captured images and fix points of interest for the AV to hold on.
11. MO capture HD images from RSTA laptop.
12. MO pull and delete captured images from the HUB.
13. MO process imagery off RSTA laptop.
14. Position AV for High Level AUTOLAND NLT 800’ AGL.
15. Navigate heads up to bring AV into the wind for a high level landing.
16. Recover AV and render it safe.

Performance Standard. Conduct target acquisition using the SUAS IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble AV.
2. Set up the GCS and launch AV.
3. Plan and load a mission using the RSTA laptop.
4. Complete specified requirements, demonstrating the ability to navigate to and conduct reconnaissance of a target.
5. Manipulate imagery obtained during reconnaissance.
6. Manually initiate AUTOLAND and subsequently pilot the AV during deep stall in order to land at the desired point.
7. Strive to land within 20 meters of desired landing point.
8. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. RQ20-1410. RQ20-1450 is only required when this event is conducted at night.
Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.
1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-20A.

Task. Conduct day mobile operations from a moving vehicle.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-20A, the student will:

1. Set up GCS in mobile configuration.
2. Plan and load mission information.
3. MO configure GCS follow mode on RSTA laptop.
4. Assemble, stage, launch AV in MAN mode.
5. Enter ALT mode at briefed altitude.
6. NAV to Home or enter HOME mode, or park the AV at a pre-briefed orbit point while entering vehicle.
7. Use Gimbaled payload to track a moving vehicle from a stationary vehicle.
8. Use Gimbaled payload to track a moving vehicle from a moving vehicle.
9. Use the range and bearing tool to measure the distance between two objects or two locations or a combination of both.
10. Heads up approach to landing area with AUTOLAND.
11. Recover AV and render it safe.

Performance Standard. Conduct day mobile operations from a moving vehicle. IAW the references, checklists, and ETF, the student will demonstrate the ability to:

1. Configure GCS for mobile operations inside a vehicle.
2. Launch AV, then transition to operations from inside a vehicle.
3. Track a moving vehicle from a stationary and moving vehicle using the VO controller and AV Tracker.
4. Ensure GCS GPS and GCS Follow mode are properly configured to support mission.
5. Maintain situational awareness on position of target vehicle during mobile operations.
6. Conduct heads up approach to landing area and manually initiate AUTOLAND.
7. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA. Configure system on a vehicle for mobile operations using mobile mount.

Prerequisite. RQ20-1410.

Range Training Area. Minimum requirements:
1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.
1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-20A.

Task. Introduction to basic night flight skills.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-20A, the student will:

1. Plan and load mission information.
2. Assemble, stage and launch AV in MAN mode.
3. Enter ALT mode at briefed altitude.
4. Track a linear feature.
5. Conduct reconnaissance of a point feature.
6. Use IR Illuminator.
7. NAV E to L for heads down approach and landing.
8. Recover AV and render it safe.

Performance Standard. Conduct a basic night flight IAW the references, checklists, and ETF. The student will demonstrate ability to:

1. Assemble GCS and AV at night.
2. Launch AV at night.
3. Use IR payload mode to track a linear target.
4. Use IR payload mode to conduct reconnaissance of a point target.
5. Use IR Illuminator.
7. Recover AV at night and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. RQ20-1410, RQ20-1440.

Range Training Area. Minimum requirements:
1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.
1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-20A.

Task. Introduction to advanced night flight skills.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-20A, the student will:
1. Plan and load mission information.
2. Assemble, stage and launch AV in MAN mode.
3. Enter ALT mode at briefed altitude.
4. Enter NAV mode. MO will route AV to programmed waypoints and targets.
5. Conduct reconnaissance of an area in NAV or LOIT mode; identify TAIs or items of interest.
6. MO pull and delete captured images from the HUB.
7. MO process imagery off RSTA laptop.
8. VO conduct heads down approach to landing area.
9. MO vector AV to landing area to manually AUTOLAND.
10. Recover AV and render it safe.

Performance Standard. Conduct an advanced night flight IAW the references, checklists, and ETF. The student will demonstrate the ability to:
1. Assemble GCS and AV at night.
2. Launch AV at night.
3. Use RSTA laptop to remain oriented.
4. Use RSTA laptop to reroute AV to specific waypoints or targets.
5. Use IR payload mode to conduct reconnaissance of a point target.
6. Pull imagery off the HUB and RSTA laptop, and process that imagery into a JPEG; delete when completed.
7. Detect orientation of AV visually using beacons.
8. Conduct a night heads up landing.
9. Manually AUTOLAND AV.
10. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. RQ20-1450.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-20A.

RQ20-1470 0.5 I,R L then L/S (N) _IQT-I/SUAS-I

Task. Conduct AV hand-offs during area/point/zone reconnaissance mobile operations.

Note: Flying this event at night is preferred. It reinforces mobile operations.

Requirement. Operate from GCS A and hand off to a secondary GCS, GCS B. Conduct a minimum of two full AV exchanges for a total of four hand offs (two handing off, two receiving AV); can be conducted from either stationary or mobile GCS. IAW the references, checklists, ETF and given a functional RQ-12A, the student will:
GCS A (Ground Crew)

1. Review and discuss hand off procedures prior to conducting flight.
2. Plan and load mission information.
3. Assemble, stage and launch AV in MAN mode.
4. Communicate AV Channel, ALT and AV Number to GCS B.
5. Conduct briefed mission profile.
6. At planned hand-off point, initiate hand-off sequence with GCS B.
7. Conduct second AV hand-off and reception.
8. NAV E to L for heads down approach and landing.
9. Recover AV and render it safe.

GCS B (Mobile Crew)

1. Set up GCS in mobile configuration.
2. Receive AV Channel, ALT, AV Number from GCS A.
3. Receive AV from GCS A.
4. Use payload camera to track a moving vehicle from a moving/stationary vehicle.
5. Hand AV back to GCS A.

Performance Standard. Conduct AV hand-offs during area/point/zone reconnaissance mobile operations IAW the references, checklists, and ETF. The student will demonstrate the ability to:

GCS A (Ground Crew)

1. Launch AV on an area/point/zone reconnaissance mission profile and vector to briefed hand off point.
2. MO will demonstrate effective communication procedures to initiate hand off to GCS B.
3. When GCS B is ready, hand AV off.
4. When directed by GCS B, VO will receive AV and regain control.
5. Use a wing rock, text, or voice message method to confirm to GCS B that AV control has been regained after hand off.
6. Safely land AV heads down using NAV mode, E to L.
7. Recover AV and render it safe.

GCS B (Mobile Crew)

1. Configure GCS for mobile operations inside a vehicle.
2. Demonstrate effective communication procedures to initiate hand off from GCS A.
3. When directed by GCS A, VO will receive AV and regain control.
4. Track a moving vehicle from a moving vehicle using EO or IR camera.
5. Maintain situational awareness on position of target vehicle during mobile operations.
6. When GCS A is ready, hand AV off.
**Initial System Condition.** GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

**System Configuration.**

1. GCS A - Hand Controller, EO/IR Gimbaled Payload, FalconView, RSTA.
2. GCS B – Hand Controller, EO/IR Gimbaled Payload, FalconView, RSTA.

**Prerequisite.** RQ20-1440. RQ20-1450 is only required when this event is conducted at night.

**Range Training Area.** Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

**References.**

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

**Applicable SUAS.** RQ-20A.

**Task.** Operate the RQ-20A using an Untrained Assistant.

**Requirement.** With instructor oversight and one Untrained Assistant, the student shall be responsible for all aspects of flight coordination and conduct IAW the references, checklists, and ETF. Given a functional RQ-20A, the student will conduct tasks as noted in the matrix below:

<table>
<thead>
<tr>
<th>SUAS-O Tasks</th>
<th>Untrained Assistant Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mission</td>
<td>Secure launch site</td>
</tr>
<tr>
<td>• Plan Mission</td>
<td>Provide airspace surveillance</td>
</tr>
<tr>
<td>• Set waypoints in Mission Hand Controller</td>
<td>Conduct time hack</td>
</tr>
<tr>
<td>Pre-flight</td>
<td>Transport equipment</td>
</tr>
<tr>
<td>• Run pre-flight check on VO controller: change LOL mode back to “Rally Point” on Mission Hand Controller</td>
<td>Hold AV for pre-flight checks</td>
</tr>
</tbody>
</table>
Performance Standard. Operate the RQ-20A using an Untrained Assistant IAW the references, checklists, and ETF. The student will demonstrate the ability to conduct all required tasks listed in the matrix above (both SUAS-O and Untrained Assistant) without assistance from the instructor. Student must demonstrate the ability to guide and direct the actions of the Untrained Assistant.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. RQ20-1410.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-20A.

RQ20-1490 0.4 I L D IQT-I/SUAS-I

Task. Alternate Launch and Recovery Techniques.

Requirement. With instructor oversight, student will utilize alternate techniques for launching and recovering the AV to maximize the flexibility of the All Environment platform in a
variety of potential operational scenarios. These techniques will be prebriefed and discussed in an Operational Risk Management (ORM) Brief from a completed ORM form. The ability to complete all techniques is dependent upon the training area environment and regulations, unit regulations, and availability of appropriate safety equipment and materials. The ETF should reflect in detail which techniques were demonstrated. Those that were not demonstrated should be briefed in detail. Given the references, checklists, ETF, and given a functional RQ-20A, the student will:

1. Plan and load mission information.
2. Assemble and stage AV.
3. Launch in MAN Mode from a moving vehicle (boat or ground vehicle) with appropriate safety controls implemented to prevent injury and/or equipment damage.
4. Launch the RQ-20A using the field launcher.
5. Heads down, NAV to HOME.
6. Transition to heads up and land manually.
7. Using a combination of techniques, land the AV within a 10m x 10m area to replicate a roof top or compound.
8. Land the AV in the water.
9. Land the AV into a cargo net or similar trapping device to limit impact damage to AV on hard or treacherous terrain.
10. Recover AV and render it safe.

Performance Standard. Safely conduct alternate launch and recovery techniques IAW the references, checklists, and ETF. With instructor oversight the student will demonstrate the ability to execute the alternate launch and recovery techniques within the operational limitations of the AV operator’s manual and according to the pre-mission Operational Risk Management form and brief.

Initial System Condition. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. RQ20-1410.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.
1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS.  RQ-20A.

RQ20-1495 0.4      I       L    (N)        IQT-I

Task.  Culmination Flight for RQ-20A.

Requirement.  With instructor oversight, students shall be responsible for all aspects of flight coordination and conduct. IAW the references, checklists, ETF, and given a functional RQ-12A, the student will:

1. Power up GCS.
2. Plan and conduct full mission brief and load mission information.
3. Assemble and stage AV.
4. Coordinate with Airspace Control Authority (ACA) or range control (simulate call to instructor) for conduct of flight operations.
5. Launch in MAN mode then enter ALT mode at briefed altitude.
6. NAV to preprogrammed waypoints.
7. Conduct area and point reconnaissance.
8. Use orbit points to control profile of AV.
9. Respond accurately and precisely to simulated emergency conditions.
10. Use MAN mode or NAV E to L for heads down approach and landing.
11. Recover AV and render it safe.

Performance Standard.  IAW the references, checklists, and ETF, the student will demonstrate ability to conduct the culmination flight for the RQ-20A without assistance from the instructor.

Initial System Condition.  GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration.  EO/IR Gimbaled Payload, FalconView, RSTA.


Range Training Area.  Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-20A.

6. IQT for All Environment SUAS (Combined RQ-12A / RQ-20A).
   a. Purpose. To develop proficiency and build experience in the basic operation of the RQ-20A and RQ-12A SUAS platforms. The RQ-20A and RQ-12A platforms are operationally identical in nature once airborne and thus lend themselves to combined training for Special Operations units operating both types of air vehicles.
   b. Admin Notes. The All Environment (AE) IQT syllabus shall be supplemented with essential academic / classroom instruction necessary to operate the systems properly, plan for and conduct flight operations while adhering to regulations and ensuring safety of flight. Academic / classroom training shall include as the minimum the following subject areas for:

   (1) Introductory Skills.
   (a) Demonstrate publications knowledge.
   (b) Demonstrate prohibited activities knowledge.
   (c) Demonstrate system description knowledge.
   (d) Demonstrate knowledge of flight log maintenance requirements
   (e) Perform system assembly/disassembly.
   (f) Conduct preflight, launch, and recovery operations.
   (g) Demonstrate knowledge of controls and indicators.
   (h) Conduct flight operations and flight training using the system simulator.

   (2) Intermediate Skills.
   (a) Demonstrate knowledge of mapping and GPS.
   (b) Demonstrate knowledge of airspace management.
   (c) Demonstrate how to use FalconView, RPUAV Tool Bar, and Image Processing software.
   (d) Operate range and bearing tool.
   (e) Conduct basic mission planning / crew mission briefing.
   (f) Conduct basic flight operations and target acquisition.
   (g) Perform enhanced reconnaissance, surveillance, and launch/recovery techniques.
   (h) Conduct water landings and recovery.
   (i) Conduct emergency procedures.
   (j) Perform system maintenance and troubleshooting.

   (3) Advanced Skills.
   (a) Perform incident and readiness reporting procedures.
   (b) Conduct mobile, night, relay, and handoff operations.
   (c) Conduct advanced reconnaissance techniques.
   (d) Conduct point precision landings.
   (e) Operate using an Untrained Assistant.
   (f) Operate RQ-12A with a single operator.

c. Conduct. Flight events are conducted as specified. All I-coded events shall be conducted live; IQT events shall be conducted Live (L). Events that are also R-coded may be conducted live or use a simulator.

Enclosure (1)
Events coded “I,R” are device coded “L then L/S” to indicate initial conducted live and refresh conducted either live or simulator (L/S).

d. **Total Flight Training.** 14 flights, 6.6 hours. Additionally, a student must complete a minimum of 5 successful launches and 5 successful landings with each SUAS to satisfactorily complete the AE syllabus.

<table>
<thead>
<tr>
<th>AE-1500</th>
<th>0.6</th>
<th>I</th>
<th>L</th>
<th>D</th>
<th>IQT-I</th>
</tr>
</thead>
</table>

**Task.** Conduct heads up/heads down flight using the RQ-20A.

**Requirement.** Complete initial flight using all system flight modes IAW the references, checklists, ETF, and given a functional RQ-20A. Instructor will demonstrate first flight.

**Instructor will demonstrate:**
1. GCS setup.
2. How to plan a mission and how to load mission information and RSTA setup.
3. How to assemble, stage, launch, and recover AV.

**Student will conduct the following:**
1. Assemble and stage the system.
2. Launch in MAN mode, enter ALT mode when operating altitude is established.
3. Conduct timed turns, box pattern, orbit, and teardrop approach.
4. Conduct dashes.
5. Enter LOIT mode and navigate the AV.
7. Use NAV and HOME modes.
8. Land the AV from ALT mode by manually initiating AUTOLAND.
9. Recover AV and render it safe.

**Performance Standard.** Conduct heads up/heads down flight IAW the references, checklists, and ETF. The student will demonstrate the ability to:
1. Assemble AV.
2. Assist with GCS setup.
3. Observe set up of the RSTA laptop, mission planning and loading a mission.
4. MO launch AV.
5. Switch between all flight modes.
6. Fly both heads up and heads down (with MO assistance) and keep the AV oriented and on altitude during timed turns, box patterns, orbit and a teardrop approach.
7. Control the speed of the AV (dash/hold).
8. Enter LOIT mode and navigate AV to various points.
10. With instructor assistance, manually navigate AV to the landing area and establish a proper landing position/altitude profile.
11. Land the AV from ALT mode by manually initiating AUTOLAND.
12. Recover AV and render it safe.

**Initial System Condition.** GCS/AV assembled and RSTA powered and configured by the instructor. Load DTED, “UAV Origin”, and 500m diamond default.

**System Configuration.** EO/IR Gimbaled Payload, FalconView, RSTA.

**Prerequisite.** Complete BUQ-I Course.

**Range Training Area.** Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

**References.**

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

**Applicable SUAS.** RQ-20A.

**Task.** Conduct heads up/head down flight using the RQ-12A.

**Requirement.** Complete initial flight using all system flight modes IAW the references, checklists, ETF, and given a functional RQ-12A. Instructor will demonstrate first flight.

**Instructor will demonstrate:**

1. GCS setup.
2. How to plan a mission and how to load mission information and RSTA setup.
3. How to assemble, stage, launch, and recover AV.

**Student will conduct the following:**

1. Assemble and stage the system.
2. Launch in MAN mode, enter ALT mode when operating altitude is established.
3. Conduct timed turns, box pattern, orbit, and teardrop approach.
4. Conduct dashes.
5. Enter LOIT mode and navigate the AV.
7. Use NAV and HOME modes.
8. Land the AV from ALT mode by manually initiating AUTOLAND.
9. Recover AV and render it safe.

**Performance Standard.** Conduct heads up/heads down flight IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble and stage AV.
2. Assist with GCS setup.
3. Observe set up of the RSTA laptop, mission planning and loading a mission.
4. MO launch AV.
5. Switch between all flight modes.
6. Fly both heads up and heads down (with MO assistance) and keep the AV oriented and on altitude during timed turns, box patterns, orbit and a teardrop approach.
7. Control the speed of the AV (dash/hold).
8. Enter LOIT mode and navigate the AV to various points.
10. With instructor assistance, manually navigate AV to landing area and establish a proper landing position/altitude profile.
11. Land the AV from ALT mode by manually initiating AUTOLAND.
12. Recover AV and render it safe.

**Initial System Condition.** GCS/AV assembled and RSTA powered and configured by the instructor. Load DTED, "UAV Origin", and 500m diamond default.

**System Configuration.** EO/IR Gimbaled Payload, FalconView, RSTA. The AV dummy RQ-12A Payload may be substituted for the EO/IR Gimbaled Payload to introduce launching and recovering the AV in order to limit damage to payloads.

**Prerequisite.** Complete BUQ-I Course.

**Range Training Area.** Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

**References.**

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

**Applicable SUAS.** RQ-12A.
Task. Manually edit waypoints and reroute AV, Low Level (LL) flight and manual landing.

Note: This event helps develop proficiency in precision landing to a spot.

Requirement. Instructor will demonstrate LL AUTOLAND. IAW the references, checklists, ETF, and given a functional applicable SUAS, the student will:

1. Set up GCS.
2. Plan and load mission information.
3. Assemble, stage and launch AV in MAN mode.
4. Enter ALT mode at briefed altitude.
5. Enter NAV mode and fly at least one complete orbit of diamond default.
6. In NAV mode, MO redirect AV to specified orbit points.
7. MO switch waypoints by MGRS and using range and bearing.
8. Conduct security looking outward and inward using the Gimbaled payload.

Note: Disconnect MO hand controller for LL portion of flight.

9. Conduct LL flying in ALT mode beginning at 100’AGL and stepping down to 20-30’ AGL.
10. Conduct LL flying in MAN mode beginning at 100’AGL and stepping down to 20-30’ AGL.
11. Return to a minimum of 300’ AGL, land AV visually by VO initiated AUTOLAND.
12. Recover AV and render it safe.

Note: Requirement to maintain a video log; recommend use of a second GCS or an external digital video recording device connected to the HUB.

Performance Standard. Manually edit waypoints and reroute AV, LL flight and manual landing IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble AV.
2. Set up the GCS.
3. Plan a mission, and load mission to AV using hand controller.
4. Launch AV while serving as MO for another student.
5. Switch between all flight modes.
6. Fly the diamond default pattern in NAV mode.
7. Manipulate position of orbit points in hand controller, and route AV to those orbit points.
8. Conduct LL flight and traffic pattern navigation in ALT mode.
9. Conduct LL flight and traffic pattern navigation in MAN mode. Hard deck for this profile shall be 10’ AGL until landing.
10. Return to a minimum of 300’ AGL, land AV visually by VO initiated AUTOLAND.
11. Recover AV and render it safe.
Note: Requirement to maintain a video log; recommend use of a second GCS or an external digital video recording device connected to the HUB.

**Initial System Condition.** GCS powered down. Load DTED, “UAV Origin”, and 500m diamond default.

**System Configuration.** EO/IR Gimbaled Payload, and two hand controller configuration. 1:50K map of operating area to navigate from.

**Prerequisite.** AE-1500 or AE-1510, as applicable to SUAS used to complete this event. AE-1560 is only required when this event is conducted at night.

**Range Training Area.** Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

**References.**
1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

**Applicable SUAS.** RQ-12A or RQ-20A.

**Task.** Conduct in depth familiarization of all flight modes.

**Requirement.** IAW the references, checklists, ETF, and given a functional SUAS, the student will:

1. Assemble and launch the AV in MAN mode.
2. Establish ALT mode at briefed altitude.
3. Enter ALT mode and navigate the AV using front and side camera modes.
4. Enter LOIT Mode. Ensure payload is extended. Demonstrate use of payload to navigate the AV.
5. Enter NAV mode and navigate using orbit points and system waypoints. Maneuver payload, slave payload to navigation point, control altitude.
6. Enter HOME mode. Maneuver payload, control altitude.
7. While in LOIT, NAV, or HOME use all modes of the Speed submenu (Long, Slow, Far, Fast).
8. Conduct manual approach or NAV E to L and AUTOLAND.
9. Recover AV and render it safe.
Performance Standard. Operate in all flight modes while remaining in the training airspace IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble the AV/GCS and program a mission into the RSTA laptop.
2. Launch the AV and operate in MAN and ALT modes. Extend and retract the Gimbaled payload.
3. Operate the AV in LOIT, NAV, and Home modes. Use payload to conduct reconnaissance while maintaining the AV in the training airspace.
4. Transition through all modes of the Speed submenu.
5. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. AE-1520. AE-1560 is only required when this event is conducted at night.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. RQ-12A or RQ-20A.

AE-1540 0.6 I L (N) __ ___IQT-I

Task. Conduct target acquisition using the SUAS.

Requirement. IAW the references, checklists, ETF, and given a functional applicable SUAS, the student will:

1. Plan and load mission information.
2. Assemble, stage and launch AV in MAN mode.
3. Enter ALT mode at briefed altitude, conduct remainder of flight heads down, except landing.
4. Navigate around target using ALT and LOIT modes.
5. MO change coordinate format on RSTA from MGRS to LAT/LONG and back to MGRS.
6. MO drag waypoints to establish an offset holding pattern from which to observe the target with the Gimbaled payload while in NAV mode.
7. MO leapfrog diamond waypoints to allow AV to search and navigate along a linear feature.
8. MO use Mission Altitude Control to adjust waypoint altitudes while AV is in NAV mode.
9. MO track stationary and moving targets from the RSTA laptop using AV Tracker.
10. MO use pushpins to track captured images and fix points of interest for the AV to hold on.
11. MO capture HD images from RSTA laptop.
12. MO pull/delete captured images from the HUB.
13. MO process imagery off RSTA laptop.
14. Position AV for High Level AUTOLAND NLT 800’ AGL.
15. Navigate heads up to bring AV into the wind for a high level landing.
16. Recover AV and render it safe.

Performance Standard. Conduct target acquisition using the RQ-12A or RQ-20A. IAW the references, checklists, and ETF, the student will demonstrate the ability to:

1. Assemble AV.
2. Set up the GCS.
3. MO will plan and load a mission using the RSTA laptop.
4. Complete specified requirements, demonstrating the ability to navigate to and conduct reconnaissance of a target.
5. Manipulate imagery obtained during reconnaissance.
6. Manually initiate AUTOLAND and subsequently pilot the AV during deep stall in order to land at the desired point.
7. Strive to land within 20 meters of desired landing point.
8. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. AE-1520. AE-1560 is only required when this event is conducted at night.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of
Designated Unmanned Aerial Vehicle Operator (DUO)

3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. RQ-12A or RQ-20A.

AE-1550 0.6 I L D IQT-I

Task. Conduct day mobile operations from a moving vehicle.

Requirement. IAW the references, checklists, ETF, and given a functional applicable SUAS, the students will:

1. Set up GCS in mobile configuration.
2. Plan and load mission information. MO configure GCS follow mode on RSTA laptop.
3. Assemble, stage and launch AV in MAN mode.
4. Enter ALT mode at briefed altitude.
5. NAV to Home or enter HOME mode, or park the AV at a pre-briefed orbit point while entering vehicle.
6. Use Gimbaled payload to track a moving vehicle from a stationary vehicle.
7. Use Gimbaled payload to track a moving vehicle from a moving vehicle.
8. Use the range and bearing tool to measure the distance between two objects or two locations or a combination of both.
9. Heads up approach to landing area with AUTOLAND.
10. Recover AV and render it safe.

Performance Standard. Conduct day mobile operations from a moving vehicle IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Configure GCS for mobile operations inside a vehicle.
2. Launch AV, then transition to operations from inside a vehicle.
3. Track a moving vehicle from a stationary and moving vehicle using the VO controller and AV Tracker.
4. Ensure GCS GPS and GCS Follow mode are properly configured to support mission.
5. Maintain situational awareness on position of target vehicle during mobile operations.
6. Conduct heads up approach to landing area and manually initiate AUTOLAND.
7. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA. Configure system on a vehicle for mobile operations using mobile mount.

Prerequisite. AE-1520.
Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. RQ-12A is preferred, but RQ-20A can be used.

Task. Introduction to basic night flight skills.

Requirement. IAW the references, checklists, ETF, and given a functional applicable SUAS, the student will:

1. Plan and load mission information.
2. Assemble, stage and launch AV in MAN mode.
3. Enter ALT mode at briefed altitude.
4. Track a linear feature.
5. Conduct reconnaissance of a point feature.
6. Use IR Illuminator (RQ-20A only).
7. NAV E to L for heads down approach and landing.
8. Recover AV and render it safe.

Performance Standard. Conduct a basic night flight. IAW the references, checklists, and ETF, the student will demonstrate ability to:

1. Assemble GCS and AV at night.
2. Launch AV at night.
3. Use IR payload mode to track a linear target.
4. Use IR payload mode to conduct reconnaissance of a point target.
5. Use IR Illuminator (RQ-20A only).
7. Recover AV at night and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. AE-1520, AE-1550.
Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-20A preferred, but RQ-12A may be used.

Task. Introduction to advanced night flight skills.

Requirement. IAW the references, checklists, ETF, and given a functional applicable SUAS, the student will:

1. Plan and load mission information.
2. Assemble, stage and launch AV in MAN mode.
3. Enter ALT mode at briefed altitude.
4. Enter NAV mode. MO route AV to programmed waypoints and targets.
5. Conduct reconnaissance of an area in NAV or LOIT mode; identify TAIs or items of interest.
6. MO pull and delete captured images from the HUB.
7. MO process imagery off RSTA laptop.
8. VO conduct heads down approach to landing area.
9. MO vectors AV to landing area to manually AUTOLAND.
10. Recover AV and render it safe.

Performance Standard. Conduct an advanced night flight IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble GCS and AV at night.
2. Launch AV at night.
3. Use RSTA laptop to remain oriented.
4. Use RSTA laptop to reroute AV to specific waypoints or targets.
5. Use IR payload camera to conduct reconnaissance of a point target.
6. Pull imagery off the HUB and RSTA laptop, and process that imagery into a JPEG; delete when completed.
7. Detect orientation of AV visually using beacons.
8. Conduct a night heads up landing.
9. Manually AUTOLAND AV.
10. Recover AV and render it safe.
Initial System Condition. GCS powered down, FalconView closed. 
Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. AE-1560.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. RQ-12A or RQ-20A.

Task. Conduct AV hand-offs during area/point/zone reconnaissance mobile operations.

Note: Flying this event at night is preferred. It reinforces mobile operations.

Requirement. Operate from GCS A and hand off to a secondary GCS, GCS B. Conduct a minimum of two full AV exchanges for a total of four hand offs (two handing off, two receiving AV); can be conducted from either stationary or mobile GCS. Conduct flight IAW the references, checklists, and ETF, the student will:

GCS A (Ground Crew)

1. Review and discuss hand off procedures prior to conducting flight.
2. Plan and load mission information.
3. Assemble, stage and launch AV.
4. Communicate AV Channel, ALT and AV Number to GCS B.
5. Conduct briefed mission profile.
6. At planned hand-off point, initiate hand-off sequence with GCS B.
7. Conduct second AV hand-off and reception.
8. NAV E to L for heads down approach and landing.
9. Recover AV and render it safe.

GCS B (Mobile Crew)
1. Set up GCS in mobile configuration.
2. Receive AV Channel, ALT, AV Number from GCS A.
3. Receive AV from GCS A.
4. Use payload camera to track a moving vehicle from a moving/stationary vehicle.
5. Hand AV back to GCS A.

Performance Standard. Conduct AV hand-offs during area/point/zone reconnaissance mobile operations IAW the references, checklists, and ETF. The student will demonstrate the ability to:

GCS A (Ground Crew)
1. Launch AV on an area/point/zone reconnaissance mission profile and vector to briefed hand off point.
2. Demonstrate effective communication procedures to initiate hand off to GCS B.
3. When GCS B is ready, hand AV off.
4. When directed by GCS B, VO will receive AV and regain control.
5. Use a wing rock, text, or voice message to confirm to GCS B that AV control has been regained after hand off.
6. Safely land AV heads down using NAV mode, E to L.
7. Recover AV and render it safe.

GCS B (Mobile Crew)
1. Configure GCS for mobile operations inside a vehicle.
2. Demonstrate effective communication procedures to initiate hand off from GCS A.
3. When directed by GCS A, VO will receive AV and regain control.
4. Track a moving vehicle from a moving vehicle using EO or IR camera.
5. Maintain situational awareness on position of target vehicle during mobile operations.
6. When GCS A is ready, hand AV off.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration.
1. GCS A - Hand Controller, EO/IR Gimbaled Payload, FalconView, RSTA.
2. GCS B - Hand Controller, EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. AE-1550, AE-1560 is only required when this event is conducted at night.

Range Training Area. Minimum requirements:
1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NAVOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. RQ-12A or RQ-20A.

Task. Operate SUAS using an Untrained Assistant.

Requirement. With instructor oversight and one Untrained Assistant, the student shall be responsible for all aspects of flight coordination and conduct IAW the references, checklists, and ETF. Given a functional applicable SUAS, the student will conduct tasks as noted in the matrix below:

<table>
<thead>
<tr>
<th>SUAS-O Tasks</th>
<th>Untrained Assistant Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mission</td>
<td>Secure launch site</td>
</tr>
<tr>
<td>• Plan Mission</td>
<td>Provide airspace surveillance</td>
</tr>
<tr>
<td></td>
<td>Conduct time hack</td>
</tr>
<tr>
<td>Pre-flight</td>
<td>Transport equipment</td>
</tr>
<tr>
<td>• Set waypoints in Mission Hand Controller</td>
<td>Hold AV for pre-flight checks</td>
</tr>
<tr>
<td>• Run pre-flight check on VO controller: change LOL mode back to “Rally Point” on Mission Hand Controller</td>
<td></td>
</tr>
<tr>
<td>Launch</td>
<td>Advance throttle to 100% for launch</td>
</tr>
<tr>
<td>• Launch AV</td>
<td>Hold VO Controller during launch, be prepared to engage AUTOLAND if required</td>
</tr>
<tr>
<td>• Take control of VO Controller once airborne</td>
<td></td>
</tr>
<tr>
<td>Flight</td>
<td>Monitor RSTA laptop</td>
</tr>
<tr>
<td>• Operate VO Controller</td>
<td>Come heads-up for landing</td>
</tr>
<tr>
<td>Post-Flight</td>
<td>Recover AV</td>
</tr>
<tr>
<td>• Inspect equipment</td>
<td>Pack and transport equipment</td>
</tr>
</tbody>
</table>

Performance Standard. Operate SUAS using an Untrained Assistant IAW the references, checklists, and ETF. The student will demonstrate the ability to conduct all required tasks listed in the matrix above (both SUAS-O and Untrained Assistant) without
assistance from the instructor. Student must demonstrate the ability to guide and direct the actions of the Untrained Assistant.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, "UAV Origin", and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. AE-1520.

Range Training Area. Minimum requirements:
1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.
1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. RQ-12A or RQ-20A.

Task. Single Operator operations using RQ-12A.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-12A, the student will demonstrate the following as a single operator:
1. Plan and load mission information.
2. VO assemble, stage and launch AV.
3. VO launch AV in MAN mode.
4. Operate AV in ALT, MAN, NAV, LOIT and HOME modes.
5. Using RSTA, reroute the AV to at least one orbit point.
6. Cycle through all payload camera modes and magnifications.
7. Capture an image using hand controller.
8. Capture HD image using RSTA laptop.
9. Heads down, NAV to HOME.
10. Transition to heads up and land manually.
11. Recover AV and render it safe.

Performance Standard. Conduct requirement as a single operator by conducting flight as a VO and MO. IAW the references, checklists, and ETF, the student will demonstrate the ability to:
1. Assemble vehicle and set up RSTA.
2. Conduct preflight checks.
3. Launch the AV.
4. Use hand controller to fly in ALT, MAN, NAV, LOIT, and HOME modes.
5. Use RSTA to navigate the AV, edit waypoints, and drag orbit points.
6. Capture images with hand controller and RSTA laptop.
7. Cycle through all payload camera options and maintain contact with a target.
8. Reroute AV to HOME heads down.
9. Transition to heads up and land manually.
10. Recover AV and render it safe.

Initial System Condition. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. AE-1510.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.
1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-12A.

Task. Alternate Launch and Recovery Techniques.

Requirement. With instructor oversight, student will utilize alternate techniques for launching and recovering the AV to maximize the flexibility of the All Environment platform in a variety of potential operational scenarios. These techniques will be pre-briefed and discussed in an Operational Risk Management (ORM) Brief from a completed ORM form. The ability to complete all techniques is dependent upon the training area environment and regulations, unit regulations, and availability of appropriate safety equipment and materials. The ETF should reflect in detail which techniques were demonstrated. Those that were not demonstrated should be briefed in detail. Given the references, checklists, ETF, and given a functional SUAS, the student will:
1. Plan and load mission information.
2. VO assemble and stage AV.
3. MO launch in MAN mode from a moving vehicle (boat or ground vehicle) with appropriate safety controls implemented to prevent MO injury and/or equipment damage.
4. MO launch using the field launcher (RQ-20A only).
5. Heads down, NAV to HOME.
6. Transition to heads up and land manually.
7. Using a combination of techniques, land the AV within a 10m x 10m area to replicate a roof top or compound.
8. Land the AV in the water.
9. Land the AV into a cargo net or similar trapping device to limit impact damage to AV on hard or treacherous terrain.
10. Recover AV and render it safe.

Performance Standard. Safely conduct alternate launch and recovery techniques IAW the references, checklists, and ETF. With instructor oversight the student will demonstrate the ability to execute the alternate launch and recovery techniques within the operational limitations of the AV operator’s manual and according to the pre-mission Operational Risk Management form and brief.

Initial System Condition. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR gimbaled payload (RQ-20A), dummy payload (RQ-12A, if available), FalconView, RSTA.

Prerequisite. AE-1520.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. RQ-12A or RQ-20A.

Task. Culmination Flight for RQ-20A.

Requirement. With instructor oversight, SUAS crew shall be responsible for all aspects of flight coordination and conduct.
IAW the references, checklists, ETF and given a functional RQ-12A, the student will:

1. Power up GCS.
2. Plan and conduct full mission brief and load mission information.
3. Assemble, stage AV.
4. Coordinate with Airspace Control Authority (ACA) or range control (simulate call to instructor) for conduct of flight operations.
5. Launch in MAN mode then enter ALT mode at briefed altitude.
6. NAV to MO preprogrammed waypoints.
7. Conduct area and point reconnaissance.
8. Use orbit points to control profile of AV.
9. Respond accurately and precisely to simulated emergency conditions.
10. Use MAN mode or NAV E to L for heads down approach and landing.
11. Recover AV and render it safe.

Performance Standard. IAW the references, checklists, and ETF, the student will demonstrate ability to conduct the culmination flight for the RQ-20A without assistance from the instructor.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, "UAV Origin", and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.


Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-20A.

AE-1630 0.3 I L (N) IQT-I

Task. Culmination Flight for RQ-12A.
Requirement. With instructor oversight, the student shall be responsible for all aspects of flight coordination and conduct. IAW the references, checklists, ETF, the student will:

1. Power up GCS.
2. Plan and conduct full mission brief and load mission information.
3. Assemble and launch AV.
4. Coordinate with Airspace Control Authority (ACA) or range control (simulate call to instructor) for conduct of flight operations.
5. Launch in MAN mode then enter ALT mode at briefed altitude.
6. NAV to MO preprogrammed waypoints.
7. Conduct area and point reconnaissance.
8. Use orbit points to control profile of AV.
9. Respond accurately and precisely to simulated emergency conditions.
10. Use MAN mode or NAV E to L for heads down approach and landing.
11. Recover AV and render it safe.

Performance Standard. IAW the references, checklists, and ETF, the student will demonstrate ability to conduct the culmination flight for the RQ-12A without assistance from the instructor.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.


Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-12A.
204. CORE SKILL TRAINING (2000 - 2799).

1. General.

   a. **Purpose.** To apply entry-level skills acquired during the IQT phase to advanced mission sets and tactical scenarios in order for a SUAS-O to be able to employ the systems in an operational environment.

   b. **Prerequisite.** Complete IQT training for the specific SUAS being trained prior to commencing Core Skill training.

   c. **Conduct.** Core Skill events in this phase may be flown in any order with the exception of the MQT-2010 event which shall be completed first.

   d. **Stage.** Mission Qualification Training (MQT).

2. **Mission Qualification Training (MQT) Stage**

   a. **Purpose.** To train SUAS-Os in unit specific SUAS tactics, techniques and procedures (TTPs). Generally, TTPs are not taught or emphasized during IQT. MQT events are independent of each other and can be conducted in any order with the exception of MQT-2010 which must be completed first.

   b. **Admin Notes.**

      (1) Completion of these MQT events using one SUAS carries over to all SUASs. MQT events are agnostic of SUAS type.

      (2) Units should complete MQT events necessary to support mission tasks. However, for a SUAS-O to be considered “full mission ready,” all MQT events may be completed using any applicable SUAS.

      (3) For each MQT recommend the conduct of pre-mission planning utilizing mission analysis (METT-TC).

      (4) Additional tasks within each event are provided as supplemental skills to be practiced in conjunction with the main event requirements in order to provide scenario depth and greater exposure for the SUAS-O.

   c. **Conduct.** Events are flown as specified.

3. **MQT Training.**

   a. **Classroom.** 1 event, 2.0 hours.

   b. **Flight.** 5 flights, 2.5 hours.

   MQT-2010 2.0 I,R Classroom NA SUAS-I

   **Task.** Introduction to local area flying operations.

   **Requirement.** The student will receive the information required to safely and effectively operate within the confines of the assigned operational area. Instruction shall include the following:
1. Ensure student has an ITR and Flight Log properly constructed and maintained per the references.
2. Provide detailed review of all Local Airspace (including SUA) and SUAS training areas.
3. Provide detailed review of procedures for reserving training areas and airspace.
4. Provide a detailed review of all applicable controlling agencies and entities (tactical and administrative) for conducting SUAS operations in the local flying area.
5. Introduce how to assist unit personnel with SUAS frequencies deconfliction.
6. Introduce the student to the unit frequency manager.
7. Provide a detailed review of all local SOPs, orders, policies and regulations that govern local SUAS flight operations.
8. Provide an overview of local unit procedures for storage, handling, and accounting for SUAS equipment.
9. Provide an overview of local supply points and procedures for replacing/repairing broken/missing system parts.
10. Provide a detailed review of local procedures for planning, conducting, and logging SUAS flight operations.
11. Provide a detailed review of procedures required in the event of a lost or damaged SUAS.
12. Provide an overview of incident and mishap reporting procedures.
13. Demonstrate how to access local and Service websites related to the performance of SUAS-O duties.

Performance Standard. The student shall demonstrate the ability to fully understand and complete all required items of this event and to coordinate and conduct safe SUAS operations.

Initial System Condition. N/A.

System Configuration. N/A.

Prerequisite. Complete IQT and be designated as a SUAS-O on the SUAS in which being trained.

References.
1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. All.

MQT-2020 0.5 I L (N) SUAS-I

Task. Refine reconnaissance techniques in a tactical scenario.

Scenario. Select tactical launch site to support mission and provide optimal positioning for launch/recovery of the AV and
security for the SUAS crew. Fly AV out in MAN mode until mission altitude is achieved, then enter ALT mode and route to hold or to first checkpoint. During the mission the VO shall conduct Route, Area, and Point Reconnaissance. During the reconnaissance mission the focus should be on the quality of the products and the live video feed. Instructor shall provide specific information and operational requirements for video/still imagery products required. The Range and Bearing (S&T) function shall be used at least once during the mission if the SUAS is so equipped. The route reconnaissance should be flown in both free flight mode and by dragging A/B/C/D waypoints.

The area reconnaissance shall be flown within a defined boundary (specified during the mission brief) with a specific objective. The point reconnaissance mission shall be flown using covert techniques to prevent acoustic and visual detection of the AV. SUAS crew must take notes and be able to identify those TAIs/NAIs found during the mission for later exploitation. At the conclusion of the flight, imagery and video shall be processed on the RSTA for dissemination; dissemination methods shall be discussed with the instructor.

Additional Tasks.

A. GCS to GCS handoff.
B. Remote site launch and forward control of vehicle from a concealed position.
C. Student obtains required resources to conduct training (i.e., range, frequencies, system checkout, etc.)
D. Conduct notional actions (e.g., reports and simulated EPs, as noted in MQT-2010).
E. Report mobile target status in real time.
F. Coordinate to provide external downlink to RVT(s).

Requirement. Instructor will provide the student with a tactical scenario tailored to the specific range/operating area in use. VO shall plan and execute entire mission with assistance from MO. IAW the references, checklists, and ETF, the student will:

1. Setup GCS and assemble AV.
2. Select and install AV payload that best supports the environmental conditions and types of targets anticipated during the mission. IR payload can be used during the daytime.
3. Plan mission IAW briefed parameters.
4. Launch AV in MAN mode.
5. Conduct route reconnaissance of a linear feature.
6. Conduct area reconnaissance of a defined NAIs or TAIs.
7. Conduct point reconnaissance using covert flight techniques.
8. Use S&T function to determine range and bearing on a selected image.
9. Download and process imagery from HUB and from RPUAV-log.
10. Capture imagery from mission video and save as JPEG.
11. Land AV manually or in NAV mode from E to L.
12. Recover AV and render it safe.
Performance Standard. Conduct reconnaissance techniques in a tactical scenario IAW the references, checklists, and ETF. The student will demonstrate the ability to complete the event requirement without assistance from the instructor.

Initial System Condition. SUAS packed for transport to the field. SUAS crew should wear combat gear appropriate to the mission but at a minimum shall wear a helmet and body armor.

System Configuration. EO Payload for day flight or IR Payload for night flight, FalconView, RSTA.

Prerequisite. MQT-2010.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable System Manuals

Applicable SUAS. All.

MQT-2030 0.5 I L (N) SUAS-I

Task. Conduct overwatch and security operations in support of a fixed position.

Scenario. The SUAS crew shall use SUAS to provide overwatch and security of their own fixed site. Site should simulate a small forward operating base or site with limited access and launch/recovery areas. Site should have some nearby vertical obstacles, if possible, such as trees or structures that will limit launch and recovery options. Mission preparation should include an IPB analysis of potential vulnerabilities, areas of interest, and visual dead space surrounding the launch site. The mission should prioritize areas within the enemy’s effective weapons range per the scenario.

During pre-mission planning, consideration should be given to potential IDF POO, enemy defilade or hidden fighting positions, ambush sites, denial of access for key avenues of approach, forward observation points for enemy observers, infill routes for sappers, etc. Mission plan should follow a realistic flight path to provide imagery/video reconnaissance of those key areas and
avenues identified during IPB. SUAS crew must take notes and be able to identify those areas/items of interest found during the mission for later exploitation. Precision landing techniques are critical to limit exposure of the SUAS crew to hostile fire and potential loss of AV.

Additional Tasks.

A. GCS to GCS handoff.
B. Remote site launch and forward control of vehicle from a major hub (hub and spoke operations).
C. Student obtains required resources to conduct training (i.e., range, frequencies, system checkout, etc.)
D. Conduct notional actions like reports and simulated EPs, as noted in MQT-2010).
E. Coordinate to provide external downlink to RVT(s).

Requirement. Instructor will provide the student with a tactical scenario tailored to the specific range/operating area in use. The student shall plan and execute entire mission with assistance from MO and guidance from the instructor. Try blending or expanding scenario to transition into MQT-2050 during the same training session (Shall fly a 0.5 time minimum for each event). IAW the references, checklists, and ETF, the student will:

1. Setup GCS and assemble AV.
2. Select and install AV payload that best supports the environmental conditions and the types of targets anticipated during the mission. IR payload can be used during daytime.
3. Plan mission IAW briefed parameters.
4. Launch AV in MAN mode.
5. Conduct site security and overwatch per mission plan and brief.
6. Download and process imagery from HUB and from RPUAV-log.
7. Capture imagery from mission video and save as JPEG.
8. Land AV manually or in NAV mode from E to L, ensuring the technique selected is optimal for landing accuracy.
9. Recover AV and render it safe.

Performance Standard. Conduct overwatch and security operations in support of a fixed position IAW the references, checklists, and ETF. The student will demonstrate the ability to complete all items in the event requirement without assistance from the instructor. Landing shall be accomplished within the confines of the operating base as defined by the instructor prior to launch. The AV will be recovered and rendered safe.

Initial System Condition. SUAS packed for transport to the field. SUAS crew should wear combat gear appropriate to the mission but at a minimum shall wear a helmet and body armor.

System Configuration. EO Payload for day flight or IR Payload for night flight, FalconView, RSTA.

Prerequisite. MQT-2010.
Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. All.

MQT-2040 0.5 I L (N) SUAS-I

Task. Track mobile targets.

Scenario. The student shall use SUAS to track mobile targets. Scenario shall provide the opportunity to track both vehicles and personnel. Scenario shall include at least one target transition – when a target changes mode of transportation or overhead cover situation. Some examples include but are not limited to:

A. A target vehicle disembarking and personnel getting out and departing on foot.
B. A target watercraft.
C. A foot mobile target getting into a vehicle.
D. A target vehicle pulling into a garage or a foot mobile target going into a building.
E. Multiple similar vehicles executing decoy and switch operations to throw off an observer.
F. An evading target on foot or in a vehicle that realizes he is under observation.

(Coordination and external support for this scenario are crucial.)

Additional Tasks.

A. Maintain PID for a specified period of time.
B. Illuminate target with onboard IR pointer, if AV is so equipped.
C. Maintain continuous coverage with multiple AVs from a second hub/landing site using two GCSs.
D. Report mobile target status in real time.
E. Coordinate to provide external downlink to RVT(s).
F. Student obtains required resources to conduct training (i.e., range, frequencies, system checkout, etc.)
G. Conduct notional actions like reports and simulated EPs, as noted in MQT-2010.
Requirement. Instructor will provide the student with a tactical scenario tailored to the specific range/operating area in use. The student shall understand the definition of PID and shall plan and execute entire mission with assistance from MO and guidance from the instructor. IAW the references, checklists, and ETF, the student will:

1. Setup GCS and assemble AV.
2. Select and install AV payload that best supports the environmental conditions and the types of targets anticipated during the mission. IR payload can be used during the daytime.
3. Plan mission IAW briefed parameters.
4. Launch AV in MAN mode.
5. Conduct surveillance operations on a mobile target(s) in order to maintain PID.
6. Download and process imagery from HUB and from RPUAV-log.
7. Capture imagery from mission video and save as JPEG.
8. Land AV manually or in NAV mode from E to L.
9. Recover AV and render it safe.

Performance Standard. Track mobile targets IAW the references, checklists and ETF. The student will demonstrate the ability to:

1. Track a mobile target.
3. Maneuver the AV efficiently to maintain contact with the target. In the event the target is lost, VO and MO must be able to coordinate their efforts to reacquire the target in order to reestablish PID.
4. Land AV manually or in NAV mode from E to L.
5. Recover AV and render it safe.

Initial System Condition. SUAS packed for transport to the field. SUAS crew should wear combat gear appropriate to the mission but at a minimum shall wear a helmet and body armor.

System Configuration. EO Payload for day flight or IR Payload for night flight, FalconView, RSTA. NVDs for illuminator operations. Video downlink equipment for assault force/patrol as required.

Prerequisite. MQT-2010.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJSIS 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of
Designated Unmanned Aerial Vehicle Operator (DUO)

3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

4. Applicable Operator’s Manuals

Applicable SUAS. All.

MQT-2050 0.5 I L (N) SUAS-I

Task. Overwatch of friendly mobile operations.

Scenario. The student shall configure the GCS for mobile operations from a vehicle. A tactical vehicle is preferred, but a non-tactical vehicle can be used. Every attempt should be made to train using vehicles expected to be used in-theater in order to build comfort with the vehicle and to allow the SUAS crew to develop and/or reinforce crew coordination procedures. Scenario should provide student the opportunity to operate the AV from a moving vehicle. Possible scenarios might include:

A. Collocated overwatch of a foot mobile patrol. AV can be operated by VO collocated with the patrol.

B. Remote overwatch of a foot mobile patrol. AV can also be launched and operated from a HUB/FOB and circle overhead a patrol. In this scenario the SUAS crew remains at the HUB/FOB. The SUAS crew must have constant communication with a member of the patrol. The patrol receives imagery from the SUAS via remote video terminal (e.g. MVR, Video Scout).

C. Overwatch of a mechanized patrol. VO configures the vehicle for mobile GCS operations.

D. Overwatch of an infill. SUAS crew coordinates with mission commander to provide overwatch of infill and integration into overall direct action plan. Consideration must be given to the element of surprise (acoustic signature of AV) and mission imagery requirements. Mobile operations can transition to fixed point security once the assault force is on the objective area.

E. Overwatch of an exfill. SUAS crew coordinates with the commander to provide overwatch of exfill route during actions to ensure that IEDs and/or ambushes are not being emplaced while a mission is on-going. AVs can be cycled, and multiple vehicles/GCSs can be used to support an objective area and route.

F. Use of IR illuminator (if AV is so equipped) to provide situational awareness to force personnel wearing NVDs.

Additional Tasks.

A. GCS to GCS handoff.

B. Use of IR illuminator in conjunction with aided mobile operations.

C. Conduct multiple GCS/AV operations.

D. Student obtains required resources to conduct training (i.e., range, frequencies, system checkout, etc.)

E. Conduct notional actions (e.g., reports and simulated EPs, as noted in MQT-2010).
F. Report friendly patrol status in real time.
G. Coordinate to provide external downlink to RVT(s).

Requirement. The SUAS can significantly enhance the security of a force by providing overhead persistent surveillance during mobile operations. Occasions for using the SUAS in support of overhead operations might include a foot-mobile patrol, vehicle patrol, infill, exfill, and time on objective area. VO shall plan and execute entire mission with assistance from MO and guidance from the instructor. Try blending or expanding scenario to transition into MQT-2030 during the same training session (Shall fly a 0.5 minimum for each event). IAW the references, checklists, and ETF, the student will:

1. Setup GCS and AV.
2. Select AV payload that best supports the environmental conditions and types of targets anticipated during the mission. IR payload may be used during daytime.
3. Configure GCS for mobile operations in a tactical or surrogate tactical vehicle.
4. Plan mission IAW briefed parameters.
5. Launch AV in MAN mode.
6. Maintain position of AV relative to friendly forces as mission requirements dictate. Continuously update Home, E/L waypoints, and orbit points to support mobile plan and AV emergencies.
7. Conduct an actual or notional landing near the SUAS-O vehicle using updated E and L waypoints or manual navigation after SUAS-O vehicle has moved from origin point.
8. Download and process imagery from HUB and from RPUAV-log.
9. Capture imagery from mission video and save as JPEG.
10. Land AV manually or in NAV mode from E to L.
11. Recover the AV and render it safe.

Performance Standard. Conduct overwatch of friendly mobile operations IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Track a mobile target.
3. Maneuver the AV efficiently to maintain contact with friendly forces while supporting the mission commander’s mission requirements.
4. Maintain control of AV at all times, effectively updating the Home, E/L waypoints, and orbit points to allow recovery of the vehicle in the event the AV must land immediately (interloper aircraft), an emergency, or due to LOL.
5. Properly configure a mobile GCS.
6. Recover the AV and render it safe.

Initial System Condition. SUAS packed for transport to the field. SUAS crew should wear combat gear appropriate to the mission but at a minimum shall wear a helmet and body armor.
System Configuration. EO/IR Payload, FalconView, RSTA. NVDs for illuminator operations. Video downlink equipment for assault force/patrol as required.

Prerequisite. MQT-2010.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. All.

MQT-2060 0.5 I L D SUAS-I

Task. Use SUAS to support the terminal control of fires (surface, naval gunfire, aviation).

Note: The three major skill sets to train to are:

A. Targeting. Using the SUAS to PID targets and, depending on the specific SUAS in use, generate either coordinates or a mission to engage that target. Map correlation is critical – the coordinates generated from the SUAS must be correlated with a map to ensure they are accurate and relevant. The targeting process can be enhanced if the JTAC or FO can see the SUAS feed through the use of a video downlink device or over the SUAS-Os shoulder. The JTAC or FO can direct the SUAS crew in positioning the AV to best support the targeting process.

B. Adjust Fire. Use the SUAS to observe fires and generate corrections for the JTAC or FO. Physical placement of the SUAS during live fire operations is a key consideration. Judging distances via the SUAS display is also a learned skill set, particularly if the terrain or target set being viewed does not provide decent contrast and comparative elements. Lastly, high situational awareness of the SUAS position and its orientation both to the magnetic compass and relative to the target are critical in generating a correction. The adjustment process can be enhanced if the JTAC or FO can see the SUAS feed through the use of a video downlink device. If the JTAC or FO can directly view the
SUAS feed he can make the corrections immediately. SUAS crew must be able to interpret the video scene for the JTAC or FO.

C. **Battle Damage Assessment (BDA).** Use the SUAS to collect BDA on a target set. SUAS crew must know what the condition of the target set was prior to engagement and be able to interpret the scene via the SUAS in order to provide accurate and timely BDA. The process of gathering BDA can be greatly enhanced if the JTAC or FO can see the SUAS feed through the use of a video downlink device or over the student’s shoulder.

**Scenario.** This event is best conducted in conjunction with a live fire event (e.g., EWTG TACP Shoot, unit FireEx, Mojave Viper, etc.) but may be conducted without live fires given a robust and detailed scenario from the instructor.

A. **Live Fire Scenario.** Integrate the SUAS into a live fire event using surface or aviation fires.

B. **Simulated Scenario.** Targeting and BDA can be simulated fairly easily in a non-live fire scenario. Corrections are more difficult to simulate. A technique that can be employed is to fly to a known target array and use a known target as the reference. The instructor points to a visible object relative to the known target and calls that object (a bush, tree, dark patch of terrain, etc.) the impact. The student then generates the correction from that object to the target. The effects of the correction cannot be effectively simulated.

**Additional Tasks.**

A. Use of 9-line, surface call for fire, AC-130 call for fire, and Naval Gunfire call for fire procedures.
B. Map reading and interpretation.
C. Range and distance estimation.
D. Use FalconView overlays and draw files to depict FSCMs and ACMs.
E. Downlink SUAS feed to JTAC or FO if they are equipped with a video receiver.
F. Student obtains required resources to conduct training (i.e., range, frequencies, system checkout, etc.)
G. Conduct notional actions (e.g., reports and simulated EPs, as noted in MQT-2010).
H. Provide information in real time.
I. Coordinate to provide external downlink to RVT(s).

**Requirement.** IAW the references, checklists, ETF, and given a functional SUAS, the student shall employ the SUAS to train to one or all of the terminal control skill support skill sets (Targeting, Adjust Fire, Battle Damage Assessment).

1. Setup GCS and AV.
2. Select AV payload that best supports the environmental conditions and the types of targets anticipated during the mission. IR payload can be used during the daytime.

3. Develop mission plan IAW briefed parameters. Ensure airspace plan and fires plans conform to each other and are integrated with all existing FSCMs and ACMs.

4. Launch AV in MAN mode.

5. Maneuver the AV relative to friendly forces to accomplish the mission objectives.

6. Conduct target reconnaissance and selection using AV and correlating to map/FalconView. Share target data with external agencies (e.g., JTAC, FO) to feed a fire mission.

7. Use SUAS to observe impacts and effects of aviation, surface, or naval fires.

8. Use SUAS to provide data for generating corrections for aviation, surface, or naval fires. Ensure AV is deconflicted from incoming fires and aircraft.

9. Use SUAS to gather BDA and report the BDA to JTAC/FO.

10. Download and process imagery from HUB and from RPUAV-log.

11. Capture imagery from mission video and save as JPEG.

12. Land AV manually or in NAV mode from E to L.

13. Recover the AV and render it safe.

**Performance Standard.** Use SUAS to support the terminal control of fires (surface, naval gunfire, aviation) IAW the references, checklists, and ETF. The student shall plan and execute entire mission with assistance from MO and guidance from the instructor. The student will demonstrate ability to:

1. Integrate SUAS plan with fire support plan.

2. Find a target array and correlate it with a map and/or FalconView.

3. Derive a MGRS grid for a given target and refine that grid using a map and/or FalconView.

4. Interpret the SUAS feed from the AV at a given altitude and provide distance corrections from the target for impacts.

5. Communicate and coordinate with the JTAC or FO to effectively and efficiently provide targeting, correction, and BDA in support of an active fires package.

6. Maintain situational awareness. While:
   a. Maneuvering the AV efficiently to maintain contact with friendly forces while supporting the mission commander’s mission requirements.
   b. Positioning the AV to observe fires as required while complying with FSCMs, ACMs and remaining clear of incoming fires.

**Initial System Condition.** SUAS packed for transport to the field. SUAS crew should wear combat gear appropriate to the mission but at a minimum shall wear a helmet and body armor.

**System Configuration.** EO / IR Payload, FalconView, RSTA, 1:50k map. Video downlink equipment for assault force/patrol as required. Current Air Land Sea Application (ALSA) Joint Fires publication.
Prerequisite. MQT-2010.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. All.

205. INSTRUCTOR UNDER TRAINING (IUT) (2800 – 2849).

1. General.

   a. Purpose. To provide designated and experienced SUAS-Os the additional skills necessary to instruct SUAS operations and employment. Upon completion of the required training, a SUAS instructor under training (IUT) may be considered for SUAS-I designation by the unit commanding officer.

   b. Prerequisite.

      (1) Shall be an E-4 or above.

      (2) Shall be SUAS-O designated and current in the system(s) in which being recommended to instruct.

      (3) Shall have a minimum of 25 hours of actual live flight experience on the system in which being recommended to instruct. Hours of experience can be waived in writing by the unit commanding officer.

      (4) Shall be recommended by a SUAS-E via the Unit SUAS-PM to begin IUT.

      (5) Should have a minimum of one year remaining on their enlistment contract.

      (6) Although not required, it is highly recommended the individual complete an approved formal basic instructor course like the course offered by the Train-The-Trainer (T3) Schools aboard Camp Lejeune, NC and Camp Pendleton, CA.

   c. Admin Notes.
(1) The steady production of well trained and experienced SUAS-Is is essential to the effectiveness and sustainment of a unit’s SUAS program to maintain well trained and highly skilled SUAS-Os to support the operational commander.

(2) The primary function of the SUAS-I is to oversee currency flights and execute training per this T&R. Therefore, unit commanding officers should select the most experienced SUAS-Os who have demonstrated expert operator knowledge, experience and maturity, judgment and ability to effectively mitigate operational risk to the SUAS and unit mission.

(3) See Table 1-4 for currency requirements.

(4) The following notes apply to SUAS-Is who have been designated and are now required to complete an annual SUAS Evaluation.

(a) SUAS-Is who receive two unqualified (UQ) ratings during a SUAS Evaluation shall receive an overall rating of UQ and be suspended from SUAS-I duties. This suspension shall be annotated on the SUAS Evaluation Form; both the SUAS-E and SUAS-I shall sign and date next to the annotation.

(b) A failure in the area of “Integrated safety principles” shall automatically result in an overall rating of UQ. The SUAS-I shall be suspended from SUAS-I duties. This suspension shall be annotated on the SUAS Evaluation Form; both the SUAS-E and SUAS-I shall sign and date next to the annotation.

(c) A suspended SUAS-I shall be re-evaluated after completing training in the area(s) identified as deficient, and may be reinstated by the unit SUAS-PM upon successful completion of a re-evaluation.

(d) SUAS-Is shall be removed from SUAS-I duties if the reevaluation results in a second failure. Their designation shall be revoked in writing by the unit commanding officer. A copy of the SUAS revocation letter shall be filed in the ITR.

(e) Subsequent retraining and recertification for personnel who were revoked shall be at the discretion of the unit commanding officer and per this T&R Manual.


d. Conduct. IUT events are flown as required.

2. IUT Training.

a. Classroom. 1 event, 2.0 hours.

b. Flight. 4 events, 1.8 hours.

<table>
<thead>
<tr>
<th>IUT-2800</th>
<th>2.0</th>
<th>I</th>
<th>Classroom</th>
<th>NA</th>
<th>IQT-I/SUAS-I/E</th>
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</table>

Task. Introduction to Instructional Techniques.

Requirement. The instructor will conduct a period of instruction to include the following:

1. Introduce/discuss/demonstrate instructional techniques.
2. Introduce/discuss/demonstrate class management techniques.  
a. How to prepare to conduct effective instruction.  
b. How to use instructional resources to communicate with students.

3. Introduce/discuss/demonstrate how to prepare for a period of instruction.  How to:  
a. Schedule a class.  
b. Prepare/access required training materials for the class.  
c. Prepare the ETF to be used to evaluate the student.

4. Discuss general tactical employment considerations.

5. Introduce/discuss/demonstrate how to document training using the ETF, logging the event code in MCTIMS, and documenting it in the ITR.

6. Familiarize the student with the content of all the event references.

Note: Locally developed instructional materials are encouraged and may be used.

Performance Standard.

1. Instructor will complete all items IAW the references.
2. Instructor will verbally ask questions to assess the IUT’s understanding of the principles of instruction.
3. Student will answer the questions in detail and demonstrate knowledge of proper instruction and classroom techniques.

Prerequisite. See paragraph 205.1.b.

References.

2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. Local Unit SOPs.
4. Local Range SOPs.
5. Applicable Operator’s Manuals.

Applicable SUAS. All.

IUT-2810 0.5 I L D IQT-I/SUAS-I/E

Task. Introduction on how to instruct a live flight event.

Scenario. Instructor may use the scenario and requirements of any MQT event in this T&R Manual to complete this event.

Requirement. Instructor will walk the student through an entire flight evolution from pre-mission brief to pack up, demonstrating the conduct of a flight evolution. The objective of this event is to demonstrate and instruct the student on how to instruct a flight event. Given required references, checklists, ETF, and a functional applicable SUAS, the instructor will:
1. Introduce procedures for requesting frequencies, range, and airspace.
2. Introduce procedures for obtaining a Range OIC and Range Safety officer, per local SOP.
3. Introduce procedures for obtaining logistics support to conduct a flight event.
4. Introduce and demonstrate mission planning and briefing procedures.
5. Introduce range and airspace activation procedures.
6. Introduce and demonstrate how to set up a site for flight operations.
7. Introduce and demonstrate how to conduct flight operations according to the requirements for the event selected.
8. Introduce and demonstrate site tear down.
9. Introduce range and airspace turn in procedures.

Performance Standard. IAW the references, checklists, ETF and given a functional applicable SUAS:

1. Instructor will:
   a. Verbally ask questions to assess the SUAS IUT’s operational and employment knowledge of the system the IUT is to instruct.
   b. Ensure the IUT understands the procedures demonstrated by asking questions and having the IUT explain and or demonstrate the procedures.
2. Student will:
   a. Observe the instructor and ask question so as to ensure mastery of how to instruct a live flight event.
   b. Answer the instructor’s questions in detail and demonstrate mastery of SUAS operational and employment knowledge of the system the IUT is going to instruct.

Initial System Condition. System completely disassembled and packed in its cases.

System Configuration. Per scenario as briefed by the instructor.

Prerequisite. IUT-2800.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. Local Unit SOPs.
4. Applicable Range SOP.
5. Applicable Operator’s Manuals.

Applicable SUAS. All.

**IUT-2820 0.5 I,R L then L D IQT-I/SUAS-I/E**

Task. Instruct a live flight event.

**Scenario.** SUAS-I/E shall select any MQT event in this T&R Manual to complete this event. The event shall be applicable to the SUAS for which the student is expected to conduct training.

**Requirement.** Student will demonstrate how to instruct an event from preparation to conduct to completing administrative requirements. The student shall conduct instruction through an entire flight evolution from pre-mission brief to pack up. The objective of this flight is for the student to be able to demonstrate and instruct SUAS T&R events / flight evolutions to SUAS-Os. Given the required references, checklists, and a functional SUAS, the student will conduct the event while the instructor plays the role of a student:

1. Prepare to instruct the event:
   a. Request frequencies, range, and airspace required to conduct event training.
   b. Obtain a Range OIC and Range Safety officer, as required.
   c. Obtain logistics support required to conduct the flight.
   d. Conduct mission planning and briefing.
   e. Reserve and activate range and airspace required.
   f. Ensure all training resources are properly staged and equipment is set up for training.

2. Conduct training on the event selected, ensuring the requirement and performance standard are met.

3. Instruct the student in a thorough manner so as to cover all requirements for the event selected.
   a. Ensure continuous, objective assessment of the student's progress during training.
   b. Ensure student completes the requirement and meets the performance standard.
   c. Identify student deficiencies in a timely manner and provide the student feedback.
   d. Answer student questions accurately.

4. Debrief the student and provide guidance for corrective action. Complete an ETF on the student.

5. Pack up training materials, turn-in range, and return airspace to controlling agency.

**Performance Standard.** Instruct a live flight event IAW the references, checklists, ETF, and given a functional SUAS. The student will demonstrate the ability to complete the requirement without assistance from the instructor. The student will:

1. Ensure training resources are obtained, and the site and equipment are setup properly.
2. Instruct the event in its entirety and ensure proper conduct and safety of flight; take corrective action when needed.
3. Complete all administrative actions to document training.

**Initial System Condition.** System completely disassembled and packed in its cases.

**System Configuration.** Per scenario as briefed by the instructor.

**Prerequisite.** IUT-2810.

**Range Training Area.** Minimum requirements:

1. **Launch/Landing Zone (LZ) dimensions:** Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. **Airspace dimensions:** A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

**References.**

2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. Local Unit SOPs.
4. Applicable Range SOP.
5. Applicable Operator’s Manuals.

**Applicable SUAS.** All.

**Task.** SUAS-I culmination flight on RQ-11B DDL.

**Scenario.** SUAS-E will select any MQT event in this T&R Manual to complete this event. The event shall be applicable to the SUAS for which the student is expected to conduct training.

**Requirement.** SUAS-E will play the role of a student. This event may be flown by the student on the same day as the IUT-2820, but each event must be a completely separate event with the SUAS configured to meet the initial system condition and system configuration requirements below. The student will:

1. Demonstrate ability to prepare to instruct an event by obtaining required frequencies, range, and airspace.
2. Demonstrate understanding of procedures for coordination of Range OIC and Range Safety officer as required.
3. Demonstrate ability to coordinate logistics to support a flight event.
4. Activate range and airspace.
5. Set up a site and conduct a flight operation.
6. Demonstrate proper training of the event selected, ensuring the requirement and performance standard are met.
7. Instruct the event in its entirety and ensured proper conduct and safety of flight; take corrective action when needed.
8. Instruct the student on how to plan and brief the event.
9. Instruct the student in a thorough manner so as to cover all requirements for the event selected.
10. Tear down site, turn in range and airspace.
11. Complete all administrative actions to document student training.

Performance Standard. Complete SUAS-I culmination flight on RQ-11B DDL IAW the references, checklists, and ETF. The student will demonstrate the ability to complete all requirements without the assistance of the SUAS-E.

Initial System Condition. System completely disassembled and packed in its cases.

System Configuration. Per scenario as briefed by SUAS-E.

Prerequisite. IUT-2800, IUT-2810, IUT-2820.

Range Training Area. Minimum requirements:
1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.
2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. Local Unit SOPs.
4. Applicable Range SOP.

Applicable SUAS. RQ-11B DDL.

IUT-2840 0.4 I,R L then L (N) IQT-I/SUAS-E

Task. SUAS-I culmination flight on RQ-12A.

Scenario. SUAS-E will select any MQT event in this T&R Manual to complete this event. The event shall be applicable to the SUAS for which the student is expected to conduct training.

Requirement. SUAS-E will play the role of a student. This event may be flown by the student on the same day as the IUT-2820, but each event must be a completely separate event with the SUAS configured to meet the initial system condition and system configuration requirements below. The student will:

1. Demonstrate ability to prepare to instruct an event by obtaining required frequencies, range, and airspace.
2. Demonstrate understanding of procedures for coordination of Range OIC and Range Safety officer as required.
3. Demonstrate ability to coordinate logistics to support a flight event.
4. Activate range and airspace.
5. Set up a site and conduct a flight operation.
6. Demonstrate proper training of the event selected, ensuring the requirement and performance standard are met.
7. Instruct the event in its entirety and ensured proper conduct and safety of flight; take corrective action when needed.
8. Instruct the student on how to plan and brief the event.
9. Instruct the student in a thorough manner so as to cover all requirements for the event selected.
10. Tear down site, turn in range and airspace.
11. Complete all administrative actions to document student training.

Performance Standard. Complete SUAS-I culmination flight on RQ-12A IAW the references, checklists, and ETF. The student will demonstrate the ability to complete all requirements without the assistance of the SUAS-E.

Initial System Condition. System completely disassembled and packed in its cases.

System Configuration. Per scenario as briefed by SUAS-E.

Prerequisite. IUT-2800, IUT-2810, IUT-2820.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. Local Unit SOPs.
4. Applicable Range SOP.

Applicable SUAS. RQ-12A.

IUT-2845 0.4 I,R L then L (N) IQT-I/SUAS-E

Task. SUAS-I culmination flight on RQ-20A.

Scenario. SUAS-E will select any MQT event in this T&R Manual to complete this event. The event shall be applicable to the SUAS for which the student is expected to conduct training.
Requirement. SUAS-E will play the role of a student. This event may be flown by the student on the same day as the IUT-2820, but each event must be a completely separate event with the SUAS configured to meet the initial system condition and system configuration requirements below. The student will:

1. Demonstrate ability to prepare to instruct an event by obtaining required frequencies, range, and airspace.
2. Demonstrate understanding of procedures for coordination of Range OIC and Range Safety officer as required.
3. Demonstrate ability to coordinate logistics to support a flight event.
4. Activate range and airspace.
5. Set up a site and conduct a flight operation.
6. Demonstrate proper training of the event selected, ensuring the requirement and performance standard are met.
7. Instruct the event in its entirety and ensured proper conduct and safety of flight; take corrective action when needed.
8. Instruct the student on how to plan and brief the event.
9. Instruct the student in a thorough manner so as to cover all requirements for the event selected.
10. Tear down site, turn in range and airspace.
11. Complete all administrative actions to document student training.

Performance Standard. Complete SUAS-I culmination flight on RQ-20A IAW the references, checklists, and ETF. The student will demonstrate the ability to complete all requirements without the assistance of the SUAS-E.

Initial System Condition. System completely disassembled and packed in its cases.

System Configuration. Per scenario as briefed by SUAS-E.

Prerequisite. IUT-2800, IUT-2810, IUT-2820.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. Local Unit SOPs.
4. Applicable Range SOP.
5. Applicable Operator’s Manuals.

Applicable SUAS. RQ-20A.
206. EVALUATOR UNDER TRAINING (EUT) (2850 – 2899).

1. General.
   a. Purpose. To provide designated and experienced SUAS-Is the additional skills necessary to conduct annual unit SUAS assessments, instruct and evaluate IUTs, and evaluate SUAS-O/Is regaining currency in order to sustain the unit SUAS program per this T&R Manual. Upon completion of the required training, an EUT may be considered for SUAS Evaluator (SUAS-E) designation in writing by the unit command officer.
   
   b. Prerequisite.
      (1) Shall be an E-5 or above.
      (2) Shall be SUAS-O designated and current in the SUAS for which the SUAS-E will serve as an evaluator.
      (3) Shall be designated and current as a SUAS-I in the SUAS being recommended to evaluate.
      (4) Shall have a minimum of six months experience as a SUAS-I in the SUAS for which the SUAS-E will serve as an evaluator. Months of experience can be waived in writing by the designating authority.
      (5) Shall be recommended by the Unit SUAS-PM, and approved in writing by the unit commanding officer to begin EUT.
      (6) Shall have read and thoroughly understand applicable references, checklists, SUAS Evaluation Guide, and evaluation training form.
   
   c. Admin Notes.
      (1) The SUAS-E is to conduct evaluation flights per this T&R Manual, and to serve as a SUAS-I when required.
      (2) The SUAS-E may train but shall evaluate IUTs, unit assigned SUAS-O/I/Es. A SUAS-E has technical supervision of the unit standardization program as specified by the unit commanding officer. The SUAS-E is the commander’s technical advisor on all SUAS standardization within the command and assists the commander to develop, implement, evaluate and manage the unit training program. Therefore, unit commanding officers shall select the most knowledgeable and experienced SUAS-I for SUAS-E training.
      (3) The steady production of well trained and experienced SUAS-Es is essential to the effectiveness and sustainment of overall unit’s SUAS program in its goal to provide well trained and highly skilled SUAS-Os to support the operational commander.
   
   d. Conduct. SUAS EUT events are flown as required.

2. EUT Training.
   a. Classroom. N/A.
b. **Flight.** 3 events, 1.2 hours.

**Task.** Observe the conduct of a SUAS-E evaluation.

**Scenario.** Student will observe another SUAS-E developing a scenario and coordinating all aspects of the evaluation flight per the Evaluation Guide.

**Requirement.** Student will observe the SUAS-E conduct an evaluation. The SUAS-E will demonstrate to the student how to conduct an evaluation according to the SUAS Evaluation Guide, to include:

1. Discuss and review all aspects of the evaluation with the student, prior to commencing the evaluation.
2. During the evaluation, explain each evaluation step in a thorough manner so as to cover requirements for the event selected.
3. After the completion of the evaluation, discuss and question the student to ensure clear understanding of how to conduct an evaluation from preparing, conducting, and documenting the evaluation. Questions should include topics/contents like:
   a. Characteristics, capabilities, and limitations of the SUAS being used to evaluate.
   b. Contents of the applicable checklist.
   c. Evaluation Guide.
   d. Training Forms and administration.

**Performance Standard.** While observing the conduct of a SUAS-E evaluation, the student will:

1. Demonstrate knowledge and understanding of the evaluation process to include applicable training devices, checklists, SUAS Evaluation Guide, and training forms.
2. Demonstrate an understanding of how to conduct an evaluation by accurately answering SUAS-E questions and explaining the process thoroughly.

**Initial System Condition.** System completely disassembled and packed in its cases.

**System Configuration.** Per scenario as briefed by the SUAS-E.

**Prerequisite.** See paragraph 206.2.

**Range Training Area.** Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.
References.

2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. SUAS Evaluation Guide.
4. Local Unit SOPs.
5. Applicable Range SOP.
6. Applicable Operator’s Manuals.

Applicable SUAS. All.

EUT-2865 0.4 I,R L then L (N) IQT-I/SUAS-E

Task. SUAS-E culmination flight on RQ-11B DDL.

Scenario. The SUAS EUT will develop a scenario and coordinate all aspects of the flight per the SUAS Evaluation Guide.

Requirement. The SUAS-E will assume the role of the person being evaluated, the evaluatee. The student will conduct an evaluation according to the SUAS Evaluation Guide.

1. Ensure the person to be evaluated is current in the RQ-11B DDL.
2. Ensure resources required to conduct the evaluation are available and the site and equipment are in a ready state.
3. Conduct the evaluation and debrief the evaluatee.
4. Complete all administrative actions required to document the evaluation.

Performance Standard. IAW the references, checklists, SUAS Evaluation Guide, and ETF, the student will complete all requirements without assistance. Evaluation was conducted thoroughly, corrective action taken as required, and safety of flight maintained.

Initial System Condition. System completely disassembled and packed in its cases.

System Configuration. Per scenario as briefed by prospective SUAS-E.

Prerequisite. EUT-2850.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.
References.

2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. SUAS Evaluation Guide.
4. Local Unit SOPs.
5. Applicable Range SOP.

Applicable SUAS. RQ-11B DDL.

EUT-2870  0.4  I,R  L then L (N)  IQT-I/SUAS-E

Task. SUAS-E culmination flight on RQ-12A.

Scenario. Student will develop a scenario and coordinate all aspects of the flight per the SUAS Evaluation Guide.

Requirement. The SUAS-E will assume the role of the person being evaluated, the evaluee. The student will conduct an evaluation according to the SUAS Evaluation Guide.

1. Ensure the person to be evaluated is current on the RQ-12A.
2. Ensure resources required to conduct the evaluation are available and the site and equipment are in a ready state.
3. Conduct the evaluation and debrief the evaluee.
4. Complete all administrative actions required to document the evaluation.

Performance Standard. IAW references, checklists, SUAS Evaluation Guide, and ETF, the student shall complete all requirements without assistance. The student will ensure the evaluation was conducted thoroughly, corrective action was taken as required, and safety of flight was maintained.

Initial System Condition. System completely disassembled and packed in its cases.

System Configuration. Per scenario as briefed by prospective SUAS-E.

Prerequisite. EUT-2850.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. NAVMC 3500.107 Group 1 Unmanned Aircraft Systems (UAS)
Training and Readiness Manual.

2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. SUAS Evaluation Guide.
4. Local Unit SOPs.
5. Applicable Range SOP.
6. Applicable Operator’s Manuals.

**Applicable SUAS. RQ-12A.**

**EUT-2875** 0.4 I,R (IQT I/SUAS-E)

**Task.** SUAS-E culmination flight on RQ-20A.

**Scenario.** Student will develop a scenario and coordinate all aspects of the flight per the SUAS Evaluation Guide.

**Requirement.** The SUAS-E will assume the role of the person being evaluated, the evaluatee. The student will conduct an evaluation according to the SUAS Evaluation Guide.

1. Ensure the person to be evaluated is current on the RQ-20A.
2. Ensure resources required to conduct the evaluation are available and the site and equipment are in a ready state.
3. Conduct the evaluation and debrief the evaluatee.
4. Complete all administrative actions required to document the evaluation.

**Performance Standard.** IAW references, checklists, SUAS Evaluation Guide, and ETF, the student shall complete all requirements without assistance. The student will ensure the evaluation was conducted thoroughly, corrective action was taken as required, and safety of flight was maintained.

**Initial System Condition.** System completely disassembled and packed in its cases.

**System Configuration.** Per scenario as briefed by prospective SUAS-E.

**Prerequisite.** EUT-2850.

**Range Training Area.** Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

**References.**

2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. SUAS Evaluation Guide.
4. Local Unit SOPs.
5. Applicable Range SOP.
6. Applicable Operator’s Manuals.

Applicable SUAS. RQ-20A.

207. DESIGNATIONS AND EVALUATIONS (2900 - 2999).

1. General.
   a. Purpose.
      (1) Designations. To designate SUAS personnel who have completed all training prerequisites and have demonstrated competency in the area being designated. The SUAS designation shall remain in effect as long as the SUAS remains current per Table 1-4.

      (2) Evaluations. To provide for annual unit SUAS evaluations and evaluations for non-current SUAS personnel regaining currency in order to sustain the unit program per this T&R Manual. A proficient level is defined as the ability to efficiently and skillfully conduct a flight and correct errors without hesitation or assistance.

   b. Admin Notes. All training requirements for designation must be completed prior to being considered for designation. The designation is not effective until the letter has been signed by the unit commanding officer, filed in the ITR, and applicable event codes have been logged in MCTIMS. For detailed information on designations refer to paragraph 117.6.

2. Designations. SUAS-O, SUAS-I, SUAS-E and SUAS-PM.

DESG-2910

Task. SUAS-O Designation for RQ-11B DDL.

Requirement. Complete the prerequisites listed below.


Prerequisite.
1. Complete the BUQ-1 Course online.
2. Complete the RQ-11B DDL IQT Course.
3. Be recommended by the Unit SUAS-PM.
4. Be designated in writing by the unit commanding officer.

Applicable SUAS. RQ-11B DDL.

DESG-2920

Task. SUAS-O Designation for RQ-12A.
Requirement. Complete the prerequisites listed below.


Prerequisite.

1. Complete the BUQ-1 Course online.
2. Complete RQ-12A IQT Course or the All Environment (AE) IQT Course.
3. Be recommended by the Unit SUAS-PM.
4. Be designated in writing by the unit commanding officer.

Applicable SUAS. RQ-12A.

DESG-2930

Task. SUAS-O Designation for RQ-20A.

Requirement. Complete the prerequisites listed below.


Prerequisite.

1. Complete the BUQ-1 Course online.
2. Complete RQ-20A IQT Course or the All Environment (AE) IQT Course.
3. Be recommended by the Unit SUAS-PM.
4. Be designated in writing by the unit commanding officer.

Applicable SUAS. RQ-20A.

DESG-2945

Task. SUAS-I Designation for RQ-11B DDL.

Requirement. Complete the prerequisites listed below.


Prerequisite.

2. Be recommended by the SUAS-E via the Unit SUAS-PM.
3. Be designated in writing by the unit commanding officer.

Applicable SUAS. RQ-11B DDL.

DESG-2950

Task. SUAS-I Designation for RQ-12A.

Requirement. Complete the prerequisites listed below.

Prerequisite.

2. Be recommended by the SUAS-E via the Unit SUAS-PM.
3. Be designated in writing by the unit commanding officer.

Applicable SUAS. RQ-12A.

DESG-2955

Task. SUAS-I Designation for RQ-20A.

Requirement. Complete the prerequisites listed below.


Prerequisite.

2. Be recommended by the SUAS-E via the Unit SUAS-PM.
3. Be designated in writing by the unit commanding officer.

Applicable SUAS. RQ-20A.

DESG-2965

Task. SUAS-E Designation for RQ-11B DDL.

Requirement. Complete the prerequisites listed below.


Prerequisite.

2. Be recommended by the Unit SUAS-PM.
3. Be designated in writing by the unit commanding officer.

Applicable SUAS. RQ-11B DDL.

DESG-2966

Task. SUAS-E Designation for RQ-12A.

Requirement. Complete the prerequisites listed below.

Prerequisite.

2. Be recommended by the Unit SUAS-PM.
3. Be designated in writing by the unit commanding officer.

Applicable SUAS. RQ-12A.

DESG-2967

Task. SUAS-E Designation for RQ-20A.

Requirement. Complete the prerequisites listed below.


Prerequisite.

1. Complete EUT-2850 and EUT-2875.
2. Be recommended by the Unit SUAS-PM.
3. Be designated in writing by the unit commanding officer.

Applicable SUAS. RQ-20A.

DESG-2975

Task. Unit SUAS-PM Designation.

Requirement. Be selected by the unit commanding officer.


Prerequisite.

1. Understand the roles and responsibilities of a Unit SUAS-PM.
2. Be designated in writing by the unit commanding officer.

Applicable SUAS. All.

3. SUAS Evaluation Requirements (EVAL).

a. Purpose. To provide the SUAS Evaluator (SUAS-E) and SUAS personnel with a standardized approach to conduct a SUAS Evaluation.

b. See paragraph 117.7 for explanation of the SUAS Evaluation process and paragraph 101.3 for location of supporting documents.

Task. SUAS Evaluation on RQ-11B DDL.

Scenario. Evaluate SUAS knowledge and ability to safely and effectively operate the SUAS. The evaluation flight shall be administered by a SUAS-E according to the SUAS Evaluation Guide.
In situations where a SUAS-O is unavailable to serve as MO, the SUAS-E may serve as the MO once the individual under evaluation completes the full system setup to include mission planning and upload.

**Requirement.** According to the SUAS Evaluation Guide, the student shall complete each of the below:

**Preflight**
1. Closed book examination with a minimum grade of 80%.
3. SUAS Evaluation discussion period.

**Flight**
1. Pre-mission planning / crew brief.
2. Identify system components.
3. Knowledge of hand controller buttons and display.
4. Assemble AV.
5. Set up GCS.
6. Perform preflight and pre-takeoff checklist.
7. Launch AV.
8. Navigate to objective area.
11. Perform hand-off procedures*
12. Perform secure data link/password procedures*
13. Navigate to recovery area.
14. Land and recover AV.
15. Perform post-flight checks on AV.
16. Disassemble and store UAS.
17. Operator level maintenance knowledge.
18. Overall situational awareness during flight.
19. Airspace knowledge, awareness, and procedures.

Note: *Items are not required, but may be performed as part of the mission scenario.

**Performance Standard.** IAW the references, checklists, SUAS Evaluation Guide, and ETF, the student shall complete all requirement items with a passing grade of “Qualified”.

**Initial System Condition.** System completely disassembled and packed in its cases.

**System Configuration.** Per scenario as briefed by SUAS-E.

**Prerequisite.**
1. Be current per Table 1-4.
2. Be designated in writing by the unit commanding officer.

**Range Training Area.** Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. SUAS Evaluation Guide.
4. Local Unit SOPs.
5. Applicable Range SOP.
6. Applicable System Manuals.

Applicable SUAS. RQ-11B DDL.

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<th>EVAL-2990</th>
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Task. SUAS Evaluation on RQ-12A.

Scenario. Evaluate SUAS knowledge and ability to safely and effectively operate the SUAS. The evaluation flight shall be administered by a SUAS-E according to the SUAS Evaluation Guide. In situations where a SUAS-O is unavailable to serve as MO, the SUAS-E may serve as the MO once the individual under evaluation completes the full system setup to include mission planning and upload.

Requirement. According to the SUAS Evaluation Guide, the student shall complete each of the below:

Preflight
1. Closed book examination with a minimum grade of 80%.
3. SUAS Evaluation discussion period.

Flight
1. Pre-mission planning / crew brief.
2. Identify system components.
3. Knowledge of hand controller buttons and display.
4. Assemble AV.
5. Set up GCS.
6. Perform preflight and pre-takeoff checklist.
7. Launch AV.
8. Navigate to objective area.
11. Perform hand-off procedures*
12. Perform secure data link/password procedures*
13. Navigate to recovery area.
14. Land and recover AV.
15. Perform post-flight checks on AV.
16. Disassemble and store UAS.
17. Operator level maintenance knowledge.
18. Overall situational awareness during flight.
19. Airspace knowledge, awareness, and procedures.

Note: *Items are not required, but may be performed as part of the mission scenario.

**Performance Standard.** IAW the references, checklists, SUAS Evaluation Guide, and ETF, the student shall complete all requirement items with a passing grade of "Qualified".

**Initial System Condition.** System completely disassembled and packed in its cases.

**System Configuration.** Per scenario as briefed by SUAS-E.

**Prerequisite.**
1. Be current per Table 1-4.
2. Be designated in writing by the unit commanding officer.

**Range Training Area.** Minimum requirements:
1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

**References.**
2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. SUAS Evaluation Guide.
4. Local Unit SOPs.
5. Applicable Range SOP.
6. Applicable System Manuals.

**Applicable SUAS.** RQ-12A.

**Task.** SUAS Evaluation on RQ-20A.

**Scenario.** Evaluate SUAS knowledge and ability to safely and effectively operate the SUAS. The evaluation flight shall be administered by a SUAS-E according to the SUAS Evaluation Guide. In situations where a SUAS-O is unavailable to serve as MO, the SUAS-E may serve as the MO once the individual under evaluation completes the full system setup to include mission planning and upload.

**Requirement.** According to the SUAS Evaluation Guide, the student shall complete each of the below:
Preflight
1. Closed book examination with a minimum grade of 80%.
3. SUAS Evaluation discussion period.

Flight
1. Pre-mission planning / crew brief.
2. Identify system components.
3. Knowledge of hand controller buttons and display.
4. Assemble AV.
5. Set up GCS.
6. Perform preflight and pre-takeoff checklist.
7. Launch AV.
8. Navigate to objective area.
11. Perform hand-off procedures*
12. Perform secure data link/password procedures*
13. Navigate to recovery area.
14. Land and recover AV.
15. Perform post-flight checks on AV.
16. Disassemble and store UAS.
17. Operator level maintenance knowledge.
18. Overall situational awareness during flight.
19. Airspace knowledge, awareness, and procedures.

Note: *Items are not required, but may be performed as part of the mission scenario.

Performance Standard. IAW the references, checklists, SUAS Evaluation Guide, and ETF, the student shall complete all requirement items with a passing grade of “Qualified”.

Initial System Condition. System completely disassembled and packed in its cases.

System Configuration. Per scenario as briefed by SUAS-E.

Prerequisite.
1. Be current per Table 1-4.
2. Be designated in writing by the unit commanding officer.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

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2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. SUAS Evaluation Guide.
4. Local Unit SOPs.
5. Applicable Range SOP.
6. Applicable System Manuals.

Applicable SUAS. RQ-20A

208. SUAS SYLLABUS SUMMARY. Table 2-4 summarizes the training syllabus outlined in this T&R Manual.

Table 2-4. SUAS Syllabus Summary.

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# CHAPTER 1

GROUP 1 UNMANNED AIRCRAFT SYSTEMS (UAS)
TRAINING AND READINESS

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CHAPTER 1
GROUP 1 UNMANNED AIRCRAFT SYSTEMS (UAS)
TRAINING AND READINESS

100. INTRODUCTION.

1. Training Marines to perform as a cohesive unit in combat lies at the heart of the T&R program. Unit readiness and individual readiness are directly related; individual proficiency serves as the building block for unit combat readiness. The Training and Readiness (T&R) Program is the Corps’ primary tool for planning, conducting and evaluating training, and assessing readiness. This syllabus is mandated for all personnel assigned to operate, instruct, evaluate, or manage small unmanned aircraft systems.

2. This T&R Manual contains the minimum individual training standards required for a Marine to initially attain and maintain currency in Group 1 Unmanned Aircraft Systems (UAS) operations. It is a fundamental planning tool for commanders to construct and execute an effective training plan that builds and maintains unmanned aircraft systems personnel readiness to support the unit mission.

3. CJCSI 3255.01, Joint Unmanned Aircraft Systems Minimum Training Standards (JUMTS), defines UAS groups, with small unmanned aircraft systems classified as Group 1 UAS. Per CJCSI 3255.01, a Group 1 UAS weighs 20 pounds or less. It normally operates Visual Flight Rules (VFR) in Class E, G, and Restricted or Uncontrolled airspace below 1200’ above ground level (AGL) at speeds less than 100 knots.

Note: For the purpose of this T&R Manual, from here forward Group 1 UAS will be referred to as Small Unmanned Aircraft System (SUAS).

101. T&R SUPPORT.

1. Training and Logistics Support Activity (TALSA).

   a. Background. Since the approval of the USMC’s Small Unit Remote Scouting System (SURSS) ORD dated 9 Aug 2004, SUASs like the RQ-11B DDL, RQ-12A WASP IV, and RQ-20A PUMA AE were added to the inventory to meet emerging operational requirements. This growth has resulted in a significant increase in total training requirements. Initially, training for these systems was contracted through various sources but as identified during numerous UAS Operational Advisory Groups (OAGs), this approach proved to be costly and unresponsive to meeting warfighter training needs. In order to support the Marine Expeditionary Forces (MEFs) and Marine Corps Special Operations Command (MARSOC) in a more responsive manner, Navy and Marine Corps Small Tactical Unmanned Aircraft Systems (PMA-263) consolidated all SUAS training requirements at two Training and Logistics Support Activity (TALSA) locations that provide centralized, flexible new equipment and sustainment training for all SUAS systems to ensure training requirements for MEF, MARSOC, and the Reserves are met. The TALSA are located aboard Marine Corps Bases Camp Lejeune, NC and Camp Pendleton, CA.
b. **Locations**

(1) TALSA East
- Address: East N Street Bldg 510, Camp Lejeune, NC 28542
- Phone Numbers: 910-450-8098/9903
- Email: PMA263TALSAEast@eri-engineering.com

(2) TALSA West
- Address: Bldg 13144, 14th Street, Camp Pendleton, CA 92055
- Phone Numbers: 760-725-4565/4575
- Email: PMA263TALSAWest@eri-engineering.com

(3) **Field Service Representative (FSR).** FSRs support MEF requirements and are capable of providing limited training for RQ-11B DDL (RAVEN) and RQ-20A (PUMA AE), and logistics support. FSRs may be established by the Navy and Marine Corp Small Tactical Unmanned Aircraft Systems (PMA-263) at the request of the Operating Forces. Information on FSR locations and capabilities can be obtained from the TALSA sites or email, PMA-263TALSAFSR@eri-engineering.com.

(4) **Mobile Training Teams (MTTs).** Although instructors are located at fixed TALSA sites, SUAS courses can be conducted using Mobile Training Teams (MTTs) anywhere required training resources are available.

c. **Services.** TALSAs are centralized locations that offer scheduling and execution entry-level SUAS courses that provide initial qualification training (IQT) for SUASs currently in use by the Marine Corps and MARSOC. Each TALSA is capable of assisting units with: SUAS logistics and maintenance support, SUAS currency requirements in this T&R Manual, advising personnel on SUAS integration (mission planning and employment), and providing subject matter expertise at various venues when requested.

d. **SUAS Initial Qualification Training (IQT) Courses.** IQT courses focus primarily on the basic operation of a SUASs. The TALSA offers standardized IQT that meet USMC and Joint training requirements and ensure students are trained to operate SUASs during contingencies and combat operations. Graduates of these courses are certified as SUAS-Operators (SUAS-Os) for the system instructed in. The SUAS IQT courses offered by the TALSA are:

(1) RQ-11B DDL Course.

(2) RQ-12A Course.

(3) RQ-20A Course.

(4) **All Environment Course.** The RQ-20A and RQ-12A platforms are operationally identical in nature once airborne and thus lend themselves to combined training for Special Operations units operating both types of air vehicles. This course is currently restricted to special operations personnel.

(5) **SUAS Accelerated Courses.** This course is restricted to designated Naval Aviators and UAS air vehicle operators. Their in-depth training satisfies portions of the program of instruction for IQT courses; therefore, an abridged course for
each SUAS was developed to certify them as SUAS-Os in compliance with this T&R Manual.

e. **Other SUAS Training.** The TALSA offers other courses and seminars to assist units to meet and maintain T&R requirements, to include:

   (1) **SUAS-PM Seminar.** This seminar reviews T&R requirements and provides guidance on how to establish and maintain a unit SUAS Program.

   (2) **SUAS-Instructor and Evaluator Courses.** The SUAS-Instructor course provides instruction to experienced SUAS Operators on how to conduct the duties of an unit SUAS-Instructor. SUAS Evaluator course provides instruction to experienced SUAS Operators or SUAS Instructors on how to conduct the duties of a SUAS Evaluator and assist the unit SUAS-Program Manager. These courses may be conducted separately or combined.

f. **Course Scheduling.** Units requiring IQT should contact the nearest TALSA to schedule a course. When training is conducted at a TALSA facility, classroom and flight training resources necessary to conduct IQT are normally provided. However, units must be prepared provide training resources the TALSA is unable to provide. These resources may include frequencies, training areas, airspace, classroom, vehicles and personnel to meet local range requirements. When the TALSA supports with an MTT at the requesting unit location, that unit must ensure necessary training resources are made available for the duration of the course to ensure the course can be conducted in its entirety.

2. **Syllabus Sponsor.** A syllabus sponsor is a unit that coordinates T&R changes on behalf of the SUAS community in coordination with Aviation Standards Branch (ASB). The Syllabus Sponsor shall maintain close liaison with the respective SUAS user community representatives. CG TECOM has assigned syllabus sponsorship for this T&R Manual to MARSOC per NAVMC 3500.14C, chapter 5. The syllabus sponsor may be contacted via e-mail at MARSOC.UAS@SOCOM.MIL.

3. **T&R Documents.** Unless otherwise noted, supporting and required documents referred to in this T&R Manual can be found at the respective SharePoint websites as noted below


   b. **Marine Corps Forces Special Operations Command (MARSOC).** Instructions for application of and amplification for the execution of this T&R Manual to support MARSOC SUAS training are contained in the MARSOC Order 3500.1_. Supporting documentation for the implementation of this T&R Manual is contained on the MARSOC SharePoint, [https://eis.usmc.mil/sites/marsoc/default.aspx](https://eis.usmc.mil/sites/marsoc/default.aspx). MARSOC SUAS personnel may contact the MARSOC SUAS-Program Manager (SUAS-PM) for assistance in accessing this site.

   c. The syllabus sponsor, in coordination with ASB, will ensure the content located on the websites noted above is maintained current.
102. EXPLANATION OF SPECIFIC TERMS. The concept of word usage and intended meaning that has been adhered to in preparing this T&R Manual is as follows:

1. “Shall” is used only when application of a procedure is mandatory.
2. “Should” is used only when application of a procedure is recommended.
3. “May” and “need not” is used only when application of a procedure is optional.

103. SAFETY. Conducting SUAS operations in a safe manner is the responsibility of all personnel from operators through unit commanding officers. Conducting operations in a safe manner ensures the preservation of a critical war fighting capability through the prevention of SUAS related mishaps, injuries or fatalities. Unit commanding officers shall ensure the unit establishes SUAS safety procedures that address preventive and emergency procedures. SUAS personnel shall be aware of the unique operational challenges and shall adhere to all safety requirements.

104. OPERATIONAL RISK MANAGEMENT (ORM).
(MCO 3500.27, OPNAVINST 3710.7 Ch 14.7.1)

1. The fundamental goal of risk management is to enhance operational capabilities and mission accomplishment. Identification and assessment of hazards and their associated risks, implementing controls, and supervising operations are all critical steps to safely execute any SUAS mission. Commanders shall integrate ORM fundamentals into the planning and execution process of SUAS operations to the maximum extent practicable. The risk management process begins at mission planning and continues until the SUAS mission is complete. The process is applied with the goal of eliminating hazards where possible and reducing residual risks to acceptable levels.

2. Air Vehicle Recovery. While not disposable, SUAS air vehicles are designed to be expendable in support of operations. If an air vehicle is lost during training every reasonable effort should be made to recover it. If an unmanned air vehicle is lost during combat operations a recovery may be attempted if it is tactically prudent and the environment is permissive enough to execute a recovery without undue risk to personnel. Specific requirements for recovering downed unmanned air vehicles may be addressed by theater or higher headquarters directives. A loss of an unmanned air vehicle during training or combat shall be properly documented according to command policy.

3. Falcon Tracker / Tracking Beacon Use. Use of an external radio tracking beacon device for SUAS training flights is strongly recommended (required for MARSOC units) in order to maximize the chance of recovering a downed air vehicle. These devices are not designed for, but are not prohibited from operational use.
105. OPERATIONAL AWARENESS. External factors like weather, emergency situations, changing environments, etc., are unpredictable by nature and require proper mission planning, detailed mission briefings, and adherence to checklists, procedures and established standards will minimize their impact on SUAS operations and personnel. Unlike manned systems, SUASs are unable to provide operators with sufficient peripheral visual, auditory, and tactical cueing. This sensory deprivation requires the SUAS operator to exercise greater vigilance and maintain a high level of situational awareness.

106. LOSS OF LINK (LOL). If a LOL condition occurs and cannot be re-established according to SUAS Emergency Procedures (EP), contact the controlling agency immediately per Naval Air Training and Operating Procedures Standardization (NATOPS), OPNAVINST 3710.7U, chapter 14.5, and local procedures.

107. REPORTING REQUIREMENTS.

1. Reporting and recording of incidents, deviations and violations of flying regulations and mishap information shall be made using the SUAS Incident/Mishap Report Form. See paragraph 101.3 of this chapter for the location of a SUAS Incident/Mishap Report Form. To facilitate mishap reporting, all SUAS flights should be recorded using the ground control station’s recording capability. Recordings and binary (BIN) files should be preserved following an incident or mishap to assist with reviews or investigations. Although there is no requirement to maintain recordings, it is highly encouraged as they can also be used as training aids. Instructions for downloading BIN files can be found in the applicable SUAS operator’s manual.

2. Unit commanders or unit delegated representatives, shall maintain a monthly summary of SUAS flight operations and monthly SUAS rosters to record training activities per OPNAVINST 3710.7U, chapter 14.10. A Local Unit Monthly SUAS Summary Report shall be approved by the unit commander and retained locally in a binder labeled “Local Unit SUAS Reports” that shall be maintained by the unit SUAS-PM. A Monthly SUAS Status Report shall be submitted via SUAS-PM chain of command to the applicable Marine Expeditionary Force (MEF)/MARSOC/Marine Forces Reserve (MARFORRES) SUAS-PM who will consolidate these reports and forward them to the NAVAIR/PMA-263 Group 1 UAS organizational email box at pma263_groupluas@navy.mil. See paragraph 101.3 of this chapter for the location of the sample letters and forms for these reports and the SUAS Monthly Reports Flowchart that guides how the monthly report is managed and submitted to the MEF/MARFORRES/MARSOC SUAS-PM.

108. MEDICAL STATUS AND REQUIREMENTS. In addition to the Aeromedical requirements for SUAS Operators (SUAS-Os) delineated in OPNAVINST 3710.7U, paragraph 14.8, SUAS-Os must not be on a light or limited duty status and shall meet the Class III standards for visual acuity, color vision and depth perception as defined per the MANMED (Article 15-85). Verification of SUAS-O medical qualification shall be documented through written verification of medical qualification from a surgeon. See paragraph 101.3 for location of the Verification of Medical Qualification sample letter. A summary of Class III Medical requirements is as follows:
1. **Visual Acuity, Distant and Near.** Must correct to 20/20 or better each eye. If the AFVT or Goodlite letters are used, a score of 7/10 on the 20/20 line constitutes meeting visual acuity requirements. Must have color vision ability to perceive those colors necessary for safe performance of operator duties.

2. **Hearing.** Demonstrate hearing of an average conversational voice in a quiet room, using both ears at six feet, with the back turned to the examiner or pass an audiometric test. Audiology - Audiometric speech discrimination test, pure tone audiometric test, unaided, with thresholds no worse than: (for the worst ear) 35Db at 500Hz, 50Db at 1,000Hz, 50Db at 2,000Hz, 60Db at 3,000Hz.

3. **Ear, Nose and Throat.** No ear, nose or throat disease or condition that may reasonably be expected to be manifested by vertigo or a disturbance of speech or equilibrium.

4. **Blood Pressure.** While no specific values have been stated in the standards, 155/95 (systolic/diastolic) have been the maximum allowed.

5. **Electro-Cardiogram.** Not normally required.

6. **Mental.** No diagnosis of psychosis, bipolar disorder, or any other severe personality disorder.

**109. JOINT UNMANNED AIRCRAFT SYSTEMS MINIMUM TRAINING STANDARDS (JUMTS) (CJCSI 3255.01).** The purpose of JUMTS is to identify the minimum knowledge required for unmanned aircraft system operators to support joint force commander (JFC) objectives.

1. **Basic UAS Qualification Level 1 (BUQ-1).** There are four levels of BUQ training. SUAS-Os are required only to achieve BUQ-1. BUQ-1 was developed to give the SUAS-O the required aviation and SUAS knowledge-based skills to fly Visual Flight Rules (VFR) in Class E and G, and restricted/combat airspace <1200’ above ground level (AGL).

2. **Joint Mission Qualification A (JMQ-A).** There are three JMQ levels. SUAS-Os are required only to achieve JMQ-A. JMQ-A provides general knowledge of the SUAS mission. This is critical to ensure SUAS-Os understand their role in accomplishing a larger joint military objective.

3. This T&R Manual complies with BUQ-I and JMQ-A requirements.

**110. NATO STANDARDIZED AGREEMENT (STANAG) 4670.** The STANAG 4670, dated 28 April 2009, is a ratified NATO Standardization Agreement that provides recommended guidance for the training of designated unmanned aerial vehicle operators. The aim of this agreement is to establish a broad set of training guidelines and to define the skills required of UAS operators. This T&R Manual complies with STANAG 4670 requirements.
111. AIRSPACE AND FREQUENCY COORDINATION.

1. SUAS personnel and planners shall utilize local procedures to coordinate and deconflict the use of airspace. SUAS operations are normally conducted in Special Use Airspace (SUA) (Warning and Restricted areas) but can also be conducted in the National Airspace under a Certificate of Authorization (COA) or Class G notification.

2. It is the responsibility of planners and SUAS-Os to coordinate the use of frequencies required to conduct SUAS operations. Frequency approval occurs at the local level and requires submission through the unit S-6/G-6. There may be long lead times to coordinate and finalize a frequency plan, therefore, it is recommended frequency requests be submitted in sufficient time to receive approval prior to SUAS operations. Refer to the applicable operator’s manual for the frequency range of a specific SUAS.

3. SUAS operations shall remain within the boundaries of the scheduled / assigned airspace and maintain radio contact with the controlling agency (i.e., Range Control). If operations spill out of the assigned airspace or an emergency occurs where the air vehicle does not return to the designated return home point, contact the controlling agency immediately. If a mission deviates from the planned schedule, notify the airspace controlling agency.

4. Personnel engaged in the operation of a SUAS shall comply with Federal Aviation Regulations (FAR), International Civil Aviation Organization (ICAO) regulations, Host country regulations, laws and rules, military regulations, DOD Flight Information Publications (e.g., General Planning Guides, Area Planning Guides), published airspace control policy, and SUAS operator’s manuals, checklists and standard operating procedures, as applicable.

112. Unit SUAS Allowance. A unit’s Table of Equipment (T/E) defines its allowance for a particular type of SUAS. Unit SUAS-PMs should coordinate with their unit S-4s to determine the status of their SUAS equipment. SUAS equipment data is noted at Table 1-1.

<table>
<thead>
<tr>
<th>SUAS Type</th>
<th>NSN</th>
<th>TAMCN</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ-11B (RAVEN) DDL</td>
<td>1550-01-578-0205</td>
<td>A0321</td>
</tr>
<tr>
<td>RQ-12A (WASP IV)</td>
<td>Not Yet Assigned</td>
<td>A03987G</td>
</tr>
<tr>
<td>RQ-20A (PUMA AE)</td>
<td>1550-01-585-1596</td>
<td>SFA541</td>
</tr>
</tbody>
</table>

Note 1: SF TAMCNs are for MARSOC only. USMC has not yet assigned a TAMCN to this item.

113. SYSTEM MANNING REQUIREMENTS. SUAs shall be manned as noted in Table 1-2 below. In certain circumstances when a commander deems it necessary, systems may be manned with one designated SUAS-O and one Untrained Assistant (as defined by applicable SUAS Operator's Manual) during operations. Untrained Assistants shall not be used during event training or evaluations unless the T&R Manual specifically directs their use.
Table 1-2. Minimum Manning Requirements.

<table>
<thead>
<tr>
<th>SUAS Type</th>
<th>System Min Manning</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ-11B DDL (RAVEN)</td>
<td>2</td>
</tr>
<tr>
<td>RQ-12A (WASP AE)</td>
<td>1</td>
</tr>
<tr>
<td>RQ-20A (PUMA AE)</td>
<td>2</td>
</tr>
</tbody>
</table>

114. SUAS MISSION CAPABLE STATUS. The SUAS must be full or partial mission capable per Table 1-3 for training. For Table 1-3, the following definitions apply:

1. **Full Mission Capable (FMC).** All baseline components are present and functional. Entire System is FMC if the quantity in the subsystem column in Table 1-3 is all present and functional. A FMC example is an RQ-11B DDL with three functional air vehicles, one functional GCS, three functional EO payloads, and three functional IR payloads.

2. **Partial Mission Capable (PMC).** Some baseline components are either missing or not functional, but system is capable of completing a full mission profile. Entire System is PMC if the quantity of each subsystem column in Table 1-3 is less than FMC, but greater than or equal to the PMC column. A PMC example is an RQ-12A with one functional air vehicle, one functional ground control station (GCS), two functional electro optical (EO) payloads and one functional infrared (IR) payload.

3. **Non-Mission Capable (NMC).** Critical baseline components are missing or non-functional, rendering the system incapable of completing a full mission profile. Entire System is NMC if functional quantity of each subsystem is less than the PMC column. A NMC example is an RQ-11B DDL with three functional air vehicles, one functional GCS, three functional IR payloads, but no functional EO payloads.

Table 1-3. Mission Capable Requirements.

<table>
<thead>
<tr>
<th>Subsystem</th>
<th>Asset Name</th>
<th>Baseline Qty</th>
<th>FMC Qty</th>
<th>PMC Qty</th>
<th>NMC Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Vehicle</td>
<td>Fuselage</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>GCS</td>
<td>GCS and RSTA Laptop</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Payload</td>
<td>Electro-Optical (EO) Day</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Payload</td>
<td>Infrared (IR), Forward Looking</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Payload</td>
<td>IR, Side Looking</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Payload</td>
<td>Gimbaled*</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

* Applies when Gimbaled payload fielded.
115. SIMULATOR TRAINING.

1. Simulators allow operators the opportunity to perform most SUAS tasks without conducting live flights. Simulators are useful for practicing procedures and tactics. Simulation technology provides an effective training capability while reducing resource requirements and costs. The SUAS simulator with Vampire database loaded on the SUAS RSTA laptop shall be used to conduct training and maintain currency per this T&R Manual to the maximum extent possible, excluding SUAS Evaluation flights.

2. Evaluation flights shall be conducted as live flights only. All flights (live or simulator) shall be logged in the SUAS-O Flight Log per paragraph 118.4 of this chapter.

116. SUAS TRAINING PROGRAM ROLES AND RESPONSIBILITIES

1. NATOPS Model Manager. ASB is assigned as the NATOPS Model Manager until such time as an operational unit can be designated. A NATOPS Model Manager administers the NATOPS program for SUAS and is responsible for the currency of all assigned NATOPS publications and SUAS crews; OPNAVINST 3710.7 defines roles and responsibilities.

2. SUAS Program. Commanders are responsible for establishing and maintaining a SUAS training program that includes integral and essential personnel to facilitate the functional and operational aspects of the program. Unit personnel assigned to serve in the billets listed below shall be designated in writing, see paragraph 207 of this T&R Manual for designation requirements. Personnel may be designated for more than one SUAS program billet provided requirements for each are met.

   a. SUAS-Program Manager (SUAS-PM) Requirements for Units without SUAS. Units that do not have SUASs on their Table of Equipment (T/E) but who are assigned subordinate units that do are required to have a staff noncommissioned officer (SNCO) or officer designated as the Unit SUAS-PM; the
individual should be assigned for a minimum of 12 months. The SUAS-PM shall attend a formal SUAS-PM seminar offered through a PMA-263 Group 1 UAS TALSA within 90 days of being designated as a unit SUAS-PM. Responsibilities shall include:

(1) Oversee the administration of the overall SUAS Program and ensure all subordinate commands' SUAS training programs are standardized.

(2) Assist subordinate commands in the administration of their unit programs to ensure all deploying unit SUAS operators, instructors, and evaluators (SUAS-O/I/Es) are properly trained, current and designated.

(3) Conduct a SUAS staff assist visit (SAV) to each subordinate unit to determine effectiveness of programs, compliance with governing directives, and efficiency of resource expenditures. Brief the unit commanding officer of the assessment results and provide recommendations as needed. See paragraph 101.3 of this chapter for the location of the SUAS Training Program Assessment Checklist. See paragraph 117.17 for more details on SAVs.

(4) Ensure incidents, deviations and violations of flying regulations and mishap information are reported per OPNAVINST 3710.7, chapter 3.11 and command directives using the SUAS Incident/Mishap Report, review the reports as needed. See paragraph 101.3 for the location of the SUAS Incident/Mishap Report Form.

(5) In coordination with subordinate units and the SUAS syllabus sponsor, develop standard operating procedures (SOP) to support the unit’s local area SUAS activities. Review lessons learned and like documents and submit recommended changes to the SOP as needed.

(6) Assist the unit commanding officer in preparing Monthly SUAS reports for submission, as applicable.

b. SUAS-Program Manager (SUAS-PM) Requirements for Units with SUAS.
Units that have SUASs on their T/E shall designate a staff noncommissioned officer (SNCO) or officer as the Unit SUAS-PM, the individual should be a SUAS-O. The SUAS-PM shall attend a formal SUAS-PM seminar offered through a PMA-263 Group 1 UAS TALSA within 90 days of being designated as a unit SUAS-PM. Responsibilities shall include:

(1) Identify personnel requiring SUAS training and schedule SUAS Initial Qualification Training (IQT) and other courses through the a PMA-263 Group 1 UAS Training and Logistics Support Activity (TALSA), see paragraph 101.1; courses offered by the TALSA meet requirements as set forth in this T&R Manual.

(2) Administer the unit SUAS Training Program, to include Individual Training Records (ITRs), Marine Corps Training Information Management System (MCTIMS), flight logs, and other required documentation.

(3) Assist the commanding officer with the accountability and maintenance status of SUAS equipment.

(4) Monitor and track currency training and designation of all unit SUAS-O/I/Es.
(5) Ensure the unit is identifying SUAS pre-deployment training requirements and integrating them into mission planning.

(6) Assist the unit commanding officer in preparing Monthly SUAS reports for submission.

(7) Notify SUAS-O/I/Es of their training status to include lapse in currency and schedule them for training. Ensure they are allotted adequate training time, especially prior to deployments.

(8) Identify SUAS personnel who are failing to maintain designation standards and make recommendations concerning revocation to the unit commanding officer. Administratively process any SUAS-O/I/E for revocation, when directed by the unit commanding officer.

(9) Support the collection and reporting of operational lessons learned and submit recommended changes to the unit SUAS-PM as needed.

c. **SUAS-Operator (SUAS-O).** A SUAS-O is a certified individual, designated by the commanding officer to operate SUASs in accordance with paragraphs 203 and 207 of this T&R Manual. A SUAS-O may be certified and designated in more than one SUAS simultaneously. Responsibilities shall include:

   (1) Ensure airspace and frequency usage is approved prior to operating a SUAS.

   (2) Report incidents, mishaps, and SUAS losses to the Unit SUAS-PM immediately upon occurrence using the SUAS Incident/Mishap Report Form, and provide a copy of the BIN file(s) and video log(s) if flight was recorded.

   (3) Provide the Unit SUAS-PM with a copy of the BUQ-I and applicable course completion certificates.

   (4) Maintain system and operator logbooks and provide copies to Unit SUAS-PM on a monthly basis for inclusion into the ITRs.

   (5) Maintain own individual currency and evaluation requirements to maintain SUAS-O designation(s). Notify the Unit SUAS-PM if recertification training is required.

d. **SUAS-Instructor (SUAS-I).** Units that have SUAS systems on their T/E shall designate at least one E-4 or above as a SUAS-I in accordance with paragraph 205 and 207 of this T&R Manual. The SUAS-I shall be highly experienced as a SUAS-O. Responsibilities shall include:

   (1) Train SUAS-Os on currency and mission qualification training (MQT) events for SUAS(s) in which designated to instruct.

   (2) Conduct refresh training for SUAS-Os who have fallen out of currency.

   **Note:** SUAS-Is/Es/PMs are prohibited from conducting IQT for the purpose of certifying personnel as first time SUAS-Os in any SUAS. Only formally trained IQT instructors (known as IQT-Is) are certified and approved to instruct IQT courses (currently at a TALSA
or a recognized formal learning center) for the purpose of certifying SUAS-Os for the first time or recertifying SUAS-Os who have gone out of currency for greater than 720 days.

(3) Perform the duties of a SUAS-O, as needed.

(4) Maintain own individual currency and evaluation requirements to maintain SUAS-O and SUAS-I designations. Notify the Unit SUAS-PM if refresh or recertification training is required.

(5) Assist the Unit SUAS-PM as needed.

e. **Unit SUAS-Evaluator (SUAS-E).** Units that have SUASs on their T/E shall designate at least one E-5 or above as a SUAS-E in accordance with paragraphs 206 and 207 of this T&R Manual. SUAS-E shall be highly experienced as a SUAS-I. Responsibilities shall include:

(1) Manage the unit SUAS Evaluation program and serve as the technical advisor on all levels of SUAS standardization within the command.

(2) Conduct SUAS-O/I/Es evaluations on the SUAS(s) in which designated to evaluate.

(3) Train and evaluate unit SUAS-O/I/Es.

(4) Recommend SUAS-I candidates for IUT based on superior operator knowledge, experience and maturity.

(5) Maintain own individual currency and evaluation requirements for SUAS billets in which designated. Notify the Unit SUAS-PM if refresh or recertification training is required. SUAS evaluations may be conducted by an SUAS-E from another command.

(6) Assist the Unit SUAS-PM as needed.

117. **TRAINING TERMS AND POLICY.** The policies and terms provided below apply specifically to this document and are provided for clarification to eliminate ambiguity.

1. **Initial Qualification Training (IQT).** The purpose of IQT is to train individuals on entry level operations of SUASs. Marine Corps IQT requirements are listed as 1000 numbered events, per paragraph 203 of this T&R Manual. IQT is conducted by IQT-Is using approved programs of instruction (POI). IQT-Is shall complete approved formal instructor training, meet certification requirements of the formal learning activity, and be very experienced and knowledgeable in SUAS operations, principles of instruction and flight training. SUAS-I are not to be confused with IQT-Is.

2. **Mission Qualification Training (MQT).** MQT is focused on supporting unit mission requirements using a SUAS. The purpose of MQT is to train SUAS-Os in the employment of assigned SUASs using relevant Tactics, Techniques, and Procedures (TTPs). These TTPs are not taught or emphasized during IQT. Units should complete MQT events necessary to support mission tasks. For a SUAS-O to be considered “full mission ready,” all MQT events may be completed using any applicable SUAS. MQT events are independent of SUAS type. MQT requirements are delineated in paragraph 204 of this T&R Manual.
3. **Prerequisite.** Prerequisites are requirements that shall be completed prior to commencing training in the event or designation for which specified.

4. **Initial.** An event is considered to be “Initial” if the individual has never completed the event before. Events in this T&R Manual coded as “I” are considered Initial. Individuals shall complete all I-coded events for a specific SUAS as delineated in Core Skill Introduction Training in order to become certified in the specific SUAS and eligible for designation. I-coded events are first completed during IQT at a formal training activity.

5. **Multiple Event Logging.** There may be opportunities for SUAS operators to accomplish the requirements for more than one T&R coded event during a single training evolution. Units are encouraged to take advantage of opportunities that allow for multiple event completion. Multiple event logging is permitted if the requirement and performance standard for each event are accomplished, to include the minimum required flight time for each event.

6. **Designation.**

   a. A designation is unit specific and remains in effect for the duration of an individual’s tenure in a command unless removed for cause. When transferred to another command, SUAS-O/I/E designations are suspended until the commanding officer of the receiving unit designates the individual in writing. See paragraph 101.3 for location of the SUAS Designation Letter sample.

   b. When an individual completes IQT, that individual is considered to be a certified SUAS-O who is proficient to operate the system in which trained. However, that individual may not serve as a SUAS-O in a unit until designated in writing by the unit commanding officer.

   c. Designations covered by this T&R Manual include SUAS-O/I/E and Unit SUAS-PM. SUAS personnel are designated based on appropriate level of training and currency per this T&R Manual.

7. **Individual Evaluations.** SUAS Evaluations are required for all SUAS-O/I/Es.

   a. Occasions when SUAS-O/I/E shall undergo a SUAS Evaluation:

      (1) **Annually.** Not to exceed 12 months from date of designation or the last SUAS Evaluation, whichever is most recent.

      (2) **Lapse in Currency.** A SUAS-O/I/E fails to maintain currency within 365 days per Table 1-4. If currency lapses beyond 365 days, then events noted in Table 1-4 for the SUAS type shall be completed prior to conducting a SUAS Evaluation.

      (3) **Re-designation.** A SUAS-O/I/E may be re-designated after having had a designation revoked in accordance with paragraph 117.11. Individuals with a revoked designation may regain that designation upon successfully completing a remedial syllabus (see paragraph 117.12) and a SUAS Evaluation, and being recommended by the SUAS-E. The unit commanding officer must approve the recommendation in writing before it can be in effect.
b. The SUAS Evaluation Guide provides the standardized direction and guidance on how to conduct a SUAS Evaluation. Only a SUAS-E may conduct these evaluations. See paragraph 101.3 of this chapter for location of the SUAS Evaluation Guide and SUAS Evaluation Form.

c. When a unit does not have an SUAS-I or SUAS-E, or a unit’s SUAS-I/Es have fallen out of currency, units shall regain currency by completing event(s) with SUAS-I/Es from another unit (higher then adjacent). If no SUAS-I/E is available from a higher or adjacent unit, the TALSA may provide SUAS-I/E support. Remember that an SUAS-I or SUAS-E can only conduct training on T&R events for the SUASs in which they are designated and current. Only a SUAS-E can conduct SUAS evaluations.

d. **Evaluation Exams.** The Emergency Procedures (EP) study guides and quizzes, SUAS Evaluation study guides, and written exams shall be maintained for standardization by the syllabus sponsor. See paragraph 101.3 of this chapter for location of the EP quizzes and study guides approved by the syllabus sponsor. Units that require SUAS Evaluation Exams should contact the syllabus sponsor.

e. **Evaluation Process.**

   (1) The Unit SUAS-PM and SUAS personnel have joint responsibility to ensure evaluations are conducted as required. As a rule of thumb, planning for an evaluation should begin 60 days from the projected evaluation date. The 60 day window will provide adequate time to obtain required range and airspace, frequencies and equipment, and to schedule required personnel (SUAS-E, Range OIC, Range Safety Officer, etc.).

   (2) The Unit SUAS-PM will work with the unit operations/training section and SUAS-E to coordinate support for the evaluation.

   (3) The SUAS-E should contact the evaluee NLT 24 hours prior to the event. It is recommended the evaluee be provided a copy of the SUAS Evaluation Guide. The SUAS Evaluation Guide provides a detailed agenda for the day of the evaluation which is composed of two closed book assessments - a SUAS written exam and an emergency procedures (EP) quiz; a mission brief, an evaluation live flight; and a formal debrief. The SUAS-E shall select any one of the MQT events with a scenario to conduct an evaluation.

   (4) The evaluee must achieve a minimum grade of 80% on the closed book exam and 100% on the EP quiz before progressing to the flight portion.

   (5) At the completion of the evaluation, the SUAS-E shall submit the completed evaluation form, graded written exam and EP quiz to the SUAS-PM. If the evaluation results in a recommendation for a designation (e.g. SUAS-I, SUAS-E, or to regain currency), then the SUAS-PM shall route all evaluation documentation provided with the appropriate designation letter for the unit commanding officer’s signature.

f. All SUAS Evaluation Forms and written examinations shall be filed in Part VI of the ITR.

8. **Event Training Forms (ETF).** ETFs shall be used to document event training. Every time an event is conducted an ETF shall be completed for that event, see paragraph 101.3 of this chapter for location of blank ETFs.
ETFs serve to document and track progress as well as to guide the student in correcting deficiencies. Completed ETFs shall be filed in Part V of the ITR, see paragraph 118 in this chapter. The TALSAs will document IQT per their local standard operating procedures and provide each student a course completion certificate to affirm T&R requirements were trained to standard.

9. **Currency.** Currency is a frequency requirement measured in time between SUAS sorties/flights or training requirements. Currency minimum training requirements are derived from the date of the initial SUAS-O designation, upon regaining currency if that refresh requires a SUAS Evaluation flight (366 - 720 day lapse), or from the last SUAS Evaluation, whichever is most recent. A SUAS-O/I/E maintains currency by achieving the established minimum training and assessment requirements. Failure to maintain currency will result in the SUAS-O/I/E losing authorization to operate, train, or evaluate the system(s) until currency is regained. In cases where a currency lapse exceeds 365 days, designations shall be revoked.

   a. **SUAS-O Currency Minimums.** SUAS-Os shall meet the following currency minimums and those noted in Table 1-4. SUAS-Os who fail to meet currency requirement shall not be authorized to operate the system(s) until currency is regained per Table 1-4.

      (1) **365 Days.** Within 365 days preceding the date of the SUAS Evaluation, a total of 12 flight events must be completed, of which a minimum of two must be live flights. For systems requiring two SUAS-Os, half of an individual's flights should be as the Vehicle Operator (VO) and half should be as the Mission Operator (MO).

      (2) **180 Days.** Within 180 days preceding the date of the SUAS Evaluation a total of six flight events are required, of which at a minimum one must be a live flight. For systems requiring two SUAS-Os, half of an individual's flights should be as the VO and half should be as the MO.

      (3) **90 Days.** Within 90 days preceding the date of the SUAS Evaluation, 1 event is required (live or simulated).

   b. Live events logged in conjunction with an annual SUAS Evaluation cannot be counted towards the currency requirements for that evaluation. Events conducted as part of a previous evaluation flight may be applied to currency minimums if that flight occurred within the period specified in Table 1-4. In order to ensure operators retain currency requirements to operate a specific SUAS, a SUAS Evaluation flight shall be conducted “live” within 12 months from the most recent SUAS Evaluation date.

      Note: In summary, a total of 13 flight events are required in a twelve month interval. Twelve flight events are for currency, two of which shall be live. The thirteenth event is the SUAS evaluation that shall be conducted live.

   c. **SUAS-I/Es currency minimums.** SUAS-I/Es shall maintain currency on the SUAS in which they will be instructing or evaluating. Currency shall be maintained as noted in Table 1-4.

   d. **Currency Lapse.**
(1) SUAS personnel who fail to meet currency requirements shall not be authorized to operate, or train/evaluate personnel on the system(s) until currency is regained through refresher training per Table 1-4. Refresher requirements are per designation type and based on the duration of currency lapse, see Table 1-4.

(2) In order to regain currency, SUAS personnel shall complete or fly the indicated events under the observation of a designated and current SUAS-I/E, as applicable. An Event Training Form (ETF) for each refresher event shall be completed and filed in Part V of the ITR of the person regaining currency. Evaluation flights shall be flown with a SUAS-E.

Note: Events indicated with device code “L/S” can be flown using the approved simulator as an alternate means of accomplishing the currency flight. If a currency lapse exceeds 365 days, the designation letter shall be revoked. Once currency is regained, a new designation letter signed by the unit commanding officer will be issued.
Table 1-4. Currency Lapse (Durations in Days).

<table>
<thead>
<tr>
<th>SUAS</th>
<th>Event</th>
<th>Duration Of Currency Lapse</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>91-180</td>
</tr>
<tr>
<td>RQ-11B DDL</td>
<td>SUAS-O</td>
<td>Days</td>
</tr>
<tr>
<td>RQ-11B DDL</td>
<td>SUAS-O</td>
<td></td>
</tr>
<tr>
<td>RQ-12A SUAS-O</td>
<td>SUAS-O</td>
<td></td>
</tr>
<tr>
<td>RQ-20A SUAS-O</td>
<td>SUAS-O</td>
<td></td>
</tr>
<tr>
<td>RQ-11B DDL</td>
<td>SUAS-I</td>
<td></td>
</tr>
<tr>
<td>RQ-11B DDL</td>
<td>SUAS-E</td>
<td></td>
</tr>
<tr>
<td>RQ-12A SUAS-I</td>
<td>SUAS-I</td>
<td></td>
</tr>
<tr>
<td>RQ-12A</td>
<td>SUAS-I</td>
<td></td>
</tr>
<tr>
<td>RQ-12A</td>
<td>SUAS-E</td>
<td></td>
</tr>
</tbody>
</table>

**Designation**

- **RQ-11B DDL SUAS-O**
  - RQ11-1200
  - RQ11-1210
  - RQ11-1220
  - RQ11-1270
  - EVAL-2985
  - DESG-2910 Revoked
  - Recomplete RQ-11B DDL IQT Course
- **RQ-12A SUAS-O**
  - RQ12-1300
  - RQ12-1310
  - RQ12-1320
  - RQ12-1370
  - EVAL-2990
  - DESG-2920 Revoked
  - Recomplete RQ-12A IQT Course
- **RQ-20A SUAS-O**
  - RQ20-1400
  - RQ20-1410
  - RQ20-1420
  - RQ20-1470
  - EVAL-2995
  - DESG-2930 Revoked
  - Recomplete RQ-20A IQT Course
- **RQ-11B DDL SUAS-I**
  - IUT-2820
  - IUT-2835
  - EVAL-2985
  - DESG-2945 Revoked
  - Recomplete RQ-11B IUT
- **RQ-11B DDL SUAS-E**
  - EUT-2865
  - EVAL-2985
  - DESG-2965 Revoked
  - Recomplete RQ-11B EUT
- **RQ-12A SUAS-I**
  - IUT-2820
  - IUT-2840
  - EVAL-2990
  - DESG-2950 Revoked
  - Recomplete RQ-12A IUT
- **RQ-12A**
  - EUT-2870
10. **Refresh.** When a SUAS-O/I/E fails to meet minimum training requirements, that individual is no longer authorized to operate SUASs until currency is regained. An individual can regain currency through the refresh process by completing the events specified in Table 1-4 under the supervision of a current SUAS-I/E, as applicable. There is no limit to the number of times an individual can refresh at a unit as long as it is done before the 721st day of currency lapse. If lapse is 721 days or greater, currency cannot be regained until the applicable SUAS IQT Course is completed at a formal training activity.

11. **Designation Revocation.** Unit commanding officers have the discretion to revoke a designation. Personnel removed from the SUAS training program shall be notified with a revocation letter signed by the unit commanding officer and removed immediately by the Unit SUAS-PM. Instances that may lead to removal from a SUAS program are flagrant violations, disregard to procedures, a trend of substandard performance, failure to refresh per Table 1-4. Unit commanding officers must approve revoked individuals for re-entry into the SUAS training program through the approval of a Remedial Syllabus letter. See paragraph 101.3 for location of the SUAS Remedial Syllabus and Revocation Letter samples.

12. **Remedial Syllabus.** A remedial syllabus is a series of training events selected by a SUAS-E and reviewed by the SUAS-PM for the purpose of correcting identified training deficiencies. This syllabus shall be approved in writing by the unit commanding officer and shall include an SUAS evaluation flight. An occasion of when a remedial syllabus would be required is in the case of a reinstatement of an individual to the SUAS Training Program following designation revocation. For example, if an individual's SUAS-O designation was revoked for repeated airspace violations, specific events from the T&R would be selected to retrain the SUAS-O on the use of airspace and on how to maintain the air vehicle within airspace boundaries.

13. **Waiver.** An event or prerequisite is determined, in exceptional circumstances, to be exempt for a SUAS-O/I/E and does not need to be completed. If granted in writing by the commanding officer, the signed waiver is valid only for the event or prerequisite noted in the waiver as it applies to the specific SUAS being trained. Waivers may remain in effect during the current tour of duty. Upon transfer, the joining commander shall review waivers and make a determination upon the validity of previous waivers. If a waiver is validated a new waiver letter shall be issued by the commanding officer and included in Part II of the ITR.
14. **Deferral.** Events may only be deferred when the lack of logistical support or training assets prevents timely event completion. For example, events may be deferred when training resources such as a training area or frequencies are not available for an extended period, or training systems lack the capability listed in the event description. For all deferrals, a letter describing the deferral, explaining the reason for it, and listing the events being deferred must be signed by the commanding officer. Deferrals remain in effect until the training resources become available or current tour of duty ends. Commanders may authorize the conduct of deferred live events using the system simulator.

15. **Deviations.**

   a. CG TECOM is the approval authority for deviations from training policy delineated in this T&R Manual. However, commander, COMMARFORSOC is the approval authority for deviations from training policy for MARSOC.

   b. Requests for T&R policy deviation shall be requested via message to CG TECOM MTESD, through the operational chain of command SUAS Program Manager (SUAS-PM) at the respective MEF/MARFORRES/MARSOC with notification to the syllabus sponsor. See paragraph 101.3 for location of the SUAS Deviation Request Message sample.

   c. For time-sensitive requests, chain of command endorsements may be obtained by phone conference. If this method is chosen, the requester shall ensure that the endorsement(s) obtained via phone are included in the message as references.

   d. During contingency or combat operations, battalion/squadron commanders or higher may deviate from this T&R Manual at their discretion. Deviations shall not constitute compliance with training requirements to be certified as SUAS-O/I/E. SUAS-O/I/E shall complete all training requirements at first opportunity in order to comply with this T&R Manual.

16. **Deployments.** SUAS-O/I/Es must be current and designated per this T&R Manual before deployment. A SUAS-O/I/E shall make every attempt to maintain currency. Once deployed, SUAS-O/I/Es will be considered current and designated for the duration of the deployment. Upon return from deployment, SUAS-O/I/Es who did not maintain their currency have 120 days to complete the refresh training requirements per Table 1-4; time lapse for refreshing is measured from date of last live flight event. Commanders shall issue a waiver letter noting a by-date when currency must be refreshed before the SUAS-O/I/E lapses in currency. See paragraph 101.3 for location of the SUAS Deployment Currency Waiver Letter sample.

17. **Unit SUAS Staff Assist Visit (SAV).** The Unit SUAS-PM at each command echelon shall conduct annual SAVs for each immediate subordinate command maintaining a SUAS Training Program. SUAS SAVs shall be conducted in accordance with the SUAS training Program assessment checklist (see paragraph 101.3 of this chapter for location of the SUAS Training Program Assessment Checklist). The purpose of these visits is to ensure proper program administration and standardization and to provide assistance and guidance for programs that do not meet standards. These visits can be in conjunction with other unit exercises or operations and are encouraged to be conducted during real world operations.
118. TRAINING ADMINISTRATION.

1. Individual Training Record (ITR).

   a. The ITR contains all documents and records for a SUAS-O/I/E. An updated and accurate ITR is critical to tracking and documenting SUAS-O/I/E currency and designations. Only the commanding officer or designated representative (the SUAS-PM) is authorized to review and attest the accuracy of an ITR.

   b. The Unit SUAS-PM is responsible for ensuring each SUAS-O/I/E has an ITR. SUAS-O/I/Es are responsible for providing the Unit SUAS-PM with SUAS training documents such as course completion certificates and copies of flight logbook entries.

   c. The ITR will be physically located with the Unit SUAS-PM, unless signed out by the individual. When signed out, will be completed and filed as a place holder until the ITR is returned.

   d. ITRs shall be constructed and organized into six parts per Table 1-5 using a common brown DOD six part folder. The syllabus sponsor will be responsible for ensuring standardization of the SUAS ITR, and shall maintain a master file of all SUAS-O ITRs with updated documentation, see paragraph 101.3 of this chapter for location of the SUAS ITR cover sheets and training forms.

   Table 1-5. ITR Organization.

<table>
<thead>
<tr>
<th>PART</th>
<th>ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>General</td>
</tr>
<tr>
<td></td>
<td>A: Privacy Act Statement</td>
</tr>
<tr>
<td></td>
<td>B: Record of Audit</td>
</tr>
<tr>
<td></td>
<td>C: Medical Documentation</td>
</tr>
<tr>
<td>II</td>
<td>Designation and Other Letters</td>
</tr>
<tr>
<td>III</td>
<td>Course Completion Certificates</td>
</tr>
<tr>
<td>IV</td>
<td>Flight Log</td>
</tr>
<tr>
<td>V</td>
<td>SUAS Event Training Forms</td>
</tr>
<tr>
<td>VI</td>
<td>Flight Evaluations</td>
</tr>
<tr>
<td></td>
<td>See paragraph 101.3 of this chapter for location of the SUAS ITR cover sheets and training forms.</td>
</tr>
</tbody>
</table>

   e. The ITR shall be audited at a minimum annually or when one of the following occasions occurs:

      (1) Upon reporting to a unit.

      (2) Upon designation or recertification.

      (3) Prior to a SUAS evaluation.

      (4) Upon transferring to another unit.

      (5) During a SAV, ITRs may be randomly reviewed.
f. The ITR (in its entirety) shall be maintained as a permanent record.

2. **T&R Event Tracking.** Once completed, T&R events shall be tracked using a SUAS T&R Event Tracking Form that shall be placed in Part V of the ITR. When an event is completed, the event number, date completed and instructor or evaluator signature shall be documented on the form. See paragraph 101.3 of this chapter for location of the SUAS T&R Event Tracking Form.

3. **Training Management System (TMS).** Marine Corps Training Information Management System (MCTIMS) is an automated, web-based database. MCTIMS is the primary database system that shall be used to track all SUAS training to include flights, simulator events, and currency requirements. MCTIMS does not replace the requirement to maintain hard copy ITRs.

4. **SUAS Flight Logbooks.**

   a. SUAS-Os shall maintain an individual flight log book. Each individual flight event, live or simulated, shall be documented using a flight log. Flight logging starts with the first flight in an IQT course and is maintained throughout a SUAS-O/I/E’s career. Flight logs shall be standardized by the syllabus sponsor and accessible in electronic format. Flight logs shall be reviewed monthly by the Unit SUAS-PM who will date and sign in the row immediately following the last entry. See paragraph 101.3 of this chapter for location of the SUAS Flight Log Form.

   b. All flights shall be logged to reflect the position of the duties being performed:

      (1) SUAS-Os will log operator time as MO or VO as appropriate.

      (2) SUAS-Is will log instructor time only if performing instructor duties.

      (3) SUAS-Es will log evaluator time only if performing evaluator duties.

      Note: Flight hour computation starts when an air vehicle (AV) is launched and ends when it has landed.

   c. SUAS-O/I/Es shall personally maintain their logbooks updated and in their custody. On a monthly basis and prior to a deployment, the Unit SUAS-PM shall inspect individual logbooks and maintain a copy in the ITR. SUAS-O/I/Es will deploy with their logbooks to ensure timely and accurate entry of flight data.
CHAPTER 2
GROUP 1 UNMANNED AIRCRAFT SYSTEM (UAS)
INDIVIDUAL TRAINING AND READINESS

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<th>PAGE</th>
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</thead>
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</tbody>
</table>
CHAPTER 2

GROUP 1 UNMANNED AIRCRAFT SYSTEM (UAS)

INDIVIDUAL TRAINING AND READINESS

200. TRAINING PROGRESSION MODEL. SUAS personnel shall follow the training progression model as depicted below. The Model is broken into four phases. As a prerequisite to beginning the first phase the student must complete the BUQ-I course offered through Joint Knowledge Online (JKO), this training may be accomplished at the student’s home station. See paragraph 101.3 for location of “BUQ-1 Registration Instructions” to access the course either on Joint Knowledge Online (JKO) or the Small Unmanned Aircraft System Manager (SUASMAN) system.

1. Core Skill Introduction Training (1000 numbered events) provides Initial Qualification Training (IQT) requirements. IQT is conducted by the Training and Logistics Support Activity (TALSA) or other recognized formal learning activities authorized by TECOM or USSOCOM J-7/9. Upon completion of IQT requirements, a student is certified as a SUAS-O and eligible to be designated in writing by the unit commanding officer. Select events in Core Skills Introduction training are also used during unit level training to maintain or regain currency per Table 1-4. These select events may be conducted by unit SUAS-Is after an individual has completed these events during IQT for the SUAS assigned to operate/employ.

2. Core Skill Training (2000–2799 numbered events) provides Mission Qualification Training (MQT) requirements that are conducted at the unit by a SUAS-I. Units should complete MQT events necessary to support mission tasks. However, for a SUAS-O to be considered “full mission ready,” all MQT events may be completed using any SUAS. MQT events are independent of SUAS type.

3. Instructor and Evaluator Under Training (IUT and EUT) (2800-2899 numbered events) provide training required to be designated as either an SUAS-Instructor (SUAS-I) or a SUAS-Evaluator (SUAS-E). This training is conducted by unit SUAS-Is or SUAS-Es as noted for each event.

4. Designations and Requirements (2900-2999 numbered events) delineate requirements for SUAS-O/I/E and SUAS-PM designations and annual requirements.
Figure 2-1. SUAS TRAINING PROGRESSION MODEL.
201. T&R EVENT STRUCTURE. The T&R event structure is provided below. The superscript numerals in the header section correspond to the explanation provided in the notes section below the example. The body sections contain embedded descriptions.

RQ11-1220¹ 0.4² I,R³ L/S⁴ (N)⁵ SUAS-I⁶

Task. States what is to be accomplished.

Additional Tasks. Only applies to 2000 numbered events. They are tasks related in scope and nature to the primary requirements of the event but are not required to complete the event. These tasks may be included during training to optimize event training benefits.

Requirement. Provides the condition in which the event will be conducted and lists performance steps that shall be completed.

Performance Standard. Directly tied to an event and indicates the level of competence that shall be achieved for the event to be considered satisfactorily completed.

Initial System Condition. State of the SUAS when presented to the trainee prior to officially commencing training on the event. As the syllabus progresses the initial system condition will require more setup on the part of the trainee.

System Configuration. Physical configuration of the SUAS required for the trainee to successfully complete the event. This section will contain information for both the air vehicle (AV) and Ground Control Station (GCS).

Prerequisite. Actions/items that shall be completed prior to starting the event.

Range Training Area. Range training area dimensions required to accomplish the event requirements.

References. Applicable references that can assist the trainee to satisfy the event performance standard, or the instructor to conduct and evaluate effectiveness of task completion.

Applicable SUAS. SUAS type(s) that can be used when completing the event.

EVENT HEADER NOTES:

1. Event Code. This number is used to log completed events in MCTIMS and the ITR SUAS T&R Event Tracking Form. An event number is a unique alphanumeric event code that has two parts. The first part is an alphanumeric sequence that describes the event type, be it a common core event that applies to all SUASs (MQT) or specific platform(s) event (e.g. RQ-11B DDL, RQ12A, RQ-20A). The second part is a four digit number unique to that event (e.g.
1010) which cannot be used again for any other event in this T&R Manual.

2. Flight Duration. This is the minimum duration for the conduct of the event. The duration is expressed in tenths of a minute - 1/10th of an hour is equal to six minutes, see Table 2-1 below. Flight duration shall be logged based on the “minute interval” in which the flight time falls. For example, if flight duration is 15 minutes, the decimal time will be 0.3.

Table 2-1. Time Conversion

<table>
<thead>
<tr>
<th>DECIMAL</th>
<th>MINUTE INTERVAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1</td>
<td>1-6</td>
</tr>
<tr>
<td>0.2</td>
<td>7-12</td>
</tr>
<tr>
<td>0.3</td>
<td>13-18</td>
</tr>
<tr>
<td>0.4</td>
<td>19-24</td>
</tr>
<tr>
<td>0.5</td>
<td>25-30</td>
</tr>
<tr>
<td>0.6</td>
<td>31-36</td>
</tr>
<tr>
<td>0.7</td>
<td>37-42</td>
</tr>
<tr>
<td>0.8</td>
<td>43-48</td>
</tr>
<tr>
<td>0.9</td>
<td>49-54</td>
</tr>
<tr>
<td>1.0</td>
<td>55-60</td>
</tr>
</tbody>
</table>

3. Program of Instruction (POI) Code. A POI is a set of training events that an individual is required to complete. Individuals undergoing training are required to complete a specific POI. POI type codes include I (initial) or R (refresher). Once I-coded events have been completed and they are also R-coded, then they are to be subsequently flown per Table 1-4, Currency Lapse.

4. Event Device Code. The device or equipment required to complete the event, see Table 2-2 below. Non-flight events are noted as “Classroom”. All I-coded events shall be conducted live; IQT events shall be conducted Live (L). Events that are also R-coded may be conducted live or use a simulator. Events coded “I, R” are device coded “L then L/S” to indicate initial conducted live and refresh conducted either live or simulator (L/S).

Table 2-2. Event Device Codes.

<table>
<thead>
<tr>
<th>DEVICE CODE</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>Live flight only</td>
</tr>
<tr>
<td>S</td>
<td>Simulator flight only</td>
</tr>
<tr>
<td>L/S</td>
<td>Live flight preferred, Simulator flight optional</td>
</tr>
</tbody>
</table>

Event shall only be completed using the approved simulator for the SUAS.

5. Time of Day. When the event may be flown. Possible codes are D (Day), N (Night) or (N) (Night optional). An (N) coded flight can be flown day or night.
6. Instructor Required. This code will specify who can conduct training for this event (i.e., SUAS-I or SUAS-E).

202. EVENT ACRONYMS. Table 2-3 provides a list of acronyms found throughout events in the IQT and MQT syllabus.

Table 2-3. Event Acronyms List.

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACA</td>
<td>Airspace Control Authority</td>
</tr>
<tr>
<td>ACM</td>
<td>Airspace Coordination Measure</td>
</tr>
<tr>
<td>AGL</td>
<td>Above Ground Level</td>
</tr>
<tr>
<td>ALT</td>
<td>Altitude</td>
</tr>
<tr>
<td>AV</td>
<td>Air Vehicle</td>
</tr>
<tr>
<td>BDA</td>
<td>Battle Damage Assessment</td>
</tr>
<tr>
<td>DTED</td>
<td>Digital Terrain Elevation Data</td>
</tr>
<tr>
<td>EO</td>
<td>Electro-Optical</td>
</tr>
<tr>
<td>EP</td>
<td>Emergency Procedures</td>
</tr>
<tr>
<td>ETF</td>
<td>Event Training Form</td>
</tr>
<tr>
<td>FO</td>
<td>Forward Observer</td>
</tr>
<tr>
<td>FSCM</td>
<td>Fire Support Coordination Measure</td>
</tr>
<tr>
<td>GCS</td>
<td>Ground Control Station</td>
</tr>
<tr>
<td>IAW</td>
<td>In Accordance With</td>
</tr>
<tr>
<td>IDF</td>
<td>Indirect Fire</td>
</tr>
<tr>
<td>IPB</td>
<td>Intelligence Preparation of the Battlefield</td>
</tr>
<tr>
<td>IR</td>
<td>Infrared</td>
</tr>
<tr>
<td>JTAC</td>
<td>Joint Terminal Attack Controller</td>
</tr>
<tr>
<td>LAT</td>
<td>Latitude</td>
</tr>
<tr>
<td>LOL</td>
<td>Loss of Link</td>
</tr>
<tr>
<td>LONG</td>
<td>Longitude</td>
</tr>
<tr>
<td>LOS</td>
<td>Line of Sight</td>
</tr>
<tr>
<td>LZ</td>
<td>Landing Zone</td>
</tr>
<tr>
<td>MGRS</td>
<td>Military Grid Reference System</td>
</tr>
<tr>
<td>MO</td>
<td>Mission Operator</td>
</tr>
<tr>
<td>NAIs</td>
<td>Named Areas of Interest</td>
</tr>
<tr>
<td>NLT</td>
<td>No Lower Than</td>
</tr>
<tr>
<td>NVD</td>
<td>Night Vision Device</td>
</tr>
<tr>
<td>PID</td>
<td>Positive Identification</td>
</tr>
<tr>
<td>POO</td>
<td>Point of Origin</td>
</tr>
<tr>
<td>RSTA</td>
<td>Reconnaissance Surveillance and Target Acquisition</td>
</tr>
<tr>
<td>RVT</td>
<td>Remote Video Terminal</td>
</tr>
<tr>
<td>SOP</td>
<td>Standard Operating Procedure</td>
</tr>
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<td>UAV</td>
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<td>Vehicle Operator</td>
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Acronyms for SUAS Modes are not included.
203. CORE SKILL INTRODUCTION TRAINING (1000).

1. General.

   a. **Purpose.** To provide entry-level instruction and develop expertise in the basic operation of the SUAS, and to emphasize systems knowledge, emergency procedures, and operational terminology. This training builds upon the academic information learned in the BUQ-I course. Core Skill Introduction training fulfills the requirements of IQT for specific SUASs. Upon successful completion of this training, the student is certified as a SUAS-O and may be designated as such in writing by the unit commanding officer.

   b. **Prerequisite.**

      (1) Meet the medical requirements per paragraph 108 of this T&R.

      (2) Complete BUQ-I Course in its entirety, see paragraph 101.3 for location of “BUQ-1 Registration Instructions.” Naval Aviators and UAS air vehicle operators are not required to complete the BUQ-1 course.

   c. **Conduct.** Every attempt should be made to fly the IQT events in numerical order. Events may be flown out of sequence to maximize training efficiency and account for environmental and operational conditions, except in cases where prerequisite events are required. An event shall not be flown unless the event prerequisites have been successfully accomplished. IQT should be conducted with a student to instructor ratio that is in accordance with the approved program of instruction (POI).

   d. **Administration Notes.**

      (1) Upon completion of IQT, all IQT event codes shall be documented in the ITR and logged in MCTIMS per paragraph 118.3 of this chapter and annotate completion dates and the name of the formal training center who conducted the event training.

      (2) For each T&R event, the SUAS-O student shall demonstrate proficiency in each task in its entirety before the task is considered complete for that student.

      (3) If SUAS personnel go out of currency for 721 days or more, they shall refresh by completing the applicable IQT course again.

      (4) In order to receive full credit for an event, an individual must personally complete all event requirements (for both VO and MO) and perform the event performance standard to a proficient level before being given full credit for the event.

**Note:** Unit SUAS-Is/Es are prohibited from conducting initial qualification training (IQT) for the purpose of certifying personnel as first time operators for any SUAS. Only personnel who have completed formal SUAS instructor training (known as IQT-Is) are authorized to conduct IQT for the purpose of certifying SUAS-Os for the first time on any platform or recertifying SUAS-Os who have lapsed in currency for greater than 720 days.
e. **Stages.** A SUAS-O student shall train in one of the below stages, as directed.

1. IQT for RQ-11B DDL - (RQ11)
2. IQT for RQ-12A AE - (RQ12)
3. IQT for RQ-20A AE - (RQ20)

2. IQT Event numbers 1000 through 1199 are reserved for future use.

3. **IQT for RQ-11B DDL.**

a. **Purpose.** To develop proficiency and build experience in the basic operation of the RQ-11B DDL SUAS.

b. **Admin Notes.** The RQ-11B DDL IQT syllabus shall be supplemented with essential academic / classroom instruction necessary to operate the system properly, plan for and conduct flight operations while adhering to regulations and ensuring safety of flight. Academic / classroom training shall include as the minimum the following subject areas:

   (1) Introductory Skills.
   (a) Demonstrate publications knowledge.
   (b) Demonstrate prohibited activities knowledge.
   (c) Demonstrate system description knowledge.
   (d) Perform system assembly/disassembly.
   (e) Conduct preflight, launch, and recovery operations.
   (f) Demonstrate knowledge of controls and indicators.
   (g) Conduct flight operations and flight training using the system simulator.
   (h) Demonstrate knowledge of flight log maintenance requirements

   (2) Intermediate Skills.
   (a) Demonstrate knowledge of mapping and GPS.
   (b) Demonstrate knowledge of airspace management.
   (c) Demonstrate how to use FalconView, RPUAV Tool Bar, and Image Processing software.
   (d) Operate range and bearing tool.
   (e) Conduct mission planning / crew mission briefing.
   (f) Conduct flight operations and target acquisition.
   (g) Conduct covert approach.
   (h) Conduct emergency procedures.
   (i) Perform system maintenance and troubleshooting.

   (3) Advanced Skills.
   (a) Conduct advanced flight operations.
   (b) Perform incident and readiness reporting procedures.
   (c) Conduct mobile, night, relay, and handoff operations.
   (d) Operate RQ-11B DDL using an Untrained Assistant.

c. **Conduct.** Flight events are conducted as specified. All I-coded events shall be conducted live; RQ-11B DDL IQT events shall be conducted Live (L). Events that are also R-coded may be subsequently conducted live or with the use of the system simulator. Events coded “I,R” are device coded “L then
L/S” to indicate initial conducted live and refresh conducted either live or simulator (L/S).

d. Total Flight Training. 10 flights, 5.6 hours. Additionally, a student must complete a minimum of 5 successful launches and 5 successful landings with each SUAS to satisfactorily complete the RQ-11B DDL syllabus.

RQ-11-1200 0.6 I,R L then L D IQT-I/SUAS-I

Task. Conduct heads up/heads down flight.

Requirement. Complete initial flight using all system flight modes IAW the references, checklists, ETF, and given a functional RQ-11B DDL. Instructor will demonstrate first flight.

Instructor will demonstrate:
1. GCS setup.
2. How to plan a mission and how to load mission information and RSTA setup.
3. How to assemble, stage, launch, and recover AV.

Student will conduct the following:
1. Assemble and stage the system.
2. Launch in MAN mode, enter ALT mode when operating altitude is established.
3. Conduct timed turns, box pattern, orbit, and teardrop approach.
4. Conduct dashes.
5. Enter LOIT mode and navigate AV.
7. Use NAV and HOME modes.
8. Land the AV from ALT mode by manually initiating AUTOLAND.
9. Recover AV and render it safe.

Performance Standard. Conduct heads up/heads down flight IAW the references, checklists, ETF, and given a functional RQ-11B DDL. The student will demonstrate the ability to:
1. Assemble AV.
2. Assist with GCS setup.
3. Observe set up of the RSTA laptop, mission planning and loading a mission.
4. MO launch AV.
5. Switch between all flight modes.
6. Fly both heads up and heads down (with MO assistance) and keep the AV oriented and on altitude during timed turns, box patterns, orbit and a teardrop approach.
7. Control the speed of the AV (dash/hold).
8. Establish a loiter point using LOIT mode.
9. Navigate AV to various points and bring AV to HOME waypoint.
10. With instructor assistance, manually navigate the AV to the landing area and establish a proper landing position/altitude profile.
11. Land the AV from ALT mode by manually initiating AUTOLAND.
12. Recover AV and render it safe.

**Initial System Condition.** GCS/AV assembled and RSTA powered and configured by the instructor. Load DTED, “UAV Origin”, and 500m diamond default.

**System Configuration.** EO Payload, FalconView, RSTA.

**Prerequisite.** Complete BUQ-I Course.

**Range Training Area.** Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

**References.**

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

**Applicable SUAS.** RQ-11B DDL.

**Task.** Manually edit waypoints and reroute AV, Low Level (LL) flight, and LL AUTOLAND.

**Note:** This event helps develop proficiency in precision landing to a spot.

**Requirement.** Instructor will demonstrate LL AUTOLAND during this event. IAW the references, checklists, ETF, and given a functional RQ-11B DDL, the student will:

1. Set up GCS.
2. Plan and load mission information.
3. Assemble, stage and launch AV in MAN mode.
4. Enter ALT mode at briefed altitude.
5. Enter NAV mode and fly at least one complete orbit of diamond default.
6. In NAV mode, MO will redirect AV to specified orbit points.
7. MO switch waypoints by MGRS and using range and bearing.
8. Conduct security looking outward and inward.

**Note:** Disconnect MO hand controller for LL portion of flight

9. Conduct LL flying in ALT mode beginning at 100’AGL and stepping down to 20-30’ AGL.
10. Conduct LL flying in MAN mode beginning at 100’AGL and stepping down to 20-30’ AGL.
11. Conduct LL VO initiated AUTOLAND between 3-6’ AGL
12. Recover AV and render it safe.

Note: Required to maintain a video log, recommend use of a second GCS or an external digital video recording device connected to the HUB.

Performance Standard. Manually edit waypoints and reroute AV, LL flight and LL AUTOLAND IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble AV.
2. Set up the GCS.
3. Plan a mission and load mission to AV using hand controller.
4. MO launch AV.
5. Switch between all flight modes.
6. Fly the diamond default pattern in NAV mode.
7. Manipulate position of orbit points in hand controller, and route AV to those orbit points.
8. Conduct LL flight and traffic pattern navigation in ALT mode.
9. Conduct LL flight and traffic pattern navigation in NAV mode. Hard deck for this profile shall be 10’ AGL until landing.
10. Conduct a LL AUTOLAND between 3’-6’ AGL.
11. Recover AV and render it safe.

Note: Required to maintain a video log, recommend use of a second GCS or an external digital video recording device connected to the HUB.

Initial System Condition. GCS powered down. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO Payload for day flight and two hand controller configuration. 1:50K map of operating area to navigate from.

Prerequisite. RQ11-1200.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
Applicable SUAS. RQ-11B DDL.

Task. Conduct target acquisition using the RQ-11B DDL.

Note: This event helps develop proficiency in high level silent AUTOLAND recovery.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-11B DDL, the student will:

1. Plan and load mission information.
2. Assemble, stage and launch AV in MAN mode.
3. Enter ALT mode at briefed altitude, conduct remainder of flight heads down, except landing.
4. Navigate around target using front and side cameras in NAV, ALT and LOIT modes.
5. MO change coordinate format on RSTA from MGRS to LAT/LONG and back to MGRS.
6. MO drag waypoints to change payload view in order to maintain contact with target and to change AV orbit from clockwise to counterclockwise.
7. MO leapfrog diamond waypoints to allow AV to search and navigate along a linear feature.
8. MO use Mission Altitude Control to adjust waypoint altitudes while AV is in NAV mode.
9. MO capture images from RSTA laptop.
10. MO pull and delete captured images from the HUB.
11. MO process imagery off RSTA laptop.
12. Position AV for High Level AUTOLAND NLT 800’ AGL.
13. Navigate heads up to bring AV into the wind for a high level landing.

Performance Standard. Conduct target acquisition using the RQ-11B DDL IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble AV.
2. Set up the GCS and launch.
3. MO will plan and load a mission using the RSTA laptop.
4. Complete specified requirements, demonstrating the ability to navigate to and conduct reconnaissance of a target.
5. Manipulate imagery obtained during reconnaissance.
6. Manually initiate AUTOLAND and subsequently pilot the AV during deep stall in order to land at the desired point.
7. Strive to land within 20 meters of desired landing point.
8. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO Payload for day flight or IR Side Payload for night flight, FalconView, RSTA.
Prerequisite. RQ11-1210. RQ11-1250 is only required when this event is conducted at night.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.
1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-11B DDL.

Task. Conduct silent (covert) target area surveillance.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-11B DDL, the student will:

1. Assemble and launch the AV in MAN mode.
2. Establish ALT mode at briefed altitude (NLT 800’ AGL).
3. Ingress to target using both MAN and ALT modes.
4. Initiate covert approach no closer than 500m from target (preferably upwind) with emphasis on use of winds and awareness of winds.
5. Demonstrate proper technique to achieve at least 270° of observation prior to egress.
6. Initiate egress in MAN mode (preferably downwind) no closer than 300 meters and NLT 300’ AGL, ensuring adequate obstacle clearance on the egress route.
7. Conduct manual approach or NAV E to L and AUTOLAND.
8. Recover AV and render it safe.

Performance Standard. Conduct silent (covert) target area surveillance IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Correlate winds aloft with target area in order to develop a sound covert approach plan. Covert approach plan shall include ingress direction/altitude, egress point and altitude, flight mode (MAN or ALT), and ensure obstacle clearance throughout entire profile.
2. Enter a covert profile by entering MAN mode and gliding to target.
3. Use teardrop entry into a surveillance profile and provide a minimum of 270° of observation prior to egress.
4. Egress target area without compromising the AV. A helpful technique is to conduct the covert approach to the GCS so operators can listen for the AV and judge the effectiveness of their planned profile.
5. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO Payload for day flight or IR Side Payload for night flight, FalconView, RSTA.

Prerequisite. RQ11-1220. RQ11-1250 is only required when this event is conducted at night.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-11B DDL.

RQ11-1240 0.6 I L D IQT-I

Task. Conduct day mobile operations from a moving vehicle.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-11B DDL, the student will:

1. Set up GCS in mobile configuration.
2. Plan and load mission information.
3. Assemble, stage, and launch AV in MAN mode.
4. Enter ALT mode at briefed altitude.
5. NAV to Home or enter HOME mode or park the AV at a pre-briefed orbit point while entering vehicle.
6. Use forward and side payload cameras to track a moving vehicle from a stationary vehicle.
7. Use forward and side payload cameras to track a moving vehicle from a moving vehicle.
8. Use the range and bearing tool to measure the distance between two objects or two locations or a combination of both.
9. Heads up approach to landing area with AUTOLAND.
10. Recover AV and render it safe.

Performance Standard. Conduct day mobile operations from a moving vehicle IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Configure GCS for mobile operations inside a vehicle.
2. Launch AV, then transition to operations from inside a vehicle.
3. Track a moving vehicle from a stationary and moving vehicle using side and forward cameras.
4. Reposition HOME waypoint at least twice during the flight.
5. Maintain situational awareness on position of target vehicle during mobile operations.
6. Conduct heads up approach to landing area and manually initiate AUTOLAND.
7. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO Payload, FalconView, RSTA. Configure system on a vehicle for mobile operations using mobile mount.

Prerequisite. RQ11-1210.

Range Training Area. Minimum requirements:
1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.
1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-11B DDL.

RQ11-1250  0.3  I    L    N   ______IQT-I

Task. Introduction to basic night flight skills.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-11B DDL, the student will:

1. Plan and load mission information.
2. Assemble, stage, and launch AV in MAN mode.
3. Enter ALT mode at briefed altitude.
4. Track a linear feature.
5. Conduct reconnaissance of a point feature.
6. Use IR Illuminator.
7. NAV E to L for heads down approach and landing.
8. Recover AV and render it safe.

**Performance Standard.** Conduct a basic night flight IAW the references, checklists, and ETF. The student will demonstrate ability to:

1. Assemble GCS and AV at night.
2. Launch AV at night.
3. Use IR payload to track a linear target.
4. Use IR payload to conduct reconnaissance of a point target.
5. Use IR Illuminator.
7. Recover AV at night and render it safe.

**Initial System Condition.** GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

**System Configuration.** IR Side Payload, FalconView, RSTA.

**Prerequisite.** RQ11-1210, RQ11-1240.

**Range Training Area.** Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

**References.**

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

**Applicable SUAS.** RQ-11B DDL.

**Task.** Introduction to advanced night flight skills.

**Requirement.** IAW the references, checklists, ETF, and given a functional RQ-11B DDL, the student will:

1. Plan and load mission information.
2. Assemble, stage, launch AV in MAN mode.
3. Enter ALT mode at briefed altitude.
4. Enter NAV mode.
5. MO route AV to programmed waypoints and targets.
6. Conduct reconnaissance of an area; identify TAIs or items of interest.
7. MO pull/delete captured images from the HUB.
8. MO process imagery off RSTA laptop.
9. VO conduct heads down approach to landing area.
10. MO vector AV to landing area to manually AUTOLAND.
11. Recover AV and render it safe.

Performance Standard. Conduct an advanced night flight IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble GCS and AV at night.
2. Launch AV at night.
3. Use RSTA laptop to remain oriented.
4. Use RSTA laptop to reroute AV to specific waypoints or targets.
5. Use IR payload to conduct reconnaissance of a point target.
6. Pull imagery off the HUB and RSTA laptop, and process that imagery into a JPEG.
7. Detect orientation of AV visually using beacons.
8. Conduct a night heads up landing.
9. Manually AUTOLAND AV.
10. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, "UAV Origin"; and 500m diamond default.

System Configuration. IR Side Payload, FalconView, RSTA.

Prerequisite. RQ11-1250.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-11B DDL.

RQ11-1270 0.5 I,R L then L/S (N) IQT-I/SUAS-I

Task. Conduct AV hand-offs during area/point/zone reconnaissance mobile operations.
Note: Flying this event at night is preferred. It reinforces mobile operations.

Requirement. Operate from GCS A and hand off to a secondary GCS, GCS B. Conduct a minimum of two full AV exchanges for a total of four hand offs (two handing off, two receiving AV); can be conducted from either stationary or mobile GCS. IAW the references, checklists, ETF, and given a functional RQ-11B DDL, the student will:

**GCS A (Ground Crew)**

1. Review and discuss hand off procedures prior to conducting flight.
2. Plan and load mission information.
3. Assemble, stage, and launch AV in MAN mode.
4. Communicate AV Channel, ALT and AV Number to GCS B.
5. Enter ALT mode at briefed altitude NLT 200’ AGL.
6. Conduct briefed mission profile.
7. At planned hand-off point, initiate hand-off sequence with GCS B.
9. NAV E to L for heads down approach and landing.
10. Recover AV and render it safe.

**GCS B (Mobile Crew)**

1. Set up GCS in mobile configuration.
2. Receive AV Channel, ALT, AV serial number from GCS A.
3. Receive AV from GCS A.
4. Use payload camera to track a moving vehicle from a moving/stationary vehicle.
5. Hand AV back to GCS A.

Performance Standard. Conduct AV hand-offs during point reconnaissance night mobile operations IAW the references, checklists, and ETF. The student will demonstrate the ability to:

**GCS A (Ground Crew)**

1. Launch AV on an area/point/zone reconnaissance mission profile and vector to briefed hand off point.
2. Demonstrate effective communication procedures to initiate hand off to GCS B.
3. When GCS B is ready, hand AV off.
4. When directed by GCS B, receive AV and regain control.
5. Use a wing rock, text or voice message to confirm to GCS B that AV control has been regained after hand off.
6. Safely land AV heads down using NAV mode, E to L.
7. Recover AV and render it safe.

**GCS B (Mobile Crew)**

1. Configure GCS for mobile operations inside a vehicle.
2. Demonstrate effective communication procedures to initiate hand off from GCS A.
3. When directed by GCS A, VO will receive AV and regain control.
4. Track a moving vehicle from a moving vehicle using IR side camera.
5. MO will reposition HOME waypoint at least twice during flight.
6. Maintain situational awareness on position of target vehicle during mobile operations.
7. When GCS A is ready, hand AV off.

Initial System Condition.  GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration.

1. GCS A - Hand Controller, IR Side Payload, FalconView, RSTA.
2. GCS B – Hand Controller, IR Side Payload, FalconView, RSTA.

Prerequisite.  RQ11-1240.  RQ11-1250 is only required when this event is conducted at night.

Range Training Area.  Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions:  Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions:  A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS.  RQ-11B DDL.

RQ11-1280  0.5  I   L    D  IQT-I

Task.  Operate the RQ-11B DDL using an Untrained Assistant.

Requirement.  With instructor oversight and one Untrained Assistant, the student shall be responsible for all aspects of flight coordination and conduct of flight IAW the references, checklists, and ETF.  Given a functional RQ-11B DDL, the student will conduct tasks as noted in the matrix below:
### SUAS-O Tasks | Untrained Assistant Tasks
---|---
**Mission** | • Plan Mission | • Secure launch site<br>• Provide airspace surveillance<br>• Conduct time hack
**Pre-flight** | • Set waypoints in Mission Hand Controller<br>• Run pre-flight check on VO controller: change LOL mode back to “Rally Point” on Mission Hand Controller | • Transport equipment<br>• Hold AV for pre-flight checks
**Launch** | • Launch AV<br>• Take control of VO Controller once airborne | • Advance throttle to 100% for launch<br>• Hold VO Controller during launch, be prepared to engage AUTOLAND if required
**Flight** | • Operate VO Controller | • Monitor RSTA laptop<br>• Come heads-up for landing
**Post-Flight** | • Inspect equipment | • Recover AV<br>• Pack and transport equipment

**Performance Standard.** Operate RQ-11B DDL using an Untrained Assistant IAW the references, checklists, and ETF. The student will demonstrate the ability to conduct all required tasks listed in the above matrix (both SUAS-O and Untrained Assistance), without assistance from the instructor. Student must demonstrate the ability to guide and direct the actions of the Untrained Assistant.

**Initial System Condition.** GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

**System Configuration.** EO payload, FalconView, RSTA.

**Prerequisite.** RQ11-1210.

**Range Training Area.** Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

**References.**

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-11B DDL.

RQ11-1290 0.6 I L (N) IQT-I

Task. Culmination Flight for RQ-11B DDL.

Requirement. Student is responsible for all aspects of flight coordination and conduct. IAW the references, checklists, ETF, and given a functional RQ-11B DDL, the student will:

1. Power up GCS.
2. Plan and conduct full mission brief and load mission information.
3. Assemble and stage AV.
4. Coordinate with Airspace Control Authority (ACA) or range control (simulate call to instructor) for conduct of flight operations.
5. Launch in MAN mode, enter ALT mode at briefed altitude.
6. NAV to preprogrammed waypoints.
7. Conduct area and point reconnaissance. Use orbit points to control profile of AV.
8. Respond accurately and precisely to simulated emergency conditions.
9. Use MAN mode or NAV E to L for heads down approach and landing.
10. Recover AV and render it safe.

Performance Standard. IAW the references, checklists, and ETF, the student will demonstrate ability to conduct the culmination flight without assistance from the instructor.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO Payload for day flight or IR Side Payload for night flight, FalconView, RSTA.

Prerequisite. RQ11-1200, RQ11-1210, RQ11-1220, RQ11-1230, RQ11-1240, RQ11-1250, RQ11-1260, RQ11-1270, RQ11-1280.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of
Designated Unmanned Aerial Vehicle Operator (DUO)

3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)


Applicable SUAS. RQ-11B DDL.

4. **IQT for RQ-12A (WASP AE).**

   a. **Purpose.** To develop proficiency and build experience in the basic operation of the RQ-12A SUAS platform.

   b. **Admin Notes.** The RQ-12A IQT syllabus shall be supplemented with essential academic / classroom instruction necessary to operate the systems properly, plan for and conduct flight operations while adhering to regulations and ensuring safety of flight. Academic / classroom training shall include as the minimum the following subject areas:

   (1) **Introductory Skills.**
       (a) Demonstrate publications knowledge.
       (b) Demonstrate prohibited activities knowledge.
       (c) Demonstrate system description knowledge.
       (d) Demonstrate knowledge of flight log maintenance requirements
       (e) Perform system assembly/disassembly.
       (f) Conduct preflight, launch, and recovery operations.
       (g) Demonstrate knowledge of controls and indicators.
       (h) Conduct flight operations and flight training using the system simulator.

   (2) **Intermediate Skills.**
       (a) Demonstrate knowledge of mapping and GPS.
       (b) Demonstrate knowledge of airspace management.
       (c) Demonstrate how to use FalconView, RPUAV Tool Bar, and Image Processing software.
       (d) Operate range and bearing tool.
       (e) Conduct basic mission planning / crew mission briefing.
       (f) Conduct basic flight operations and target acquisition.
       (g) Perform enhanced reconnaissance, surveillance, and launch/recovery techniques.
       (h) Conduct water landings and recovery.
       (i) Conduct emergency procedures.
       (j) Perform system maintenance and troubleshooting.

   (3) **Advanced Skills.**
       (a) Perform incident and readiness reporting procedures.
       (b) Conduct mobile, night, relay, and handoff operations.
       (c) Conduct advanced reconnaissance techniques.
       (d) Conduct point precision landings.
       (e) Demonstrate knowledge of using an Untrained Assistant.
       (f) Operate RQ-12A with a single operator.

   c. **Conduct.** Flight events are conducted as specified. All I-coded events shall be conducted live; IQT events shall be conducted Live (L). Events that are also R-coded may be subsequently conducted live or with the use of the system simulator. Events coded “I,R” are device coded “L then
L/S” to indicate initial conducted live and refresh conducted either live or simulator (L/S).

d. **Total Flight Training.** 11 flights, 4.6 hours. Additionally, a student must complete a minimum of 5 successful launches and 5 successful landings to satisfactorily complete the RQ-12A syllabus.

**RQ12-1300 0.4 I,R L then L D IQT-I/SUAS-I**

**Task.** Conduct heads up/heads down flight.

**Requirement.** Complete initial flight using all system flight modes IAW the references, checklists, ETF, and given a functional RQ-12A. Instructor will demonstrate first flight.

**Instructor will demonstrate:**

1. GCS setup.
2. How to plan a mission and how to load mission information and RSTA setup.
3. How to assemble, stage, launch, and recover AV.

**Student will conduct the following:**

1. Assemble and stage the system.
2. Launch AV in MAN mode, enter ALT mode when operating altitude is established.
3. Conduct timed turns, box pattern, orbit, and teardrop approach.
4. Conduct dashes.
5. Enter LOIT mode and navigate the AV.
7. Use NAV and HOME modes.
8. Land the AV automatically by routing it to the E Waypoint.
9. Recover AV and render it safe.

**Performance Standard.** Conduct heads up/heads down flight IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble and stage AV.
2. Assist with GCS setup.
3. Observe set up of the RSTA laptop, mission planning and loading a mission.
4. Launch AV.
5. Switch between all flight modes.
6. Fly both heads up and heads down (with MO assistance) and keep the AV oriented and on altitude during timed turns, box patterns, orbit and a teardrop approach.
7. Control the speed of the AV (dash/hold).
8. Enter LOIT mode and navigate the AV to various points.
10. With instructor assistance, manually navigate AV to landing area and establish a proper landing position/altitude profile.
11. Land AV from NAV mode by routing the vehicle to the E Waypoint.
12. Recover AV and render it safe.

Initial System Condition. GCS/AV assembled and RSTA powered and configured by the instructor. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. Complete BUQ-I Course.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-12A.


Note: This event helps develop proficiency in precision landing to a spot.

Requirement. Instructor will demonstrate Manual Landing profile. IAW the references, checklists, ETF, and given a functional RQ-12A, the student will:

1. Set up GCS.
2. Plan and load mission information.
3. Assemble, stage and launch AV in MAN mode.
4. Enter ALT mode at briefed altitude.
5. Enter NAV mode and fly at least one complete orbit of diamond default.
6. In NAV mode, redirect AV to specified orbit points.
7. Switch waypoints by MGRS and using range and bearing.
8. Conduct security looking outward and inward using the Gimbaled payload.

Note: Disconnect MO hand controller for LL portion of flight.
9. Conduct LL flying in ALT mode beginning at 100’AGL and stepping down to 20-30’ AGL.
10. Conduct LL flying in MAN mode beginning at 100’AGL and stepping down to 20-30’ AGL.
11. Return to minimum of 300’ AGL, land AV visually by VO initiated AUTOLAND.
12. Recover AV and render it safe.

Note: Required to maintain a video log; recommend use of a second GCS or an external digital video recording device connected to the HUB.

Performance Standard. Manually edit waypoints and reroute AV, LL flight and manual landing IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble AV.
2. Set up the GCS.
3. Plan a mission, and load mission to AV using hand controller.
4. Launch AV while serving as MO for another student.
5. Switch between all flight modes.
6. Fly the diamond default pattern in NAV mode.
7. Manipulate position of orbit points in hand controller, and route AV to those orbit points.
8. Conduct LL flight and traffic pattern navigation in ALT mode.
9. Conduct LL flight and traffic pattern navigation in MAN mode.
   Hard deck for this profile shall be 10’ AGL until landing.
10. Return to minimum of 300’ AGL, land AV visually by VO initiated AUTOLAND.
11. Recover AV and render it safe.

Note: Required to maintain a video log, recommend use of a second GCS or an external digital video recording device connected to the HUB.

Initial System Condition. GCS powered down. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, and two hand controller configuration. 1:50K map of operating area to navigate from.

Prerequisite. RQ12-1300. RQ12-1350 is only required when this event is conducted at night.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-12A.

RQ12-1320 0.5 I,R L then L/S (N) IQT-I/SUAS-I

Task. Conduct in depth familiarization of all flight modes.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-12A, the student will:

1. Assemble and launch the AV in MAN mode.
2. Establish ALT mode at briefed altitude.
3. Enter ALT mode and navigate the AV using front and side camera modes.
4. Enter LOIT Mode. Ensure payload is extended. Demonstrate use of payload to navigate the AV.
5. Enter NAV mode and navigate using orbit points and system waypoints. Maneuver payload, slave payload to navigation point, control altitude.
6. Enter HOME mode. Maneuver payload, control altitude.
7. While in LOIT, NAV, or HOME use all modes of the Speed submenu (Long, Slow, Far, Fast).
8. Conduct manual approach or NAV E to L and AUTOLAND.
9. Recover AV and render it safe.

Performance Standard. Operate in all flight modes while remaining in the training airspace IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble the AV/GCS and program a mission into the RSTA laptop.
2. Launch the AV and operate in MAN and ALT modes. Extend and retract the Gimbaled payload.
3. Operate the AV in LOIT, NAV, and Home modes.
4. Use payload to conduct reconnaissance while maintaining the AV in the training airspace.
5. Transition through all modes of the Speed submenu.
6. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. RQ12-1310. RQ12-1350 is only required when this event is conducted at night.

Range Training Area. Minimum requirements:
1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.
1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-12A.

RQ12-1330 0.4 I L (N) IQT-I

Task. Conduct target acquisition using the RQ-12A.

Note: This event helps develop proficiency in high level silent AUTOLAND recovery.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-12A, the student will:

1. Plan and load mission information.
2. Assemble, stage and launch AV in MAN mode.
3. Enter ALT mode at briefed altitude, conduct remainder of flight heads down, except landing.
4. Navigate around target using ALT and LOIT modes.
5. MO change coordinate format on RSTA from MGRS to LAT/LONG and back to MGRS.
6. MO drag waypoints to establish an offset holding pattern from which to observe the target with the Gimbaled payload while in NAV mode.
7. MO leapfrog diamond waypoints to allow AV to search and navigate along a linear feature.
8. MO use Mission Altitude Control to adjust waypoint altitudes while AV is in NAV mode.
9. MO track stationary and moving targets from the RSTA laptop using AV Tracker.
10. MO use pushpins to track captured images and fix points of interest for the AV to hold on.
11. MO capture HD images from RSTA laptop.
12. MO pull and delete captured images from the HUB.
13. MO process imagery off RSTA laptop.
14. Position AV for High Level AUTOLAND NLT 800’ AGL.
15. Navigate heads up to bring AV into the wind for a high level landing.
16. Recover AV and render it safe.

Performance Standard. Conduct target acquisition using the RQ-12A IAW the references, checklists, and ETF. The student will demonstrate the ability to:
1. Set up the GCS and assemble AV.
2. MO will plan and load a mission using the RSTA laptop.
3. MO launch AV.
4. Complete specified requirements, demonstrating the ability to navigate to and conduct reconnaissance of a target.
5. Manipulate imagery obtained during reconnaissance.
6. Manually initiate AUTOLAND and subsequently pilot the AV during deep stall in order to land at the desired point.
7. Strive to land within 20 meters of desired landing point.
8. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. RQ12-1310. RQ12-1350 is only required when this event is conducted at night.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-12A.

RQ12-1340 0.5 I L D IQT-I

Task. Conduct day mobile operations from a moving vehicle.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-12A, the student will:

1. Set up GCS in mobile configuration.
2. Plan and load mission information. MO shall configure GCS follow mode on RSTA laptop.
3. Assemble, stage and launch AV in MAN mode.
4. Enter ALT mode at briefed altitude.
5. NAV to Home or enter HOME mode, or park the AV at a pre-briefed orbit point while entering vehicle.
6. Use Gimbaled payload to track a moving vehicle from a stationary vehicle.
7. Use Gimbaled payload to track a moving vehicle from a moving vehicle.
8. Use the range and bearing tool to measure the distance between two objects or two locations or a combination of both.
9. Heads up approach to landing area with AUTOLAND.
10. Recover AV and render it safe.

**Performance Standard.** Conduct day mobile operations from a moving vehicle IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Configure GCS for mobile operations inside a vehicle.
2. Launch AV, then transition to operations from inside a vehicle.
3. Track a moving vehicle from a stationary and moving vehicle using the VO controller and AV Tracker.
4. Ensure GCS GPS and GCS Follow mode are properly configured to support mission.
5. Maintain situational awareness on position of target vehicle during mobile operations.
6. Conduct heads up approach to landing area and manually initiate AUTOLAND.
7. Recover AV and render it safe.

**Initial System Condition.** GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

**System Configuration.** EO/IR Gimbaled Payload, FalconView, RSTA. Configure system on a vehicle for mobile operations using mobile mount.

**Prerequisite.** RQ12-1310.

**Range Training Area.** Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

**References.**

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

**Applicable SUAS.** RQ-12A.

**Task.** Introduction to basic night flight skills.
Requirement. IAW the references, checklists, ETF, and given a functional RQ-12A, the student will:

1. Plan and load mission information.
2. Assemble, stage and launch AV in MAN mode.
3. Enter ALT mode at briefed altitude.
4. Track a linear feature.
5. Conduct reconnaissance of a point feature.
6. NAV E to L for heads down approach and landing.
7. Recover AV and render it safe.

Performance Standard. Conduct a basic night flight IAW the references, checklists, and ETF. The student will demonstrate ability to:

1. Assemble GCS and AV at night.
2. Launch AV at night.
3. Use IR payload mode to track a linear target.
4. Use IR payload mode to conduct reconnaissance of a point target.
5. Detect orientation of AV visually using beacons.
6. Recover AV at night and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. RQ12-1310, RQ12-1340.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-12A.

Task. Introduction to advanced night flight skills.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-12A, the student will:
1. Plan and load mission information.
2. Assemble, stage and launch AV in MAN mode.
3. Enter ALT mode at briefed altitude.
4. Enter NAV mode. MO route AV to programmed waypoints and targets.
5. Conduct reconnaissance of an area in NAV or LOIT mode; identify TAIs or items of interest.
6. MO pull and delete captured images from the HUB.
7. MO process imagery off RSTA laptop.
8. VO conduct heads down approach to landing area.
9. MO vectors AV to landing area to manually AUTOLAND.
10. Recover AV and render it safe.

Performance Standard. Conduct an advanced night flight IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble GCS and AV at night.
2. Launch AV at night.
3. Use RSTA laptop to remain oriented.
4. Use RSTA laptop to reroute AV to specific waypoints or targets.
5. Use IR payload camera to conduct reconnaissance of a point target.
6. MO pull imagery off the HUB and RSTA laptop, and process that imagery into a JPEG; delete when completed.
7. Detect orientation of AV visually using beacons.
8. Conduct a night heads up landing.
9. Manually AUTOLAND AV.
10. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. RQ12-1350.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
Applicable SUAS. RQ-12A.

Task. Conduct AV hand-offs during area/point/zone reconnaissance mobile operations.

Note: Flying this event at night is preferred. It reinforces mobile operations.

Requirement. Operate from GCS A and hand off to a secondary GCS, GCS B. Conduct a minimum of two full AV exchanges for a total of four hand offs (two handing off, two receiving AV); can be conducted from either stationary or mobile GCS. IAW the references, checklists, ETF and given a functional RQ-12A, the student will:

GCS A (Ground Crew)

1. Review and discuss hand off procedures prior to conducting flight.
2. Plan and load mission information.
3. Assemble, stage, and launch AV in MAN mode.
4. Communicate AV Channel, ALT and AV Number d to GCS B.
5. Conduct briefed mission profile.
6. At planned hand-off point, initiate hand-off sequence with GCS B.
7. Conduct second AV hand-off and reception.
8. NAV E to L for heads down approach and landing.
9. Recover AV and render it safe.

GCS B (Mobile Crew)

1. Set up GCS in mobile configuration.
2. Receive AV Channel, ALT, AV Number from GCS A.
3. Receive AV from GCS A.
4. Use payload camera to track a moving vehicle from a moving/stationary vehicle.
5. Hand AV back to GCS A.

Performance Standard. Conduct AV hand-offs during area/point/zone reconnaissance mobile operations IAW the references, checklists, and ETF. The student will demonstrate the ability to:

GCS A (Ground Crew)

1. Launch AV on an area/point/zone reconnaissance mission profile and vector to briefed hand off point.
2. Demonstrate effective communication procedures to initiate hand off to GCS B.
3. When GCS B is ready, hand AV off.
4. When directed by GCS B, receive AV and regain control.
5. Use a wing rock, text, or voice message to confirm to GCS B that AV control has been regained after hand off.
6. Safely land AV heads down using NAV mode, E to L.
7. Recover AV and render it safe.

**GCS B (Mobile Crew)**

1. Configure GCS for mobile operations inside a vehicle.
2. Demonstrate effective communication procedures to initiate hand off from GCS A.
3. When directed by GCS A, receive AV and regain control.
4. Track a moving vehicle from a moving vehicle using EO or IR camera.
5. Maintain situational awareness on position of target vehicle during mobile operations.
6. When GCS A is ready, hand AV off.

**Initial System Condition.** GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

**System Configuration.**

1. GCS A - Hand Controller, EO/IR Gimbaled Payload, FalconView, RSTA.
2. GCS B – Hand Controller, EO/IR Gimbaled Payload, FalconView, RSTA.

**Prerequisite.** RQ12-1340. RQ12-1350 is only required when this event is conducted at night.

**Range Training Area.** Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

**References.**

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

**Applicable SUAS.** RQ-12A.

**RQ12-1380**

**Task.** Introduce operating the RQ-12A using an Untrained Assistant, and conduct Single Operator Operations.

**Requirement.**

1. Student will brief instructor on Untrained Assistant duties per the matrix below.
### SUAS-O Tasks

<table>
<thead>
<tr>
<th>Mission</th>
<th>Untrained Assistant Tasks</th>
</tr>
</thead>
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<tr>
<td>• Plan Mission</td>
<td>• Secure launch site</td>
</tr>
<tr>
<td>• Secure launch site</td>
<td>• Provide airspace surveillance</td>
</tr>
<tr>
<td>• Provide airspace surveillance</td>
<td>• Conduct time hack</td>
</tr>
<tr>
<td>• Conduct time hack</td>
<td>• Transport equipment</td>
</tr>
<tr>
<td>• Transport equipment</td>
<td>• Hold AV for pre-flight checks</td>
</tr>
<tr>
<td>Pre-flight</td>
<td></td>
</tr>
<tr>
<td>• Set waypoints in Mission Hand Controller</td>
<td>• Advance throttle to 100% for launch</td>
</tr>
<tr>
<td>• Run pre-flight check on VO controller: change LOL mode back to “Rally Point” on Mission Hand Controller</td>
<td>• Hold VO Controller during launch, be prepared to engage AUTOLAND if required</td>
</tr>
<tr>
<td>• Advance throttle to 100% for launch</td>
<td>• Hold AV for pre-flight checks</td>
</tr>
<tr>
<td>• Hold AV for pre-flight checks</td>
<td>• Transport equipment</td>
</tr>
<tr>
<td>Launch</td>
<td></td>
</tr>
<tr>
<td>• Launch AV</td>
<td>• Monitor RSTA laptop</td>
</tr>
<tr>
<td>• Take control of VO Controller once airborne</td>
<td>• Come heads-up for landing</td>
</tr>
<tr>
<td>• Monitor RSTA laptop</td>
<td>• Come heads-up for landing</td>
</tr>
<tr>
<td>Flight</td>
<td></td>
</tr>
<tr>
<td>• Operate VO Controller</td>
<td>• Come heads-up for landing</td>
</tr>
<tr>
<td>• Come heads-up for landing</td>
<td>• Inspect equipment</td>
</tr>
<tr>
<td>Post-Flight</td>
<td></td>
</tr>
<tr>
<td>• Inspect equipment</td>
<td>• Recover AV</td>
</tr>
<tr>
<td>• Recover AV</td>
<td>• Pack and transport equipment</td>
</tr>
</tbody>
</table>

2. Student will perform the requirement as a single operator. Set up, launch, fly, and recover AV as a single operator. Instructor will supervise event and be prepared to serve as an Untrained Assistant. IAW the references, checklists, ETF, and given a functional RQ-12A, demonstrate the following.

   a. Plan and load mission information.
   b. Assemble, stage and launch AV in MAN mode.
   c. Operate AV in ALT, MAN, NAV, LOIT and HOME modes.
   d. Using RSTA, reroute the AV to at least one orbit point.
   e. Cycle through all payload camera modes and magnifications.
   f. Capture an image using hand controller. Capture HD image using RSTA laptop.
   g. NAV to HOME heads down.
   h. Transition to heads up and land manually.
   i. Recover AV and render it safe.

Performance Standard. Conduct requirement as a single operator by conducting flight as a VO and MO. IAW the references, checklists, and ETF, the student will demonstrate the ability to:

1. Explain the duties of an Untrained Assistant.
2. Assemble vehicle and set up RSTA.
3. Conduct preflight checks.
4. Launch the AV.
5. Use hand controller to fly in ALT, MAN, NAV, LOIT, and HOME modes.
6. Use RSTA to navigate the AV, edit waypoints, and drag orbit points.
7. Capture images with hand controller and RSTA laptop.
8. Cycle through all payload camera options and maintain contact with a target.
9. Reroute AV to HOME heads down.
10. Transition to heads up and land manually.
11. Recover AV and render it safe.

_Initial System Condition._ Load DTED, "UAV Origin", and 500m diamond default.

_System Configuration._ EO/IR Gimbaled Payload, FalconView, RSTA.

**Prerequisite.** RQ12-1310.

_Range Training Area. Minimum requirements:_

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

_References._

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

_Applicable SUAS. RQ-12A._

**Task. Alternate Launch and Recovery Techniques.**

**Requirement.** With instructor oversight, student will utilize alternate techniques for launching and recovering the AV to maximize the flexibility of the RQ-12A platform in a variety of potential operational scenarios. These techniques will be pre-briefed and discussed in an Operational Risk Management (ORM) Brief from a completed ORM form. The ability to complete all techniques is dependent upon the training area environment and regulations, unit regulations, and availability of appropriate safety equipment and materials. The ETF should reflect in detail which techniques were demonstrated. Those that were not demonstrated should be briefed in detail. IAW the references, checklists, ETF, and given a functional RQ-12A, the student will:

1. Plan and load mission information.
2. VO assemble and stage the AV.
3. MO launch in MAN mode from a moving vehicle (boat or ground vehicle) with appropriate safety controls implemented to prevent injury and/or equipment damage.
4. Heads down, NAV to HOME.
5. Transition to heads up and land manually.
6. Using a combination of techniques, land the AV within a 10m x 10m area to replicate a roof top or compound.
7. Land the AV in the water.
8. Land the AV into a cargo net or similar trapping device to limit impact damage to AV on hard or treacherous terrain.
9. Recover AV and render it safe.

Performance Standard. Safely conduct alternate launch and recovery techniques IAW the references, checklists, and ETF. With instructor oversight the student will demonstrate the ability to execute the alternate launch and recovery techniques within the operational limitations of the AV operator’s manual and according to the pre-mission Operational Risk Management form and brief.

Initial System Condition. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload (RQ-20A), dummy payload (RQ-12A, if available), FalconView, RSTA.

Prerequisite. RQ12-1310.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-12A.

Task. Culmination Flight for RQ-12A.

Requirement. With instructor oversight, the student shall be responsible for all aspects of flight coordination and conduct. IAW the references, checklists, ETF and given a functional RQ-12A, the student will:
1. Power up GCS.
2. Plan and conduct full mission brief and load mission information.
3. Assemble and stage AV.
4. Coordinate with Airspace Control Authority (ACA) or range control (simulate call to instructor) for conduct of flight operations.
5. Launch in MAN mode then enter ALT mode at briefed altitude.
6. NAV to MO preprogrammed waypoints.
7. Conduct area and point reconnaissance.
8. Use orbit points to control profile of AV.
9. Respond accurately and precisely to simulated emergency conditions.
10. Use MAN mode or NAV E to L for heads down approach and landing.
11. Recover AV and render it safe.

Performance Standard. IAW the references, checklists, and ETF, the student will demonstrate ability to conduct the culmination flight for the RQ-12A without assistance from the instructor.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.


Range Training Area. Minimum requirements:
1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.
1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. RQ-12A.

5. IQT for RQ-20A PUMA AE DDL.
   a. Purpose. To develop proficiency and build experience in the basic operation of the RQ-20A SUAS platform.
   b. Admin Notes. The RQ-20A IQT syllabus shall be supplemented with essential academic / classroom instruction necessary to operate the systems properly, plan for and conduct flight operations while adhering to
regulations and ensuring safety of flight. Academic / classroom training shall include as the minimum the following subject areas:

1) Introductory Skills.
   (a) Demonstrate publications knowledge.
   (b) Demonstrate prohibited activities knowledge.
   (c) Demonstrate system description knowledge.
   (d) Demonstrate knowledge of flight log maintenance requirements
   (e) Perform system assembly/disassembly.
   (f) Conduct preflight, launch, and recovery operations.
   (g) Demonstrate knowledge of controls and indicators.
   (h) Conduct flight operations and flight training using the system simulator.

2) Intermediate Skills.
   (a) Demonstrate knowledge of mapping and GPS.
   (b) Demonstrate knowledge of airspace management.
   (c) Demonstrate how to use FalconView, RPUAV Tool Bar, and Image Processing software.
   (d) Operate range and bearing tool.
   (e) Conduct basic mission planning / crew mission briefing.
   (f) Conduct basic flight operations and target acquisition.
   (g) Perform enhanced reconnaissance, surveillance, and launch/recovery techniques.
   (h) Conduct water landings and recovery.
   (i) Conduct emergency procedures.
   (j) Perform system maintenance and troubleshooting.

3) Advanced Skills.
   (a) Perform incident and readiness reporting procedures.
   (b) Conduct mobile, night, relay, and handoff operations.
   (c) Conduct advanced reconnaissance techniques.
   (d) Conduct point precision landings.
   (e) Operate using an Untrained Assistant.

c. Conduct. Flight events are conducted as specified. All I-coded events shall be conducted live; IQT events shall be conducted Live (L). Events that are also R-coded may be subsequently conducted live or with the use the system simulator. Events coded “I,R” are device coded “L then L/S” to indicate initial conducted live and refresh conducted either live or simulator (L/S).

d. Total Flight Training. 11 flights, 5.1 hours. Additionally, a student must complete a minimum of 5 successful launches and 5 successful landings with each SUAS to satisfactorily complete the AE syllabus.

   Task. Conduct heads up/heads down flight using the RQ-20A.

   Requirement. Complete initial flight using all system flight modes IAW the references, checklists, ETF, and given a functional RQ-20A. Instructor will demonstrate first flight.

   Instructor will demonstrate:
1. GCS setup.
2. How to plan a mission and how to load mission information and RSTA setup.
3. How to assemble, stage, launch, and recover AV.

**Student will conduct the following:**

1. Assemble and stage the system.
2. Launch in MAN mode, enter ALT mode when operating altitude is established.
3. Conduct timed turns, box pattern, orbit, and teardrop approach.
4. Conduct dashes.
5. Enter LOIT mode and navigate the AV.
7. Use NAV and HOME modes.
8. Land the AV from ALT mode by manually initiating AUTOLAND.
9. Recover AV and render it safe.

**Performance Standard.** Conduct heads up/heads down flight IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble AV.
2. Assist with GCS setup.
3. Observe set up of the RSTA laptop, mission planning and loading a mission.
4. MO launch AV.
5. Switch between all flight modes.
6. Fly both heads up and heads down (with MO assistance) and keep the AV oriented and on altitude during timed turns, box patterns, orbit and a teardrop approach.
7. Control the speed of the AV (dash/hold).
8. Enter LOIT mode and navigate the AV to various points.
10. With instructor assistance, manually navigate the AV to the landing area and establish a proper landing position/altitude profile.
11. Land AV from ALT mode by manually initiating AUTOLAND.
12. Recover AV and render it safe.

**Initial System Condition.** GCS/AV assembled and RSTA powered and configured by the instructor. Load DTED, “UAV Origin”, and 500m diamond default.

**System Configuration.** EO/IR Gimbaled Payload, FalconView, RSTA.

**Prerequisite.** Complete BUQ-I Course.

**Range Training Area.** Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.
References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-20A.


Note: This event helps develop proficiency in precision landing to a spot.

Requirement. Instructor will demonstrate Manual Landing profile. IAW the references, checklists, ETF, and given a functional RQ-20A, the student will:

1. Set up GCS.
2. Plan and load mission information.
3. Assemble, stage and launch AV in MAN mode.
4. Enter ALT mode at briefed altitude.
5. Enter NAV mode and fly at least one complete orbit of diamond default.
6. In NAV mode, MO redirect AV to specified orbit points.
7. MO switch waypoints by MGRS and using range and bearing.
8. Conduct security looking outward and inward using the Gimbaled payload.

Note: Disconnect MO hand controller for LL portion of flight

9. Conduct LL flying in ALT mode beginning at 100’AGL and stepping down to 20-30’ AGL.
10. Conduct LL flying in MAN mode beginning at 100’AGL and stepping down to 20-30’ AGL.
11. Return to minimum of 300’ AGL, land AV visually by VO initiated AUTOLAND.
12. Recover AV and render it safe.

Note: Maintain a video log; recommend use of a second GCS or an external digital video recording device connected to the HUB.

Performance Standard. Manually edit waypoints and reroute AV, LL flight and manual landing IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble AV.
2. Set up the GCS.
3. Plan a mission, and load mission to AV using hand controller.
4. MO launch AV.
5. Switch between all flight modes.
6. Fly the diamond default pattern in NAV mode.
7. Manipulate position of orbit points in hand controller, and route AV to those orbit points.
8. Conduct LL flight and traffic pattern navigation in ALT mode.
9. Conduct LL flight and traffic pattern navigation in MAN mode.
   Hard deck for this profile shall be 10’ AGL until landing.
10. Return to minimum of 300’ AGL, land AV visually by VO initiated AUTOLAND.
11. Recover AV and render it safe.

Note: Maintain a video log; recommend use of a second GCS or an external digital video recording device connected to the HUB.

Initial System Condition. GCS powered down. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, and two hand controller configuration. 1:50K map of operating area to navigate from.

Prerequisite. RQ20-1400. RQ20-1450 is only required when this event is conducted at night.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-20A.

RQ20-1420 0.5 I,R L then L/S (N) IQT-I/SUAS-I

Task. Conduct in depth familiarization of all flight modes.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-20A, the student will:

1. Assemble and launch the AV in MAN mode.
2. Establish ALT mode at briefed altitude.
3. Enter ALT mode and navigate AV using front and side camera modes.
4. Enter LOIT Mode and demonstrate use of payload to navigate the AV. Ensure payload is extended.
5. Enter NAV mode and navigate using orbit points and system waypoints. Maneuver payload, slave payload to navigation point, control altitude.
6. Enter HOME mode and maneuver payload, be sure to control altitude.
7. While in LOIT, NAV, or HOME use all modes of the Speed submenu (Long, Slow, Far, Fast).
8. Conduct manual approach or NAV E to L and AUTOLAND.
9. Recover AV and render it safe.

Performance Standard. Operate in all flight modes while remaining in the training airspace IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble the AV/GCS, and program a mission into the RSTA laptop.
2. Launch the AV and operate in MAN and ALT modes.
3. Extend and retract the Gimbaled payload.
4. Operate the AV in LOIT, NAV, and Home modes.
5. Use payload to conduct reconnaissance while maintaining the AV in the training airspace.
6. Transition through all modes of the Speed submenu.
7. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. RQ20-1410. RQ20-1450 is only required when this event is conducted at night.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCS 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-20A.
Task. Conduct target acquisition using the RQ-20A.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-20A, the student will:

1. Plan and load mission information.
2. Assemble, stage and launch AV in MAN mode.
3. Enter ALT mode at briefed altitude, conduct remainder of flight heads down, except landing.
4. Navigate around target using ALT and LOIT modes.
5. MO change coordinate format on RSTA from MGRS to LAT/LONG and back to MGRS.
6. MO drag waypoints to establish an offset holding pattern from which to observe the target with the Gimbaled payload while in NAV mode.
7. MO leapfrog diamond waypoints to allow AV to search and navigate along a linear feature.
8. MO use Mission Altitude Control to adjust waypoint altitudes while AV is in NAV mode.
9. MO track stationary and moving targets from the RSTA laptop using AV Tracker.
10. MO use pushpins to track captured images and fix points of interest for the AV to hold on.
11. MO capture HD images from RSTA laptop.
12. MO pull and delete captured images from the HUB.
13. MO process imagery off RSTA laptop.
14. Position AV for High Level AUTOLAND NLT 800’ AGL.
15. Navigate heads up to bring AV into the wind for a high level landing.
16. Recover AV and render it safe.

Performance Standard. Conduct target acquisition using the SUAS IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble AV.
2. Set up the GCS and launch AV.
3. Plan and load a mission using the RSTA laptop.
4. Complete specified requirements, demonstrating the ability to navigate to and conduct reconnaissance of a target.
5. Manipulate imagery obtained during reconnaissance.
6. Manually initiate AUTOLAND and subsequently pilot the AV during deep stall in order to land at the desired point.
7. Strive to land within 20 meters of desired landing point.
8. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. RQ20-1410. RQ20-1450 is only required when this event is conducted at night.
Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-20A.

Task. Conduct day mobile operations from a moving vehicle.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-20A, the student will:

1. Set up GCS in mobile configuration.
2. Plan and load mission information.
3. MO configure GCS follow mode on RSTA laptop.
4. Assemble, stage, launch AV in MAN mode.
5. Enter ALT mode at briefed altitude.
6. NAV to Home or enter HOME mode, or park the AV at a pre-briefed orbit point while entering vehicle.
7. Use Gimbaled payload to track a moving vehicle from a stationary vehicle.
8. Use Gimbaled payload to track a moving vehicle from a moving vehicle.
9. Use the range and bearing tool to measure the distance between two objects or two locations or a combination of both.
10. Heads up approach to landing area with AUTOLAND.
11. Recover AV and render it safe.

Performance Standard. Conduct day mobile operations from a moving vehicle. IAW the references, checklists, and ETF, the student will demonstrate the ability to:

1. Configure GCS for mobile operations inside a vehicle.
2. Launch AV, then transition to operations from inside a vehicle.
3. Track a moving vehicle from a stationary and moving vehicle using the VO controller and AV Tracker.
4. Ensure GCS GPS and GCS Follow mode are properly configured to support mission.
5. Maintain situational awareness on position of target vehicle during mobile operations.
6. Conduct heads up approach to landing area and manually initiate AUTOLAND.
7. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed.
Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.
Configure system on a vehicle for mobile operations using mobile mount.

Prerequisite. RQ20-1410.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-20A.

RQ20-1450 0.4 I L N IQT-I

Task. Introduction to basic night flight skills.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-20A, the student will:

1. Plan and load mission information.
2. Assemble, stage and launch AV in MAN mode.
3. Enter ALT mode at briefed altitude.
4. Track a linear feature.
5. Conduct reconnaissance of a point feature.
6. Use IR Illuminator.
7. NAV E to L for heads down approach and landing.
8. Recover AV and render it safe.

Performance Standard. Conduct a basic night flight IAW the references, checklists, and ETF. The student will demonstrate ability to:

1. Assemble GCS and AV at night.
2. Launch AV at night.
3. Use IR payload mode to track a linear target.
4. Use IR payload mode to conduct reconnaissance of a point target.
5. Use IR Illuminator.
7. Recover AV at night and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. RQ20-1410, RQ20-1440.

Range Training Area. Minimum requirements:
1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.
1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-20A.

Task. Introduction to advanced night flight skills.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-20A, the student will:

1. Plan and load mission information.
2. Assemble, stage and launch AV in MAN mode.
3. Enter ALT mode at briefed altitude.
4. Enter NAV mode. MO will route AV to programmed waypoints and targets.
5. Conduct reconnaissance of an area in NAV or LOIT mode; identify TAI or items of interest.
6. MO pull and delete captured images from the HUB.
7. MO process imagery off RSTA laptop.
8. VO conduct heads down approach to landing area.
9. MO vector AV to landing area to manually AUTOLAND.
10. Recover AV and render it safe.

Performance Standard. Conduct an advanced night flight IAW the references, checklists, and ETF. The student will demonstrate the ability to:
1. Assemble GCS and AV at night.
2. Launch AV at night.
3. Use RSTA laptop to remain oriented.
4. Use RSTA laptop to reroute AV to specific waypoints or targets.
5. Use IR payload mode to conduct reconnaissance of a point target.
6. Pull imagery off the HUB and RSTA laptop, and process that imagery into a JPEG; delete when completed.
7. Detect orientation of AV visually using beacons.
8. Conduct a night heads up landing.
9. Manually AUTOLAND AV.
10. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. RQ20-1450.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.
1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-20A.

Task. Conduct AV hand-offs during area/point/zone reconnaissance mobile operations.

Note: Flying this event at night is preferred. It reinforces mobile operations.

Requirement. Operate from GCS A and hand off to a secondary GCS, GCS B. Conduct a minimum of two full AV exchanges for a total of four hand offs (two handing off, two receiving AV); can be conducted from either stationary or mobile GCS. IAW the references, checklists, ETF and given a functional RQ-12A, the student will:
GCS A (Ground Crew)

1. Review and discuss hand off procedures prior to conducting flight.
2. Plan and load mission information.
3. Assemble, stage and launch AV in MAN mode.
4. Communicate AV Channel, ALT and AV Number to GCS B.
5. Conduct briefed mission profile.
6. At planned hand-off point, initiate hand-off sequence with GCS B.
7. Conduct second AV hand-off and reception.
8. NAV E to L for heads down approach and landing.
9. Recover AV and render it safe.

GCS B (Mobile Crew)

1. Set up GCS in mobile configuration.
2. Receive AV Channel, ALT, AV Number from GCS A.
3. Receive AV from GCS A.
4. Use payload camera to track a moving vehicle from a moving/stationary vehicle.
5. Hand AV back to GCS A.

Performance Standard. Conduct AV hand-offs during area/point/zone reconnaissance mobile operations IAW the references, checklists, and ETF. The student will demonstrate the ability to:

GCS A (Ground Crew)

1. Launch AV on an area/point/zone reconnaissance mission profile and vector to briefed hand off point.
2. MO will demonstrate effective communication procedures to initiate hand off to GCS B.
3. When GCS B is ready, hand AV off.
4. When directed by GCS B, VO will receive AV and regain control.
5. Use a wing rock, text, or voice message method to confirm to GCS B that AV control has been regained after hand off.
6. Safely land AV heads down using NAV mode, E to L.
7. Recover AV and render it safe.

GCS B (Mobile Crew)

1. Configure GCS for mobile operations inside a vehicle.
2. Demonstrate effective communication procedures to initiate hand off from GCS A.
3. When directed by GCS A, VO will receive AV and regain control.
4. Track a moving vehicle from a moving vehicle using EO or IR camera.
5. Maintain situational awareness on position of target vehicle during mobile operations.
6. When GCS A is ready, hand AV off.
Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration.

1. GCS A – Hand Controller, EO/IR Gimbaled Payload, FalconView, RSTA.
2. GCS B – Hand Controller, EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. RQ20-1440. RQ20-1450 is only required when this event is conducted at night.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-20A.

RQ20-1480 0.4 I L D _______ IQT-I

Task. Operate the RQ-20A using an Untrained Assistant.

Requirement. With instructor oversight and one Untrained Assistant, the student shall be responsible for all aspects of flight coordination and conduct IAW the references, checklists, and ETF. Given a functional RQ-20A, the student will conduct tasks as noted in the matrix below:

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</tr>
<tr>
<td>• Run pre-flight check on VO controller: change LOL mode back to “Rally Point” on Mission Hand Controller</td>
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<td>Launch</td>
<td>SUAS-O Tasks</td>
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<td>• Launch AV</td>
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<td>• Take control of VO</td>
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<td>Flight</td>
<td>• Operate VO Controller</td>
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<td>Post-Flight</td>
<td>• Inspect equipment</td>
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**Performance Standard.** Operate the RQ-20A using an Untrained Assistant IAW the references, checklists, and ETF. The student will demonstrate the ability to conduct all required tasks listed in the matrix above (both SUAS-O and Untrained Assistant) without assistance from the instructor. Student must demonstrate the ability to guide and direct the actions of the Untrained Assistant.

**Initial System Condition.** GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

**System Configuration.** EO/IR Gimbaled Payload, FalconView, RSTA.

**Prerequisite.** RQ20-1410.

**Range Training Area.** Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

**References.**

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

**Applicable SUAS.** RQ-20A.

RQ20-1490 0.4 I L D IQT-I/SUAS-I

**Task.** Alternate Launch and Recovery Techniques.

**Requirement.** With instructor oversight, student will utilize alternate techniques for launching and recovering the AV to maximize the flexibility of the All Environment platform in a
variety of potential operational scenarios. These techniques will be prebriefed and discussed in an Operational Risk Management (ORM) Brief from a completed ORM form. The ability to complete all techniques is dependent upon the training area environment and regulations, unit regulations, and availability of appropriate safety equipment and materials. The ETF should reflect in detail which techniques were demonstrated. Those that were not demonstrated should be briefed in detail. Given the references, checklists, ETF, and given a functional RQ-20A, the student will:

1. Plan and load mission information.
2. Assemble and stage AV.
3. Launch in MAN Mode from a moving vehicle (boat or ground vehicle) with appropriate safety controls implemented to prevent injury and/or equipment damage.
4. Launch the RQ-20A using the field launcher.
5. Heads down, NAV to HOME.
6. Transition to heads up and land manually.
7. Using a combination of techniques, land the AV within a 10m x 10m area to replicate a roof top or compound.
8. Land the AV in the water.
9. Land the AV into a cargo net or similar trapping device to limit impact damage to AV on hard or treacherous terrain.
10. Recover AV and render it safe.

Performance Standard. Safely conduct alternate launch and recovery techniques IAW the references, checklists, and ETF. With instructor oversight the student will demonstrate the ability to execute the alternate launch and recovery techniques within the operational limitations of the AV operator’s manual and according to the pre-mission Operational Risk Management form and brief.

Initial System Condition. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. RQ20-1410.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-20A.

RQ20-1495 0.4 I L (N) IQT-I

Task. Culmination Flight for RQ-20A.

Requirement. With instructor oversight, students shall be responsible for all aspects of flight coordination and conduct. IAW the references, checklists, ETF, and given a functional RQ-12A, the student will:

1. Power up GCS.
2. Plan and conduct full mission brief and load mission information.
3. Assemble and stage AV.
4. Coordinate with Airspace Control Authority (ACA) or range control (simulate call to instructor) for conduct of flight operations.
5. Launch in MAN mode then enter ALT mode at briefed altitude.
6. NAV to preprogrammed waypoints.
7. Conduct area and point reconnaissance.
8. Use orbit points to control profile of AV.
9. Respond accurately and precisely to simulated emergency conditions.
10. Use MAN mode or NAV E to L for heads down approach and landing.
11. Recover AV and render it safe.

Performance Standard. IAW the references, checklists, and ETF, the student will demonstrate ability to conduct the culmination flight for the RQ-20A without assistance from the instructor.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.


Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-20A.

6. IQT for All Environment SUAS (Combined RQ-12A / RQ-20A).

   a. **Purpose.** To develop proficiency and build experience in the basic operation of the RQ-20A and RQ-12A SUAS platforms. The RQ-20A and RQ-12A platforms are operationally identical in nature once airborne and thus lend themselves to combined training for Special Operations units operating both types of air vehicles.

   b. **Admin Notes.** The All Environment (AE) IQT syllabus shall be supplemented with essential academic / classroom instruction necessary to operate the systems properly, plan for and conduct flight operations while adhering to regulations and ensuring safety of flight. Academic / classroom training shall include as the minimum the following subject areas for:

      (1) **Introductory Skills.**
          (a) Demonstrate publications knowledge.
          (b) Demonstrate prohibited activities knowledge.
          (c) Demonstrate system description knowledge.
          (d) Demonstrate knowledge of flight log maintenance requirements
          (e) Perform system assembly/disassembly.
          (f) Conduct preflight, launch, and recovery operations.
          (g) Demonstrate knowledge of controls and indicators.
          (h) Conduct flight operations and flight training using the system simulator.

      (2) **Intermediate Skills.**
          (a) Demonstrate knowledge of mapping and GPS.
          (b) Demonstrate knowledge of airspace management.
          (c) Demonstrate how to use FalconView, RP UAV Tool Bar, and Image Processing software.
          (d) Operate range and bearing tool.
          (e) Conduct basic mission planning / crew mission briefing.
          (f) Conduct basic flight operations and target acquisition.
          (g) Perform enhanced reconnaissance, surveillance, and launch/recovery techniques.
          (h) Conduct water landings and recovery.
          (i) Conduct emergency procedures.
          (j) Perform system maintenance and troubleshooting.

      (3) **Advanced Skills.**
          (a) Perform incident and readiness reporting procedures.
          (b) Conduct mobile, night, relay, and handoff operations.
          (c) Conduct advanced reconnaissance techniques.
          (d) Conduct point precision landings.
          (e) Operate using an Untrained Assistant.
          (f) Operate RQ-12A with a single operator.

   c. **Conduct.** Flight events are conducted as specified. All I-coded events shall be conducted live; IQT events shall be conducted Live (L). Events that are also R-coded may be conducted live or use a simulator.
Events coded “I,R” are device coded “L then L/S” to indicate initial conducted live and refresh conducted either live or simulator (L/S).

d. **Total Flight Training.** 14 flights, 6.6 hours. Additionally, a student must complete a minimum of 5 successful launches and 5 successful landings with each SUAS to satisfactorily complete the AE syllabus.

**AE-1500 0.6 I L D IQT-I**

**Task.** Conduct heads up/heads down flight using the RQ-20A.

**Requirement.** Complete initial flight using all system flight modes IAW the references, checklists, ETF, and given a functional RQ-20A. Instructor will demonstrate first flight.

**Instructor will demonstrate:**
1. GCS setup.
2. How to plan a mission and how to load mission information and RSTA setup.
3. How to assemble, stage, launch, and recover AV.

**Student will conduct the following:**
1. Assemble and stage the system.
2. Launch in MAN mode, enter ALT mode when operating altitude is established.
3. Conduct timed turns, box pattern, orbit, and teardrop approach.
4. Conduct dashes.
5. Enter LOIT mode and navigate the AV.
7. Use NAV and HOME modes.
8. Land the AV from ALT mode by manually initiating AUTOLAND.
9. Recover AV and render it safe.

**Performance Standard.** Conduct heads up/heads down flight IAW the references, checklists, and ETF. The student will demonstrate the ability to:
1. Assemble AV.
2. Assist with GCS setup.
3. Observe set up of the RSTA laptop, mission planning and loading a mission.
4. MO launch AV.
5. Switch between all flight modes.
6. Fly both heads up and heads down (with MO assistance) and keep the AV oriented and on altitude during timed turns, box patterns, orbit and a teardrop approach.
7. Control the speed of the AV (dash/hold).
8. Enter LOIT mode and navigate AV to various points.
10. With instructor assistance, manually navigate AV to the landing area and establish a proper landing position/altitude profile.
11. Land the AV from ALT mode by manually initiating AUTOLAND.
12. Recover AV and render it safe.

**Initial System Condition.** GCS/AV assembled and RSTA powered and configured by the instructor. Load DTED, “UAV Origin”, and 500m diamond default.

**System Configuration.** EO/IR Gimbaled Payload, FalconView, RSTA.

**Prerequisite.** Complete BUQ-I Course.

**Range Training Area.** Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

**References.**

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

**Applicable SUAS.** RQ-20A.

**Task.** Conduct heads up/heads down flight using the RQ-12A.

**Requirement.** Complete initial flight using all system flight modes IAW the references, checklists, ETF, and given a functional RQ-12A. Instructor will demonstrate first flight.

**Instructor will demonstrate:**

1. GCS setup.
2. How to plan a mission and how to load mission information and RSTA setup.
3. How to assemble, stage, launch, and recover AV.

**Student will conduct the following:**

1. Assemble and stage the system.
2. Launch in MAN mode, enter ALT mode when operating altitude is established.
3. Conduct timed turns, box pattern, orbit, and teardrop approach.
4. Conduct dashes.
5. Enter LOIT mode and navigate the AV.
7. Use NAV and HOME modes.
8. Land the AV from ALT mode by manually initiating AUTOLAND.
9. Recover AV and render it safe.

**Performance Standard.** Conduct heads up/heads down flight IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble and stage AV.
2. Assist with GCS setup.
3. Observe set up of the RSTA laptop, mission planning and loading a mission.
4. MO launch AV.
5. Switch between all flight modes.
6. Fly both heads up and heads down (with MO assistance) and keep the AV oriented and on altitude during timed turns, box patterns, orbit and a teardrop approach.
7. Control the speed of the AV (dash/hold).
8. Enter LOIT mode and navigate the AV to various points.
10. With instructor assistance, manually navigate AV to landing area and establish a proper landing position/altitude profile.
11. Land the AV from ALT mode by manually initiating AUTOLAND.
12. Recover AV and render it safe.

**Initial System Condition.** GCS/AV assembled and RSTA powered and configured by the instructor. Load DTED, “UAV Origin”, and 500m diamond default.

**System Configuration.** EO/IR Gimbaled Payload, FalconView, RSTA. The AV dummy RQ-12A Payload may be substituted for the EO/IR Gimbaled Payload to introduce launching and recovering the AV in order to limit damage to payloads.

**Prerequisite.** Complete BUQ-I Course.

**Range Training Area.** Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

**References.**

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

**Applicable SUAS.** RQ-12A.
Task. Manually edit waypoints and reroute AV, Low Level (LL) flight and manual landing.

Note: This event helps develop proficiency in precision landing to a spot.

Requirement. Instructor will demonstrate LL AUTOLAND. IAW the references, checklists, ETF, and given a functional applicable SUAS, the student will:

1. Set up GCS.
2. Plan and load mission information.
3. Assemble, stage and launch AV in MAN mode.
4. Enter ALT mode at briefed altitude.
5. Enter NAV mode and fly at least one complete orbit of diamond default.
6. In NAV mode, MO redirect AV to specified orbit points.
7. MO switch waypoints by MGRS and using range and bearing.
8. Conduct security looking outward and inward using the Gimbaled payload.

Note: Disconnect MO hand controller for LL portion of flight.

9. Conduct LL flying in ALT mode beginning at 100’ AGL and stepping down to 20-30’ AGL.
10. Conduct LL flying in MAN mode beginning at 100’ AGL and stepping down to 20-30’ AGL.
11. Return to a minimum of 300’ AGL, land AV visually by VO initiated AUTOLAND.
12. Recover AV and render it safe.

Note: Requirement to maintain a video log; recommend use of a second GCS or an external digital video recording device connected to the HUB.

Performance Standard. Manually edit waypoints and reroute AV, LL flight and manual landing IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble AV.
2. Set up the GCS.
3. Plan a mission, and load mission to AV using hand controller.
4. Launch AV while serving as MO for another student.
5. Switch between all flight modes.
6. Fly the diamond default pattern in NAV mode.
7. Manipulate position of orbit points in hand controller, and route AV to those orbit points.
8. Conduct LL flight and traffic pattern navigation in ALT mode.
9. Conduct LL flight and traffic pattern navigation in MAN mode. Hard deck for this profile shall be 10’ AGL until landing.
10. Return to a minimum of 300’ AGL, land AV visually by VO initiated AUTOLAND.
11. Recover AV and render it safe.
Note: Requirement to maintain a video log; recommend use of a second GCS or an external digital video recording device connected to the HUB.

Initial System Condition. GCS powered down. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, and two hand controller configuration. 1:50K map of operating area to navigate from.

Prerequisite. AE-1500 or AE-1510, as applicable to SUAS used to complete this event. AE-1560 is only required when this event is conducted at night.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. RQ-12A or RQ-20A.

AE-1530 0.5  I   L   (N)  ______IQT-I

Task. Conduct in depth familiarization of all flight modes.

Requirement. IAW the references, checklists, ETF, and given a functional SUAS, the student will:

1. Assemble and launch the AV in MAN mode.
2. Establish ALT mode at briefed altitude.
3. Enter ALT mode and navigate the AV using front and side camera modes.
4. Enter LOIT Mode. Ensure payload is extended. Demonstrate use of payload to navigate the AV.
5. Enter NAV mode and navigate using orbit points and system waypoints. Maneuver payload, slave payload to navigation point, control altitude.
6. Enter HOME mode. Maneuver payload, control altitude.
7. While in LOIT, NAV, or HOME use all modes of the Speed submenu (Long, Slow, Far, Fast).
8. Conduct manual approach or NAV E to L and AUTOLAND.
9. Recover AV and render it safe.
Performance Standard. Operate in all flight modes while remaining in the training airspace IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble the AV/GCS and program a mission into the RSTA laptop.
2. Launch the AV and operate in MAN and ALT modes. Extend and retract the Gimbaled payload.
3. Operate the AV in LOIT, NAV, and Home modes. Use payload to conduct reconnaissance while maintaining the AV in the training airspace.
4. Transition through all modes of the Speed submenu.
5. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. AE-1520. AE-1560 is only required when this event is conducted at night.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.
1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. RQ-12A or RQ-20A.

Task. Conduct target acquisition using the SUAS.

Requirement. IAW the references, checklists, ETF, and given a functional applicable SUAS, the student will:

1. Plan and load mission information.
2. Assemble, stage and launch AV in MAN mode.
3. Enter ALT mode at briefed altitude, conduct remainder of flight heads down, except landing.
4. Navigate around target using ALT and LOIT modes.
5. MO change coordinate format on RSTA from MGRS to LAT/LONG and back to MGRS.
6. MO drag waypoints to establish an offset holding pattern from which to observe the target with the Gimbaled payload while in NAV mode.
7. MO leapfrog diamond waypoints to allow AV to search and navigate along a linear feature.
8. MO use Mission Altitude Control to adjust waypoint altitudes while AV is in NAV mode.
9. MO track stationary and moving targets from the RSTA laptop using AV Tracker.
10. MO use pushpins to track captured images and fix points of interest for the AV to hold on.
11. MO capture HD images from RSTA laptop.
12. MO pull/delete captured images from the HUB.
13. MO process imagery off RSTA laptop.
14. MO position AV for High Level AUTOLAND NLT 800’ AGL.
15. MO navigate heads up to bring AV into the wind for a high level landing.
16. MO recover AV and render it safe.

Performance Standard. Conduct target acquisition using the RQ-12A or RQ-20A. IAW the references, checklists, and ETF, the student will demonstrate the ability to:

1. Assemble AV.
2. Set up the GCS.
3. MO will plan and load a mission using the RSTA laptop.
4. Complete specified requirements, demonstrating the ability to navigate to and conduct reconnaissance of a target.
5. Manipulate imagery obtained during reconnaissance.
6. Manually initiate AUTOLAND and subsequently pilot the AV during deep stall in order to land at the desired point.
7. Strive to land within 20 meters of desired landing point.
8. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. AE-1520. AE-1560 is only required when this event is conducted at night.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of
Designated Unmanned Aerial Vehicle Operator (DUO)

3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

4. Applicable Operator’s Manuals

Applicable SUAS. RQ-12A or RQ-20A.

AE-1550 0.6 I L D IPT-I

Task. Conduct day mobile operations from a moving vehicle.

Requirement. IAW the references, checklists, ETF, and given a functional applicable SUAS, the students will:

1. Set up GCS in mobile configuration.
2. Plan and load mission information. MO configure GCS follow mode on RSTA laptop.
3. Assemble, stage and launch AV in MAN mode.
4. Enter ALT mode at briefed altitude.
5. NAV to Home or enter HOME mode, or park the AV at a pre-briefed orbit point while entering vehicle.
6. Use Gimbaled payload to track a moving vehicle from a stationary vehicle.
7. Use Gimbaled payload to track a moving vehicle from a moving vehicle.
8. Use the range and bearing tool to measure the distance between two objects or two locations or a combination of both.
9. Heads up approach to landing area with AUTOLAND.
10. Recover AV and render it safe.

Performance Standard. Conduct day mobile operations from a moving vehicle IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Configure GCS for mobile operations inside a vehicle.
2. Launch AV, then transition to operations from inside a vehicle.
3. Track a moving vehicle from a stationary and moving vehicle using the VO controller and AV Tracker.
4. Ensure GCS GPS and GCS Follow mode are properly configured to support mission.
5. Maintain situational awareness on position of target vehicle during mobile operations.
6. Conduct heads up approach to landing area and manually initiate AUTOLAND.
7. Recover AV and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA. Configure system on a vehicle for mobile operations using mobile mount.

Prerequisite. AE-1520.
Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. RQ-12A is preferred, but RQ-20A can be used.

Task. Introduction to basic night flight skills.

Requirement. IAW the references, checklists, ETF, and given a functional applicable SUAS, the student will:

1. Plan and load mission information.
2. Assemble, stage and launch AV in MAN mode.
3. Enter ALT mode at briefed altitude.
4. Track a linear feature.
5. Conduct reconnaissance of a point feature.
6. Use IR Illuminator (RQ-20A only).
7. NAV E to L for heads down approach and landing.
8. Recover AV and render it safe.

Performance Standard. Conduct a basic night flight. IAW the references, checklists, and ETF, the student will demonstrate ability to:

1. Assemble GCS and AV at night.
2. Launch AV at night.
3. Use IR payload mode to track a linear target.
4. Use IR payload mode to conduct reconnaissance of a point target.
5. Use IR Illuminator (RQ-20A only).
7. Recover AV at night and render it safe.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. AE-1520, AE-1550.
Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-20A preferred, but RQ-12A may be used.

Task. Introduction to advanced night flight skills.

Requirement. IAW the references, checklists, ETF, and given a functional applicable SUAS, the student will:

1. Plan and load mission information.
2. Assemble, stage and launch AV in MAN mode.
3. Enter ALT mode at briefed altitude.
4. Enter NAV mode. MO route AV to programmed waypoints and targets.
5. Conduct reconnaissance of an area in NAV or LOIT mode; identify TAIs or items of interest.
6. MO pull and delete captured images from the HUB.
7. MO process imagery off RSTA laptop.
8. VO conduct heads down approach to landing area.
9. MO vectors AV to landing area to manually AUTOLAND.
10. Recover AV and render it safe.

Performance Standard. Conduct an advanced night flight IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Assemble GCS and AV at night.
2. Launch AV at night.
3. Use RSTA laptop to remain oriented.
4. Use RSTA laptop to reroute AV to specific waypoints or targets.
5. Use IR payload camera to conduct reconnaissance of a point target.
6. Pull imagery off the HUB and RSTA laptop, and process that imagery into a JPEG; delete when completed.
7. Detect orientation of AV visually using beacons.
8. Conduct a night heads up landing.
9. Manually AUTOLAND AV.
10. Recover AV and render it safe.
Initial System Condition. GCS powered down, FalconView closed. Load DTED, "UAV Origin", and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. AE-1560.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. RQ-12A or RQ-20A.

Task. Conduct AV hand-offs during area/point/zone reconnaissance mobile operations.

Note: Flying this event at night is preferred. It reinforces mobile operations.

Requirement. Operate from GCS A and hand off to a secondary GCS, GCS B. Conduct a minimum of two full AV exchanges for a total of four hand offs (two handing off, two receiving AV); can be conducted from either stationary or mobile GCS. Conduct flight IAW the references, checklists, and ETF, the student will:

GCS A (Ground Crew)

1. Review and discuss hand off procedures prior to conducting flight.
2. Plan and load mission information.
3. Assemble, stage and launch AV.
4. Communicate AV Channel, ALT and AV Number to GCS B.
5. Conduct briefed mission profile.
6. At planned hand-off point, initiate hand-off sequence with GCS B.
7. Conduct second AV hand-off and reception.
8. NAV E to L for heads down approach and landing.
9. Recover AV and render it safe.

GCS B (Mobile Crew)
1. Set up GCS in mobile configuration.
2. Receive AV Channel, ALT, AV Number from GCS A.
3. Receive AV from GCS A.
4. Use payload camera to track a moving vehicle from a moving/stationary vehicle.
5. Hand AV back to GCS A.

Performance Standard. Conduct AV hand-offs during area/point/zone reconnaissance mobile operations IAW the references, checklists, and ETF. The student will demonstrate the ability to:

GCS A (Ground Crew)
1. Launch AV on an area/point/zone reconnaissance mission profile and vector to briefed hand off point.
2. Demonstrate effective communication procedures to initiate hand off to GCS B.
3. When GCS B is ready, hand AV off.
4. When directed by GCS B, VO will receive AV and regain control.
5. Use a wing rock, text, or voice message to confirm to GCS B that AV control has been regained after hand off.
6. Safely land AV heads down using NAV mode, E to L.
7. Recover AV and render it safe.

GCS B (Mobile Crew)
1. Configure GCS for mobile operations inside a vehicle.
2. Demonstrate effective communication procedures to initiate hand off from GCS A.
3. When directed by GCS A, VO will receive AV and regain control.
4. Track a moving vehicle from a moving vehicle using EO or IR camera.
5. Maintain situational awareness on position of target vehicle during mobile operations.
6. When GCS A is ready, hand AV off.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration.
1. GCS A - Hand Controller, EO/IR Gimbaled Payload, FalconView, RSTA.
2. GCS B - Hand Controller, EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. AE-1550, AE-1560 is only required when this event is conducted at night.

Range Training Area. Minimum requirements:
1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.
1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. RQ-12A or RQ-20A.

AE-1590 0.5 I L D IQT-I

Task. Operate SUAS using an Untrained Assistant.

Requirement. With instructor oversight and one Untrained Assistant, the student shall be responsible for all aspects of flight coordination and conduct IAW the references, checklists, and ETF. Given a functional applicable SUAS, the student will conduct tasks as noted in the matrix below:

<table>
<thead>
<tr>
<th>SUAS-O Tasks</th>
<th>Untrained Assistant Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mission</td>
<td></td>
</tr>
<tr>
<td>• Plan Mission</td>
<td>• Secure launch site</td>
</tr>
<tr>
<td>Pre-flight</td>
<td></td>
</tr>
<tr>
<td>• Set waypoints in Mission Hand Controller</td>
<td>• Provide airspace surveillance</td>
</tr>
<tr>
<td>• Run pre-flight check on VO controller: change LOL mode back to “Rally Point” on Mission Hand Controller</td>
<td>• Conduct time hack</td>
</tr>
<tr>
<td>Launch</td>
<td></td>
</tr>
<tr>
<td>• Launch AV</td>
<td>• Transport equipment</td>
</tr>
<tr>
<td>• Take control of VO Controller once airborne</td>
<td>• Hold AV for pre-flight checks</td>
</tr>
<tr>
<td>Flight</td>
<td></td>
</tr>
<tr>
<td>• Operate VO Controller</td>
<td>• Advance throttle to 100% for launch</td>
</tr>
<tr>
<td>Post-Flight</td>
<td></td>
</tr>
<tr>
<td>• Inspect equipment</td>
<td>• Hold VO Controller during launch, be prepared to engage AUTOLAND if required</td>
</tr>
<tr>
<td></td>
<td>• Monitor RSTA laptop</td>
</tr>
<tr>
<td></td>
<td>• Come heads-up for landing</td>
</tr>
<tr>
<td></td>
<td>• Recover AV</td>
</tr>
<tr>
<td></td>
<td>• Pack and transport equipment</td>
</tr>
</tbody>
</table>

Performance Standard. Operate SUAS using an Untrained Assistant IAW the references, checklists, and ETF. The student will demonstrate the ability to conduct all required tasks listed in the matrix above (both SUAS-O and Untrained Assistant) without
assistance from the instructor. Student must demonstrate the ability to guide and direct the actions of the Untrained Assistant.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. AE-1520.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. RQ-12A or RQ-20A.

Task. Single Operator operations using RQ-12A.

Requirement. IAW the references, checklists, ETF, and given a functional RQ-12A, the student will demonstrate the following as a single operator:

1. Plan and load mission information.
2. VO assemble, stage and launch AV.
3. VO launch AV in MAN mode.
4. Operate AV in ALT, MAN, NAV, LOIT and HOME modes.
5. Using RSTA, reroute the AV to at least one orbit point.
6. Cycle through all payload camera modes and magnifications.
7. Capture an image using hand controller.
8. Capture HD image using RSTA laptop.
9. Heads down, NAV to HOME.
10. Transition to heads up and land manually.
11. Recover AV and render it safe.

Performance Standard. Conduct requirement as a single operator by conducting flight as a VO and MO. IAW the references, checklists, and ETF, the student will demonstrate the ability to:

1. Assemble vehicle and set up RSTA.
2. Conduct preflight checks.
3. Launch the AV.
4. Use hand controller to fly in ALT, MAN, NAV, LOIT, and HOME modes.
5. Use RSTA to navigate the AV, edit waypoints, and drag orbit points.
6. Capture images with hand controller and RSTA laptop.
7. Cycle through all payload camera options and maintain contact with a target.
8. Reroute AV to HOME heads down.
9. Transition to heads up and land manually.
10. Recover AV and render it safe.

Initial System Condition. Load DTED, "UAV Origin", and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.

Prerequisite. AE-1510.

Range Training Area. Minimum requirements:
1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.
1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-12A.

Task. Alternate Launch and Recovery Techniques.

Requirement. With instructor oversight, student will utilize alternate techniques for launching and recovering the AV to maximize the flexibility of the All Environment platform in a variety of potential operational scenarios. These techniques will be pre-briefed and discussed in an Operational Risk Management (ORM) Brief from a completed ORM form. The ability to complete all techniques is dependent upon the training area environment and regulations, unit regulations, and availability of appropriate safety equipment and materials. The ETF should reflect in detail which techniques were demonstrated. Those that were not demonstrated should be briefed in detail. Given the references, checklists, ETF, and given a functional SUAS, the student will:
1. Plan and load mission information.
2. VO assemble and stage AV.
3. MO launch in MAN mode from a moving vehicle (boat or ground vehicle) with appropriate safety controls implemented to prevent MO injury and/or equipment damage.
4. MO launch using the field launcher (RQ-20A only).
5. Heads down, NAV to HOME.
6. Transition to heads up and land manually.
7. Using a combination of techniques, land the AV within a 10m x 10m area to replicate a roof top or compound.
8. Land the AV in the water.
9. Land the AV into a cargo net or similar trapping device to limit impact damage to AV on hard or treacherous terrain.
10. Recover AV and render it safe.

Performance Standard. Safely conduct alternate launch and recovery techniques IAW the references, checklists, and ETF. With instructor oversight the student will demonstrate the ability to execute the alternate launch and recovery techniques within the operational limitations of the AV operator’s manual and according to the pre-mission Operational Risk Management form and brief.

Initial System Condition. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload (RQ-20A), dummy payload (RQ-12A, if available), FalconView, RSTA.

Prerequisite. AE-1520.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. RQ-12A or RQ-20A.

Task. Culmination Flight for RQ-20A.

Requirement. With instructor oversight, SUAS crew shall be responsible for all aspects of flight coordination and conduct.
IAW the references, checklists, ETF and given a functional RQ-12A, the student will:

1. Power up GCS.
2. Plan and conduct full mission brief and load mission information.
3. Assemble, stage AV.
4. Coordinate with Airspace Control Authority (ACA) or range control (simulate call to instructor) for conduct of flight operations.
5. Launch in MAN mode then enter ALT mode at briefed altitude.
6. NAV to MO preprogrammed waypoints.
7. Conduct area and point reconnaissance.
8. Use orbit points to control profile of AV.
9. Respond accurately and precisely to simulated emergency conditions.
10. Use MAN mode or NAV E to L for heads down approach and landing.
11. Recover AV and render it safe.

Performance Standard. IAW the references, checklists, and ETF, the student will demonstrate ability to conduct the culmination flight for the RQ-20A without assistance from the instructor.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, “UAV Origin”, and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.


Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-20A.

Task. Culmination Flight for RQ-12A.
Requirement. With instructor oversight, the student shall be responsible for all aspects of flight coordination and conduct. IAW the references, checklists, ETF, the student will:

1. Power up GCS.
2. Plan and conduct full mission brief and load mission information.
3. Assemble and launch AV.
4. Coordinate with Airspace Control Authority (ACA) or range control (simulate call to instructor) for conduct of flight operations.
5. Launch in MAN mode then enter ALT mode at briefed altitude.
6. NAV to MO preprogrammed waypoints.
7. Conduct area and point reconnaissance.
8. Use orbit points to control profile of AV.
9. Respond accurately and precisely to simulated emergency conditions.
10. Use MAN mode or NAV E to L for heads down approach and landing.
11. Recover AV and render it safe.

Performance Standard. IAW the references, checklists, and ETF, the student will demonstrate ability to conduct the culmination flight for the RQ-12A without assistance from the instructor.

Initial System Condition. GCS powered down, FalconView closed. Load DTED, "UAV Origin", and 500m diamond default.

System Configuration. EO/IR Gimbaled Payload, FalconView, RSTA.


Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)

Applicable SUAS. RQ-12A.
204. CORE SKILL TRAINING (2000 – 2799).

1. General.

   a. Purpose. To apply entry-level skills acquired during the IQT phase to advanced mission sets and tactical scenarios in order for a SUAS-O to be able to employ the systems in an operational environment.

   b. Prerequisite. Complete IQT training for the specific SUAS being trained prior to commencing Core Skill training.

   c. Conduct. Core Skill events in this phase may be flown in any order with the exception of the MQT-2010 event which shall be completed first.


2. Mission Qualification Training (MQT) Stage

   a. Purpose. To train SUAS-Os in unit specific SUAS tactics, techniques and procedures (TTPs). Generally, TTPs are not taught or emphasized during IQT. MQT events are independent of each other and can be conducted in any order with the exception of MQT-2010 which must be completed first.

   b. Admin Notes.

      (1) Completion of these MQT events using one SUAS carries over to all SUASs. MQT events are agnostic of SUAS type.

      (2) Units should complete MQT events necessary to support mission tasks. However, for a SUAS-O to be considered “full mission ready,” all MQT events may be completed using any applicable SUAS.

      (3) For each MQT recommend the conduct of pre-mission planning utilizing mission analysis (METT-TC).

      (4) Additional tasks within each event are provided as supplemental skills to be practiced in conjunction with the main event requirements in order to provide scenario depth and greater exposure for the SUAS-O.

   c. Conduct. Events are flown as specified.

3. MQT Training.

   a. Classroom. 1 event, 2.0 hours.

   b. Flight. 5 flights, 2.5 hours.

      MQT-2010 2.0 I,R Classroom NA SUAS-I

      Task. Introduction to local area flying operations.

      Requirement. The student will receive the information required to safely and effectively operate within the confines of the assigned operational area. Instruction shall include the following:
1. Ensure student has an ITR and Flight Log properly constructed and maintained per the references.
2. Provide detailed review of all Local Airspace (including SUA) and SUAS training areas.
3. Provide detailed review of procedures for reserving training areas and airspace.
4. Provide a detailed review of all applicable controlling agencies and entities (tactical and administrative) for conducting SUAS operations in the local flying area.
5. Introduce how to assist unit personnel with SUAS frequencies deconfliction.
6. Introduce the student to the unit frequency manager.
7. Provide a detailed review of all local SOPs, orders, policies and regulations that govern local SUAS flight operations.
8. Provide an overview of local unit procedures for storage, handling, and accounting for SUAS equipment.
9. Provide an overview of local supply points and procedures for replacing/repairing broken/missing system parts.
10. Provide a detailed review of local procedures for planning, conducting, and logging SUAS flight operations.
11. Provide a detailed review of procedures required in the event of a lost or damaged SUAS.
12. Provide an overview of incident and mishap reporting procedures.
13. Demonstrate how to access local and Service websites related to the performance of SUAS-O duties.

Performance Standard. The student shall demonstrate the ability to fully understand and complete all required items of this event and to coordinate and conduct safe SUAS operations.

Initial System Condition. N/A.

System Configuration. N/A.

Prerequisite. Complete IQT and be designated as a SUAS-O on the SUAS in which being trained.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. All.

MQT-2020 0.5 I L (N) SUAS-I

Task. Refine reconnaissance techniques in a tactical scenario.

Scenario. Select tactical launch site to support mission and provide optimal positioning for launch/recovery of the AV and
security for the SUAS crew. Fly AV out in MAN mode until mission altitude is achieved, then enter ALT mode and route to hold or to first checkpoint. During the mission the VO shall conduct Route, Area, and Point Reconnaissance. During the reconnaissance mission the focus should be on the quality of the products and the live video feed. Instructor shall provide specific information and operational requirements for video/still imagery products required. The Range and Bearing (S&T) function shall be used at least once during the mission if the SUAS is so equipped. The route reconnaissance should be flown in both free flight mode and by dragging A/B/C/D waypoints.

The area reconnaissance shall be flown within a defined boundary (specified during the mission brief) with a specific objective. The point reconnaissance mission shall be flown using covert techniques to prevent acoustic and visual detection of the AV. SUAS crew must take notes and be able to identify those TAIs/NAIs found during the mission for later exploitation. At the conclusion of the flight, imagery and video shall be processed on the RSTA for dissemination; dissemination methods shall be discussed with the instructor.

**Additional Tasks.**

A. GCS to GCS handoff.
B. Remote site launch and forward control of vehicle from a concealed position.
C. Student obtains required resources to conduct training (i.e., range, frequencies, system checkout, etc.)
D. Conduct notional actions (e.g., reports and simulated EPs, as noted in MQT-2010).
E. Report mobile target status in real time.
F. Coordinate to provide external downlink to RVT(s).

**Requirement.** Instructor will provide the student with a tactical scenario tailored to the specific range/operating area in use. VO shall plan and execute entire mission with assistance from MO. IAW the references, checklists, and ETF, the student will:

1. Setup GCS and assemble AV.
2. Select and install AV payload that best supports the environmental conditions and types of targets anticipated during the mission. IR payload can be used during the daytime.
3. Plan mission IAW briefed parameters.
4. Launch AV in MAN mode.
5. Conduct route reconnaissance of a linear feature.
6. Conduct area reconnaissance of a defined NAIs or TAIs.
7. Conduct point reconnaissance using covert flight techniques.
8. Use S&T function to determine range and bearing on a selected image.
9. Download and process imagery from HUB and from RPUAV-log.
10. Capture imagery from mission video and save as JPEG.
11. Land AV manually or in NAV mode from E to L.
12. Recover AV and render it safe.
Performance Standard. Conduct reconnaissance techniques in a tactical scenario IAW the references, checklists, and ETF. The student will demonstrate the ability to complete the event requirement without assistance from the instructor.

Initial System Condition. SUAS packed for transport to the field. SUAS crew should wear combat gear appropriate to the mission but at a minimum shall wear a helmet and body armor.

System Configuration. EO Payload for day flight or IR Payload for night flight, FalconView, RSTA.

Prerequisite. MQT-2010.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable System Manuals

Applicable SUAS. All.

MQT-2030  0.5  I   L  (N)  _____SUAS-I

Task. Conduct overwatch and security operations in support of a fixed position.

Scenario. The SUAS crew shall use SUAS to provide overwatch and security of their own fixed site. Site should simulate a small forward operating base or site with limited access and launch/recovery areas. Site should have some nearby vertical obstacles, if possible, such as trees or structures that will limit launch and recovery options. Mission preparation should include an IPB analysis of potential vulnerabilities, areas of interest, and visual dead space surrounding the launch site. The mission should prioritize areas within the enemy’s effective weapons range per the scenario.

During pre-mission planning, consideration should be given to potential IDF POO, enemy defilade or hidden fighting positions, ambush sites, denial of access for key avenues of approach, forward observation points for enemy observers, infill routes for sappers, etc. Mission plan should follow a realistic flight path to provide imagery/video reconnaissance of those key areas and
avenues identified during IPB. SUAS crew must take notes and be able to identify those areas/items of interest found during the mission for later exploitation. Precision landing techniques are critical to limit exposure of the SUAS crew to hostile fire and potential loss of AV.

Additional Tasks.

A. GCS to GCS handoff.
B. Remote site launch and forward control of vehicle from a major hub (hub and spoke operations).
C. Student obtains required resources to conduct training (i.e., range, frequencies, system checkout, etc.)
D. Conduct notional actions like reports and simulated EPs, as noted in MQT-2010).
E. Coordinate to provide external downlink to RVT(s).

Requirement. Instructor will provide the student with a tactical scenario tailored to the specific range/operating area in use. The student shall plan and execute entire mission with assistance from MO and guidance from the instructor. Try blending or expanding scenario to transition into MQT-2050 during the same training session (Shall fly a 0.5 time minimum for each event). IAW the references, checklists, and ETF, the student will:

1. Setup GCS and assemble AV.
2. Select and install AV payload that best supports the environmental conditions and the types of targets anticipated during the mission. IR payload can be used during daytime.
3. Plan mission IAW briefed parameters.
4. Launch AV in MAN mode.
5. Conduct site security and overwatch per mission plan and brief.
6. Download and process imagery from HUB and from RPUAV-log.
7. Capture imagery from mission video and save as JPEG.
8. Land AV manually or in NAV mode from E to L, ensuring the technique selected is optimal for landing accuracy.
9. Recover AV and render it safe.

Performance Standard. Conduct overwatch and security operations in support of a fixed position IAW the references, checklists, and ETF. The student will demonstrate the ability to complete all items in the event requirement without assistance from the instructor. Landing shall be accomplished within the confines of the operating base as defined by the instructor prior to launch. The AV will be recovered and rendered safe.

Initial System Condition. SUAS packed for transport to the field. SUAS crew should wear combat gear appropriate to the mission but at a minimum shall wear a helmet and body armor.

System Configuration. EO Payload for day flight or IR Payload for night flight, FalconView, RSTA.

Prerequisite. MQT-2010.
Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. All.

MQT-2040 0.5 I L (N) SUAS-I

Task. Track mobile targets.

Scenario. The student shall use SUAS to track mobile targets. Scenario shall provide the opportunity to track both vehicles and personnel. Scenario shall include at least one target transition - when a target changes mode of transportation or overhead cover situation. Some examples include but are not limited to:

A. A target vehicle disembarking and personnel getting out and departing on foot.
B. A target watercraft.
C. A foot mobile target getting into a vehicle.
D. A target vehicle pulling into a garage or a foot mobile target going into a building.
E. Multiple similar vehicles executing decoy and switch operations to throw off an observer.
F. An evading target on foot or in a vehicle that realizes he is under observation.

(Coordination and external support for this scenario are crucial.)

Additional Tasks.

A. Maintain PID for a specified period of time.
B. Illuminate target with onboard IR pointer, if AV is so equipped.
C. Maintain continuous coverage with multiple AVs from a second hub/landing site using two GCSs.
D. Report mobile target status in real time.
E. Coordinate to provide external downlink to RVT(s).
F. Student obtains required resources to conduct training (i.e., range, frequencies, system checkout, etc.)
G. Conduct notional actions like reports and simulated EPs, as noted in MQT-2010.
Requirement. Instructor will provide the student with a tactical scenario tailored to the specific range/operating area in use. The student shall understand the definition of PID and shall plan and execute entire mission with assistance from MO and guidance from the instructor. IAW the references, checklists, and ETF, the student will:

1. Setup GCS and assemble AV.
2. Select and install AV payload that best supports the environmental conditions and the types of targets anticipated during the mission. IR payload can be used during the daytime.
3. Plan mission IAW briefed parameters.
4. Launch AV in MAN mode.
5. Conduct surveillance operations on a mobile target(s) in order to maintain PID.
6. Download and process imagery from HUB and from RPUAV-log.
7. Capture imagery from mission video and save as JPEG.
8. Land AV manually or in NAV mode from E to L.
9. Recover AV and render it safe.

Performance Standard. Track mobile targets IAW the references, checklists and ETF. The student will demonstrate the ability to:

1. Track a mobile target.
3. Maneuver the AV efficiently to maintain contact with the target. In the event the target is lost, VO and MO must be able to coordinate their efforts to reacquire the target in order to reestablish PID.
4. Land AV manually or in NAV mode from E to L.
5. Recover AV and render it safe.

Initial System Condition. SUAS packed for transport to the field. SUAS crew should wear combat gear appropriate to the mission but at a minimum shall wear a helmet and body armor.

System Configuration. EO Payload for day flight or IR Payload for night flight, FalconView, RSTA. NVDs for illuminator operations. Video downlink equipment for assault force/patrol as required.

Prerequisite. MQT-2010.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of
Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. All.

MQT-2050 0.5 I L (N) SUAS-I

Task. Overwatch of friendly mobile operations.

Scenario. The student shall configure the GCS for mobile operations from a vehicle. A tactical vehicle is preferred, but a non-tactical vehicle can be used. Every attempt should be made to train using vehicles expected to be used in-theater in order to build comfort with the vehicle and to allow the SUAS crew to develop and/or reinforce crew coordination procedures. Scenario should provide student the opportunity to operate the AV from a moving vehicle. Possible scenarios might include:

A. Collocated Overwatch of a foot mobile patrol. AV can be operated by VO collocated with the patrol.
B. Remote Overwatch of a foot mobile patrol. AV can also be launched and operated from a HUB/FOB and circle overhead a patrol. In this scenario the SUAS crew remains at the HUB/FOB. The SUAS crew must have constant communication with a member of the patrol. The patrol receives imagery from the SUAS via remote video terminal (e.g. MVR, Video Scout).
C. Overwatch of a mechanized patrol. VO configures the vehicle for mobile GCS operations.
D. Overwatch of an infill. SUAS crew coordinates with mission commander to provide Overwatch of infill and integration into overall direct action plan. Consideration must be given to the element of surprise (acoustic signature of AV) and mission imagery requirements. Mobile operations can transition to fixed point security once the assault force is on the objective area.
E. Overwatch of an exfill. SUAS crew coordinates with the commander to provide Overwatch of exfill route during actions on to ensure that IEDs and/or ambushes are not being emplaced while a mission is on-going. AVs can be cycled, and multiple vehicles/GCSs can be used to support an objective area and route.
F. Use of IR illuminator (if AV is so equipped) to provide situational awareness to force personnel wearing NVDs.

Additional Tasks.
A. GCS to GCS handoff.
B. Use of IR illuminator in conjunction with aided mobile operations.
C. Conduct multiple GCS/AV operations.
D. Student obtains required resources to conduct training (i.e., range, frequencies, system checkout, etc.)
E. Conduct notional actions (e.g., reports and simulated EPs, as noted in MQT-2010).
F. Report friendly patrol status in real time.
G. Coordinate to provide external downlink to RVT(s).

Requirement. The SUAS can significantly enhance the security of a force by providing overhead persistent surveillance during mobile operations. Occasions for using the SUAS in support of overhead operations might include a foot-mobile patrol, vehicle patrol, infill, exfill, and time on objective area. VO shall plan and execute entire mission with assistance from MO and guidance from the instructor. Try blending or expanding scenario to transition into MQT-2030 during the same training session (Shall fly a 0.5 minimum for each event). IAW the references, checklists, and ETF, the student will:

1. Setup GCS and AV.
2. Select AV payload that best supports the environmental conditions and types of targets anticipated during the mission. IR payload may be used during daytime.
3. Configure GCS for mobile operations in a tactical or surrogate tactical vehicle.
4. Plan mission IAW briefed parameters.
5. Launch AV in MAN mode.
6. Maintain position of AV relative to friendly forces as mission requirements dictate. Continuously update Home, E/L waypoints, and orbit points to support mobile plan and AV emergencies.
7. Conduct an actual or notional landing near the SUAS-O vehicle using updated E and L waypoints or manual navigation after SUAS-O vehicle has moved from origin point.
8. Download and process imagery from HUB and from RPUAV-log.
9. Capture imagery from mission video and save as JPEG.
10. Land AV manually or in NAV mode from E to L.
11. Recover the AV and render it safe.

Performance Standard. Conduct overwatch of friendly mobile operations IAW the references, checklists, and ETF. The student will demonstrate the ability to:

1. Track a mobile target.
3. Maneuver the AV efficiently to maintain contact with friendly forces while supporting the mission commander’s mission requirements.
4. Maintain control of AV at all times, effectively updating the Home, E/L waypoints, and orbit points to allow recovery of the vehicle in the event the AV must land immediately (interloper aircraft), an emergency, or due to LOL.
5. Properly configure a mobile GCS.
6. Recover the AV and render it safe.

Initial System Condition. SUAS packed for transport to the field. SUAS crew should wear combat gear appropriate to the mission but at a minimum shall wear a helmet and body armor.
System Configuration. EO/IR Payload, FalconView, RSTA. NVDs for illuminator operations. Video downlink equipment for assault force/patrol as required.

Prerequisite. MQT-2010.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. All.

MQT-2060 0.5 I L D SUAS-I

Task. Use SUAS to support the terminal control of fires (surface, naval gunfire, aviation).

Note: The three major skill sets to train to are:

A. Targeting. Using the SUAS to PID targets and, depending on the specific SUAS in use, generate either coordinates or a mission to engage that target. Map correlation is critical - the coordinates generated from the SUAS must be correlated with a map to ensure they are accurate and relevant. The targeting process can be enhanced if the JTAC or FO can see the SUAS feed through the use of a video downlink device or over the SUAS-Os shoulder. The JTAC or FO can direct the SUAS crew in positioning the AV to best support the targeting process.

B. Adjust Fire. Use the SUAS to observe fires and generate corrections for the JTAC or FO. Physical placement of the SUAS during live fire operations is a key consideration. Judging distances via the SUAS display is also a learned skill set, particularly if the terrain or target set being viewed does not provide decent contrast and comparative elements. Lastly, high situational awareness of the SUAS position and its orientation both to the magnetic compass and relative to the target are critical in generating a correction. The adjustment process can be enhanced if the JTAC or FO can see the SUAS feed through the use of a video downlink device. If the JTAC or FO can directly view the
SUAS feed he can make the corrections immediately. SUAS crew must be able to interpret the video scene for the JTAC or FO.

C. **Battle Damage Assessment (BDA).** Use the SUAS to collect BDA on a target set. SUAS crew must know what the condition of the target set was prior to engagement and be able to interpret the scene via the SUAS in order to provide accurate and timely BDA. The process of gathering BDA can be greatly enhanced if the JTAC or FO can see the SUAS feed through the use of a video downlink device or over the student’s shoulder.

Scenario. This event is best conducted in conjunction with a live fire event (e.g., EWTG TACP Shoot, unit FireEx, Mojave Viper, etc.) but may be conducted without live fires given a robust and detailed scenario from the instructor.

A. **Live Fire Scenario.** Integrate the SUAS into a live fire event using surface or aviation fires.

B. **Simulated Scenario.** Targeting and BDA can be simulated fairly easily in a non-live fire scenario. Corrections are more difficult to simulate. A technique that can be employed is to fly to a known target array and use a known target as the reference. The instructor points to a visible object relative to the known target and calls that object (a bush, tree, dark patch of terrain, etc.) the impact. The student then generates the correction from that object to the target. The effects of the correction cannot be effectively simulated.

**Additional Tasks.**

A. Use of 9-line, surface call for fire, AC-130 call for fire, and Naval Gunfire call for fire procedures.
B. Map reading and interpretation.
C. Range and distance estimation.
D. Use FalconView overlays and draw files to depict FSCMs and ACMs.
E. Downlink SUAS feed to JTAC or FO if they are equipped with a video receiver.
F. Student obtains required resources to conduct training (i.e., range, frequencies, system checkout, etc.)
G. Conduct notional actions (e.g., reports and simulated EPs, as noted in MQT-2010).
H. Provide information in real time.
I. Coordinate to provide external downlink to RVT(s).

**Requirement.** IAW the references, checklists, ETF, and given a functional SUAS, the student shall employ the SUAS to train to one or all of the terminal control skill support skill sets (Targeting, Adjust Fire, Battle Damage Assessment).

1. Setup GCS and AV.
2. Select AV payload that best supports the environmental conditions and the types of targets anticipated during the mission. IR payload can be used during the daytime.
3. Develop mission plan IAW briefed parameters. Ensure airspace plan and fires plans conform to each other and are integrated with all existing FSCMs and ACMs.
4. Launch AV in MAN mode.
5. Maneuver the AV relative to friendly forces to accomplish the mission objectives.
6. Conduct target reconnaissance and selection using AV and correlating to map/FalconView. Share target data with external agencies (e.g., JTAC, FO) to feed a fire mission.
7. Use SUAS to observe impacts and effects of aviation, surface, or naval fires.
8. Use SUAS to provide data for generating corrections for aviation, surface, or naval fires. Ensure AV is deconflicted from incoming fires and aircraft.
9. Use SUAS to gather BDA and report the BDA to JTAC/FO.
10. Download and process imagery from HUB and from RPUAV-log.
11. Capture imagery from mission video and save as JPEG.
12. Land AV manually or in NAV mode from E to L.
13. Recover the AV and render it safe.

**Performance Standard.** Use SUAS to support the terminal control of fires (surface, naval gunfire, aviation) IAW the references, checklists, and ETF. The student shall plan and execute entire mission with assistance from MO and guidance from the instructor. The student will demonstrate ability to:

1. Integrate SUAS plan with fire support plan.
2. Find a target array and correlate it with a map and/or FalconView.
3. Derive a MGRS grid for a given target and refine that grid using a map and/or FalconView.
4. Interpret the SUAS feed from the AV at a given altitude and provide distance corrections from the target for impacts.
5. Communicate and coordinate with the JTAC or FO to effectively and efficiently provide targeting, correction, and BDA in support of an active fires package.
6. Maintain situational awareness. While:
   a. Maneuvering the AV efficiently to maintain contact with friendly forces while supporting the mission commander’s mission requirements.
   b. Positioning the AV to observe fires as required while complying with FSCMs, ACMs and remaining clear of incoming fires.

**Initial System Condition.** SUAS packed for transport to the field. SUAS crew should wear combat gear appropriate to the mission but at a minimum shall wear a helmet and body armor.

**System Configuration.** EO / IR Payload, FalconView, RSTA, 1:50k map. Video downlink equipment for assault force/patrol as required. Current Air Land Sea Application (ALSA) Joint Fires publication.
Prerequisite. MQT-2010.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. CJCSI 3255.01 Joint UAS Minimum Training Standards (JUMTS)
2. NATO STANAG 4670 Recommended Guidance for the Training of Designated Unmanned Aerial Vehicle Operator (DUO)
3. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations)
4. Applicable Operator’s Manuals

Applicable SUAS. All.

205. INSTRUCTOR UNDER TRAINING (IUT) (2800 – 2849).

1. General.
   
   a. **Purpose.** To provide designated and experienced SUAS-Os the additional skills necessary to instruct SUAS operations and employment. Upon completion of the required training, a SUAS instructor under training (IUT) may be considered for SUAS-I designation by the unit commanding officer.

   b. **Prerequisite.**

      (1) Shall be an E-4 or above.

      (2) Shall be SUAS-O designated and current in the system(s) in which being recommended to instruct.

      (3) Shall have a minimum of 25 hours of actual live flight experience on the system in which being recommended to instruct. Hours of experience can be waived in writing by the unit commanding officer.

      (4) Shall be recommended by a SUAS-E via the Unit SUAS-PM to begin IUT.

      (5) Should have a minimum of one year remaining on their enlistment contract.

      (6) Although not required, it is highly recommended the individual complete an approved formal basic instructor course like the course offered by the Train-The-Trainer (T3) Schools aboard Camp Lejeune, NC and Camp Pendleton, CA.

   c. **Admin Notes.**
(1) The steady production of well trained and experienced SUAS-Is is essential to the effectiveness and sustainment of a unit’s SUAS program to maintain well trained and highly skilled SUAS-Os to support the operational commander.

(2) The primary function of the SUAS-I is to oversee currency flights and execute training per this T&R. Therefore, unit commanding officers should select the most experienced SUAS-Os who have demonstrated expert operator knowledge, experience and maturity, judgment and ability to effectively mitigate operational risk to the SUAS and unit mission.

(3) See Table 1-4 for currency requirements.

(4) The following notes apply to SUAS-Is who have been designated and are now required to complete an annual SUAS Evaluation.

(a) SUAS-Is who receive two unqualified (UQ) ratings during a SUAS Evaluation shall receive an overall rating of UQ and be suspended from SUAS-I duties. This suspension shall be annotated on the SUAS Evaluation Form; both the SUAS-E and SUAS-I shall sign and date next to the annotation.

(b) A failure in the area of “Integrated safety principles” shall automatically result in an overall rating of UQ. The SUAS-I shall be suspended from SUAS-I duties. This suspension shall be annotated on the SUAS Evaluation Form; both the SUAS-E and SUAS-I shall sign and date next to the annotation.

(c) A suspended SUAS-I shall be re-evaluated after completing training in the area(s) identified as deficient, and may be reinstated by the unit SUAS-PM upon successful completion of a re-evaluation.

(d) SUAS-Is shall be removed from SUAS-I duties if the reevaluation results in a second failure. Their designation shall be revoked in writing by the unit commanding officer. A copy of the SUAS revocation letter shall be filed in the ITR.

(e) Subsequent retraining and recertification for personnel who were revoked shall be at the discretion of the unit commanding officer and per this T&R Manual.

d. Conduct. IUT events are flown as required.

2. IUT Training.

a. Classroom. 1 event, 2.0 hours.

b. Flight. 4 events, 1.8 hours.

IUT-2800 2.0 I Classroom NA IQT-I/SUAS-I/E

Task. Introduction to Instructional Techniques.

Requirement. The instructor will conduct a period of instruction to include the following:

1. Introduce/discuss/demonstrate instructional techniques.
2. Introduce/discuss/demonstrate class management techniques.
   a. How to prepare to conduct effective instruction.
   b. How to use instructional resources to communicate with students.
3. Introduce/discuss/demonstrate how to prepare for a period of instruction. How to:
   a. Schedule a class.
   b. Prepare/access required training materials for the class.
   c. Prepare the ETF to be used to evaluate the student.
4. Discuss general tactical employment considerations.
5. Introduce/discuss/demonstrate how to document training using the ETF, logging the event code in MCTIMS, and documenting it in the ITR.
6. Familiarize the student with the content of all the event references.

   Note: Locally developed instructional materials are encouraged and may be used.

Performance Standard.

1. Instructor will complete all items IAW the references.
2. Instructor will verbally ask questions to assess the IUT’s understanding of the principles of instruction.
3. Student will answer the questions in detail and demonstrate knowledge of proper instruction and classroom techniques.

Prerequisite. See paragraph 205.1.b.

References.

2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. Local Unit SOPs.
4. Local Range SOPs.
5. Applicable Operator’s Manuals.

Applicable SUAS. All.

IUT-2810 0.5 I L D IQT-I/SUAS-I/E

Task. Introduction on how to instruct a live flight event.

Scenario. Instructor may use the scenario and requirements of any MQT event in this T&R Manual to complete this event.

Requirement. Instructor will walk the student through an entire flight evolution from pre-mission brief to pack up, demonstrating the conduct of a flight evolution. The objective of this event is to demonstrate and instruct the student on how to instruct a flight event. Given required references, checklists, ETF, and a functional applicable SUAS, the instructor will:
1. Introduce procedures for requesting frequencies, range, and airspace.
2. Introduce procedures for obtaining a Range OIC and Range Safety officer, per local SOP.
3. Introduce procedures for obtaining logistics support to conduct a flight event.
4. Introduce and demonstrate mission planning and briefing procedures.
5. Introduce range and airspace activation procedures.
6. Introduce and demonstrate how to set up a site for flight operations.
7. Introduce and demonstrate how to conduct flight operations according to the requirements for the event selected.
8. Introduce and demonstrate site tear down.
9. Introduce range and airspace turn in procedures.

**Performance Standard.** IAW the references, checklists, ETF and given a functional applicable SUAS:

1. Instructor will:
   a. Verbally ask questions to assess the SUAS IUT’s operational and employment knowledge of the system the IUT is to instruct.
   b. Ensure the IUT understands the procedures demonstrated by asking questions and having the IUT explain and or demonstrate the procedures.
2. Student will:
   a. Observe the instructor and ask question so as to ensure mastery of how to instruct a live flight event.
   b. Answer the instructor’s questions in detail and demonstrate mastery of SUAS operational and employment knowledge of the system the IUT is going to instruct.

**Initial System Condition.** System completely disassembled and packed in its cases.

**System Configuration.** Per scenario as briefed by the instructor.

**Prerequisite.** IUT-2800.

**Range Training Area.** Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

**References.**

2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. Local Unit SOPs.
4. Applicable Range SOP.
5. Applicable Operator’s Manuals.

Applicable SUAS. All.

IUT-2820 0.5 I,R L then L D IQT-I/SUAS-I/E

Task. Instruct a live flight event.

Scenario. SUAS-I/E shall select any MQT event in this T&R Manual to complete this event. The event shall be applicable to the SUAS for which the student is expected to conduct training.

Requirement. Student will demonstrate how to instruct an event from preparation to conduct to completing administrative requirements. The student shall conduct instruction through an entire flight evolution from pre-mission brief to pack up. The objective of this flight is for the student to be able to demonstrate and instruct SUAS T&R events / flight evolutions to SUAS-Os. Given the required references, checklists, and a functional SUAS, the student will conduct the event while the instructor plays the role of a student:

1. Prepare to instruct the event:
   a. Request frequencies, range, and airspace required to conduct event training.
   b. Obtain a Range OIC and Range Safety officer, as required.
   c. Obtain logistics support required to conduct the flight.
   d. Conduct mission planning and briefing.
   e. Reserve and activate range and airspace required.
   f. Ensure all training resources are properly staged and equipment is set up for training.
2. Conduct training on the event selected, ensuring the requirement and performance standard are met.
3. Instruct the student in a thorough manner so as to cover all requirements for the event selected.
   a. Ensure continuous, objective assessment of the student's progress during training.
   b. Ensure student completes the requirement and meets the performance standard.
   c. Identify student deficiencies in a timely manner and provide the student feedback.
   d. Answer student questions accurately.
4. Debrief the student and provide guidance for corrective action. Complete an ETF on the student.
5. Pack up training materials, turn-in range, and return airspace to controlling agency.

Performance Standard. Instruct a live flight event IAW the references, checklists, ETF, and given a functional SUAS. The student will demonstrate the ability to complete the requirement without assistance from the instructor. The student will:

1. Ensure training resources are obtained, and the site and equipment are setup properly.
2. Instruct the event in its entirety and ensure proper conduct and safety of flight; take corrective action when needed.
3. Complete all administrative actions to document training.

**Initial System Condition.** System completely disassembled and packed in its cases.

**System Configuration.** Per scenario as briefed by the instructor.

**Prerequisite.** IUT-2810.

**Range Training Area.** Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200 ft AGL. Tall obstacles may obstruct LOS during flight.

**References.**

2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. Local Unit SOPs.
4. Applicable Range SOP.
5. Applicable Operator's Manuals.

**Applicable SUAS.** All.

**Task.** SUAS-I culmination flight on RQ-11B DDL.

**Scenario.** SUAS-E will select any MQT event in this T&R Manual to complete this event. The event shall be applicable to the SUAS for which the student is expected to conduct training.

**Requirement.** SUAS-E will play the role of a student. This event may be flown by the student on the same day as the IUT-2820, but each event must be a completely separate event with the SUAS configured to meet the initial system condition and system configuration requirements below. The student will:

1. Demonstrate ability to prepare to instruct an event by obtaining required frequencies, range, and airspace.
2. Demonstrate understanding of procedures for coordination of Range OIC and Range Safety officer as required.
3. Demonstrate ability to coordinate logistics to support a flight event.
4. Activate range and airspace.
5. Set up a site and conduct a flight operation.
6. Demonstrate proper training of the event selected, ensuring the requirement and performance standard are met.
7. Instruct the event in its entirety and ensured proper conduct and safety of flight; take corrective action when needed.
8. Instruct the student on how to plan and brief the event.
9. Instruct the student in a thorough manner so as to cover all requirements for the event selected.
10. Tear down site, turn in range and airspace.
11. Complete all administrative actions to document student training.

**Performance Standard.** Complete SUAS-I culmination flight on RQ-11B DDL IAW the references, checklists, and ETF. The student will demonstrate the ability to complete all requirements without the assistance of the SUAS-E.

**Initial System Condition.** System completely disassembled and packed in its cases.

**System Configuration.** Per scenario as briefed by SUAS-E.

**Prerequisite.** IUT-2800, IUT-2810, IUT-2820.

**Range Training Area.** Minimum requirements:
1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

**References.**
2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. Local Unit SOPs.
4. Applicable Range SOP.

**Applicable SUAS.** RQ-11B DDL.

**IUT-2840** 0.4 I,R L then L (N) IQT-I/SUAS-E

**Task.** SUAS-I culmination flight on RQ-12A.

**Scenario.** SUAS-E will select any MQT event in this T&R Manual to complete this event. The event shall be applicable to the SUAS for which the student is expected to conduct training.

**Requirement.** SUAS-E will play the role of a student. This event may be flown by the student on the same day as the IUT-2820, but each event must be a completely separate event with the SUAS configured to meet the initial system condition and system configuration requirements below. The student will:

1. Demonstrate ability to prepare to instruct an event by obtaining required frequencies, range, and airspace.
2. Demonstrate understanding of procedures for coordination of Range OIC and Range Safety officer as required.
3. Demonstrate ability to coordinate logistics to support a flight event.
4. Activate range and airspace.
5. Set up a site and conduct a flight operation.
6. Demonstrate proper training of the event selected, ensuring the requirement and performance standard are met.
7. Instruct the event in its entirety and ensured proper conduct and safety of flight; take corrective action when needed.
8. Instruct the student on how to plan and brief the event.
9. Instruct the student in a thorough manner so as to cover all requirements for the event selected.
10. Tear down site, turn in range and airspace.
11. Complete all administrative actions to document student training.

Performance Standard. Complete SUAS-I culmination flight on RQ-12A IAW the references, checklists, and ETF. The student will demonstrate the ability to complete all requirements without the assistance of the SUAS-E.

Initial System Condition. System completely disassembled and packed in its cases.

System Configuration. Per scenario as briefed by SUAS-E.

Prerequisite. IUT-2800, IUT-2810, IUT-2820.

Range Training Area. Minimum requirements:
1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.
2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. Local Unit SOPs.
4. Applicable Range SOP.

Applicable SUAS. RQ-12A.

Task. SUAS-I culmination flight on RQ-20A.

Scenario. SUAS-E will select any MQT event in this T&R Manual to complete this event. The event shall be applicable to the SUAS for which the student is expected to conduct training.
Requirement. SUAS-E will play the role of a student. This event may be flown by the student on the same day as the IUT-2820, but each event must be a completely separate event with the SUAS configured to meet the initial system condition and system configuration requirements below. The student will:

1. Demonstrate ability to prepare to instruct an event by obtaining required frequencies, range, and airspace.
2. Demonstrate understanding of procedures for coordination of Range OIC and Range Safety officer as required.
3. Demonstrate ability to coordinate logistics to support a flight event.
4. Activate range and airspace.
5. Set up a site and conduct a flight operation.
6. Demonstrate proper training of the event selected, ensuring the requirement and performance standard are met.
7. Instruct the event in its entirety and ensured proper conduct and safety of flight; take corrective action when needed.
8. Instruct the student on how to plan and brief the event.
9. Instruct the student in a thorough manner so as to cover all requirements for the event selected.
10. Tear down site, turn in range and airspace.
11. Complete all administrative actions to document student training.

Performance Standard. Complete SUAS-I culmination flight on RQ-20A IAW the references, checklists, and ETF. The student will demonstrate the ability to complete all requirements without the assistance of the SUAS-E.

Initial System Condition. System completely disassembled and packed in its cases.

System Configuration. Per scenario as briefed by SUAS-E.

Prerequisite. IUT-2800, IUT-2810, IUT-2820.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. Local Unit SOPs.
4. Applicable Range SOP.
5. Applicable Operator’s Manuals.

Applicable SUAS. RQ-20A.
206. EVALUATOR UNDER TRAINING (EUT) (2850 - 2899).

1. General.
   a. Purpose. To provide designated and experienced SUAS-Is the additional skills necessary to conduct annual unit SUAS assessments, instruct and evaluate IUTs, and evaluate SUAS-O/Is regaining currency in order to sustain the unit SUAS program per this T&R Manual. Upon completion of the required training, an EUT may be considered for SUAS Evaluator (SUAS-E) designation in writing by the unit command officer.
   
   b. Prerequisite.
      (1) Shall be an E-5 or above.
      (2) Shall be SUAS-O designated and current in the SUAS for which the SUAS-E will serve as an evaluator.
      (3) Shall be designated and current as a SUAS-I in the SUAS being recommended to evaluate.
      (4) Shall have a minimum of six months experience as a SUAS-I in the SUAS for which the SUAS-E will serve as an evaluator. Months of experience can be waived in writing by the designating authority.
      (5) Shall be recommended by the Unit SUAS-PM, and approved in writing by the unit commanding officer to begin EUT.
      (6) Shall have read and thoroughly understand applicable references, checklists, SUAS Evaluation Guide, and evaluation training form.
   
   c. Admin Notes.
      (1) The SUAS-E is to conduct evaluation flights per this T&R Manual, and to serve as a SUAS-I when required.
      (2) The SUAS-E may train but shall evaluate IUTs, unit assigned SUAS-O/I/Es. A SUAS-E has technical supervision of the unit standardization program as specified by the unit commanding officer. The SUAS-E is the commander’s technical advisor on all SUAS standardization within the command and assists the commander to develop, implement, evaluate and manage the unit training program. Therefore, unit commanding officers shall select the most knowledgeable and experienced SUAS-I for SUAS-E training.
      (3) The steady production of well trained and experienced SUAS-Es is essential to the effectiveness and sustainment of overall unit’s SUAS program in its goal to provide well trained and highly skilled SUAS-Os to support the operational commander.
   
   d. Conduct. SUAS EUT events are flown as required.

2. EUT Training.
   a. Classroom. N/A.
b. **Flight.** 3 events, 1.2 hours.

**EUT-2850 0.4 I L (N) IQT-I/SUAS-E**

**Task.** Observe the conduct of a SUAS-E evaluation.

**Scenario.** Student will observe another SUAS-E developing a scenario and coordinating all aspects of the evaluation flight per the Evaluation Guide.

**Requirement.** Student will observe the SUAS-E conduct an evaluation. The SUAS-E will demonstrate to the student how to conduct an evaluation according to the SUAS Evaluation Guide, to include:

1. Discuss and review all aspects of the evaluation with the student, prior to commencing the evaluation.
2. During the evaluation, explain each evaluation step in a thorough manner so as to cover requirements for the event selected.
3. After the completion of the evaluation, discuss and question the student to ensure clear understanding of how to conduct an evaluation from preparing, conducting, and documenting the evaluation. Questions should include topics/contents like:
   a. Characteristics, capabilities, and limitations of the SUAS being used to evaluate.
   b. Contents of the applicable checklist.
   c. Evaluation Guide.
   d. Training Forms and administration.

**Performance Standard.** While observing the conduct of a SUAS-E evaluation, the student will:

1. Demonstrate knowledge and understanding of the evaluation process to include applicable training devices, checklists, SUAS Evaluation Guide, and training forms.
2. Demonstrate an understanding of how to conduct an evaluation by accurately answering SUAS-E questions and explaining the process thoroughly.

**Initial System Condition.** System completely disassembled and packed in its cases.

**System Configuration.** Per scenario as briefed by the SUAS-E.

**Prerequisite.** See paragraph 206.2.

**Range Training Area.** Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.
References.

2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. SUAS Evaluation Guide.
4. Local Unit SOPs.
5. Applicable Range SOP.
6. Applicable Operator’s Manuals.

Applicable SUAS. All.

EUT-2865 0.4 I,R L then L (N) IQT-I/SUAS-E

Task. SUAS-E culmination flight on RQ-11B DDL.

Scenario. The SUAS EUT will develop a scenario and coordinate all aspects of the flight per the SUAS Evaluation Guide.

Requirement. The SUAS-E will assume the role of the person being evaluated, the evaluee. The student will conduct an evaluation according to the SUAS Evaluation Guide.

1. Ensure the person to be evaluated is current in the RQ-11B DDL.
2. Ensure resources required to conduct the evaluation are available and the site and equipment are in a ready state.
3. Conduct the evaluation and debrief the evaluee.
4. Complete all administrative actions required to document the evaluation.

Performance Standard. IAW the references, checklists, SUAS Evaluation Guide, and ETF, the student will complete all requirements without assistance. Evaluation was conducted thoroughly, corrective action taken as required, and safety of flight maintained.

Initial System Condition. System completely disassembled and packed in its cases.

System Configuration. Per scenario as briefed by prospective SUAS-E.

Prerequisite. EUT-2850.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.
References.

2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. SUAS Evaluation Guide.
4. Local Unit SOPs.
5. Applicable Range SOP.
6. Applicable Operator’s Manuals.

Applicable SUAS. RQ-11B DDL.

EUT-2870 0.4 I,R L then L (N) IQT-I/SUAS-E

Task. SUAS-E culmination flight on RQ-12A.

Scenario. Student will develop a scenario and coordinate all aspects of the flight per the SUAS Evaluation Guide.

Requirement. The SUAS-E will assume the role of the person being evaluated, the evaluatee. The student will conduct an evaluation according to the SUAS Evaluation Guide.

1. Ensure the person to be evaluated is current on the RQ-12A.
2. Ensure resources required to conduct the evaluation are available and the site and equipment are in a ready state.
3. Conduct the evaluation and debrief the evaluatee.
4. Complete all administrative actions required to document the evaluation.

Performance Standard. IAW references, checklists, SUAS Evaluation Guide, and ETF, the student shall complete all requirements without assistance. The student will ensure the evaluation was conducted thoroughly, corrective action was taken as required, and safety of flight was maintained.

Initial System Condition. System completely disassembled and packed in its cases.

System Configuration. Per scenario as briefed by prospective SUAS-E.

Prerequisite. EUT-2850.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

1. NAVMC 3500.107 Group 1 Unmanned Aircraft Systems (UAS)
Training and Readiness Manual.

2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).

3. SUAS Evaluation Guide.

4. Local Unit SOPs.

5. Applicable Range SOP.


Applicable SUAS. RQ-12A.

EUT-2875 0.4 I,R L then L (N) IQT-I/SUAS-E

Task. SUAS-E culmination flight on RQ-20A.

Scenario. Student will develop a scenario and coordinate all aspects of the flight per the SUAS Evaluation Guide.

Requirement. The SUAS-E will assume the role of the person being evaluated, the evaluatee. The student will conduct an evaluation according to the SUAS Evaluation Guide.

1. Ensure the person to be evaluated is current on the RQ-20A.

2. Ensure resources required to conduct the evaluation are available and the site and equipment are in a ready state.

3. Conduct the evaluation and debrief the evaluatee.

4. Complete all administrative actions required to document the evaluation.

Performance Standard. IAW references, checklists, SUAS Evaluation Guide, and ETF, the student shall complete all requirements without assistance. The student will ensure the evaluation was conducted thoroughly, corrective action was taken as required, and safety of flight was maintained.

Initial System Condition. System completely disassembled and packed in its cases.

System Configuration. Per scenario as briefed by prospective SUAS-E.

Prerequisite. EUT-2850.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.

2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.


2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. SUAS Evaluation Guide.
4. Local Unit SOPs.
5. Applicable Range SOP.
6. Applicable Operator’s Manuals.

Applicable SUAS. RQ-20A.

207. DESIGNATIONS AND EVALUATIONS (2900 – 2999).

1. General.
   a. Purpose.
      
      (1) Designations. To designate SUAS personnel who have completed all training prerequisites and have demonstrated competency in the area being designated. The SUAS designation shall remain in effect as long as the SUAS remains current per Table 1-4.
      
      (2) Evaluations. To provide for annual unit SUAS evaluations and evaluations for non-current SUAS personnel regaining currency in order to sustain the unit program per this T&R Manual. A proficient level is defined as the ability to efficiently and skillfully conduct a flight and correct errors without hesitation or assistance.

      b. Admin Notes. All training requirements for designation must be completed prior to being considered for designation. The designation is not effective until the letter has been signed by the unit commanding officer, filed in the ITR, and applicable event codes have been logged in MCTIMS. For detailed information on designations refer to paragraph 117.6.

2. Designations. SUAS-O, SUAS-I, SUAS-E and SUAS-PM.

DESG-2910

   Task. SUAS-O Designation for RQ-11B DDL.

   Requirement. Complete the prerequisites listed below.


   Prerequisite.
   1. Complete the BUQ-1 Course online.
   2. Complete the RQ-11B DDL IQT Course.
   3. Be recommended by the Unit SUAS-PM.
   4. Be designated in writing by the unit commanding officer.

   Applicable SUAS. RQ-11B DDL.

DESG-2920

   Task. SUAS-O Designation for RQ-12A.
Enclosure (1) 2-100

Requirement. Complete the prerequisites listed below.


Prerequisite.

1. Complete the BUQ-1 Course online.
2. Complete RQ-12A IQT Course or the All Environment (AE) IQT Course.
3. Be recommended by the Unit SUAS-PM.
4. Be designated in writing by the unit commanding officer.

Applicable SUAS. RQ-12A.

DESG-2930

Task. SUAS-O Designation for RQ-20A.

Requirement. Complete the prerequisites listed below.


Prerequisite.

1. Complete the BUQ-1 Course online.
2. Complete RQ-20A IQT Course or the All Environment (AE) IQT Course.
3. Be recommended by the Unit SUAS-PM.
4. Be designated in writing by the unit commanding officer.

Applicable SUAS. RQ-20A.

DESG-2945

Task. SUAS-I Designation for RQ-11B DDL.

Requirement. Complete the prerequisites listed below.


Prerequisite.

2. Be recommended by the SUAS-E via the Unit SUAS-PM.
3. Be designated in writing by the unit commanding officer.

Applicable SUAS. RQ-11B DDL.

DESG-2950

Task. SUAS-I Designation for RQ-12A.

Requirement. Complete the prerequisites listed below.

Prerequisite.

2. Be recommended by the SUAS-E via the Unit SUAS-FM.
3. Be designated in writing by the unit commanding officer.

Applicable SUAS. RQ-12A.

DESG-2955

Task. SUAS-I Designation for RQ-20A.

Requirement. Complete the prerequisites listed below.


Prerequisite.

2. Be recommended by the SUAS-E via the Unit SUAS-FM.
3. Be designated in writing by the unit commanding officer.

Applicable SUAS. RQ-20A.

DESG-2965

Task. SUAS-E Designation for RQ-11B DDL.

Requirement. Complete the prerequisites listed below.


Prerequisite.

2. Be recommended by the Unit SUAS-FM.
3. Be designated in writing by the unit commanding officer.

Applicable SUAS. RQ-11B DDL.

DESG-2966

Task. SUAS-E Designation for RQ-12A.

Requirement. Complete the prerequisites listed below.

Prerequisite.

2. Be recommended by the Unit SUAS-PM.
3. Be designated in writing by the unit commanding officer.

Applicable SUAS. RQ-12A.

DESG-2967

Task. SUAS-E Designation for RQ-20A.

Requirement. Complete the prerequisites listed below.


Prerequisite.

1. Complete EUT-2850 and EUT-2875.
2. Be recommended by the Unit SUAS-PM.
3. Be designated in writing by the unit commanding officer.

Applicable SUAS. RQ-20A.

DESG-2975

Task. Unit SUAS-PM Designation.

Requirement. Be selected by the unit commanding officer.


Prerequisite.

1. Understand the roles and responsibilities of a Unit SUAS-PM.
2. Be designated in writing by the unit commanding officer.

Applicable SUAS. All.

3. SUAS Evaluation Requirements (EVAL).

   a. Purpose. To provide the SUAS Evaluator (SUAS-E) and SUAS personnel with a standardized approach to conduct a SUAS Evaluation.

   b. See paragraph 117.7 for explanation of the SUAS Evaluation process and paragraph 101.3 for location of supporting documents.

EVAL-2985 0.3 I,R L then L (N) SUAS-E

Task. SUAS Evaluation on RQ-11B DDL.

Scenario. Evaluate SUAS knowledge and ability to safely and effectively operate the SUAS. The evaluation flight shall be administered by a SUAS-E according to the SUAS Evaluation Guide.
In situations where a SUAS-O is unavailable to serve as MO, the SUAS-E may serve as the MO once the individual under evaluation completes the full system setup to include mission planning and upload.

**Requirement.** According to the SUAS Evaluation Guide, the student shall complete each of the below:

**Preflight**
1. Closed book examination with a minimum grade of 80%.
3. SUAS Evaluation discussion period.

**Flight**
1. Pre-mission planning / crew brief.
2. Identify system components.
3. Knowledge of hand controller buttons and display.
4. Assemble AV.
5. Set up GCS.
6. Perform preflight and pre-takeoff checklist.
7. Launch AV.
8. Navigate to objective area.
11. Perform hand-off procedures*
12. Perform secure data link/password procedures*
13. Navigate to recovery area.
14. Land and recover AV.
15. Perform post-flight checks on AV.
16. Disassemble and store UAS.
17. Operator level maintenance knowledge.
18. Overall situational awareness during flight.
19. Airspace knowledge, awareness, and procedures.

Note: *Items are not required, but may be performed as part of the mission scenario.

**Performance Standard.** IAW the references, checklists, SUAS Evaluation Guide, and ETF, the student shall complete all requirement items with a passing grade of "Qualified".

**Initial System Condition.** System completely disassembled and packed in its cases.

**System Configuration.** Per scenario as briefed by SUAS-E.

**Prerequisite.**
1. Be current per Table 1-4.
2. Be designated in writing by the unit commanding officer.

**Range Training Area.** Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. SUAS Evaluation Guide.
4. Local Unit SOPs.
5. Applicable Range SOP.
6. Applicable System Manuals.

Applicable SUAS. RQ-11B DDL.

EVAL-2990 0.3 I,R L then L (N) SUAS-E

Task. SUAS Evaluation on RQ-12A.

Scenario. Evaluate SUAS knowledge and ability to safely and effectively operate the SUAS. The evaluation flight shall be administered by a SUAS-E according to the SUAS Evaluation Guide. In situations where a SUAS-O is unavailable to serve as MO, the SUAS-E may serve as the MO once the individual under evaluation completes the full system setup to include mission planning and upload.

Requirement. According to the SUAS Evaluation Guide, the student shall complete each of the below:

Preflight
1. Closed book examination with a minimum grade of 80%.
3. SUAS Evaluation discussion period.

Flight
1. Pre-mission planning / crew brief.
2. Identify system components.
3. Knowledge of hand controller buttons and display.
4. Assemble AV.
5. Set up GCS.
6. Perform preflight and pre-takeoff checklist.
7. Launch AV.
8. Navigate to objective area.
11. Perform hand-off procedures*
12. Perform secure data link/password procedures*
13. Navigate to recovery area.
14. Land and recover AV.
15. Perform post-flight checks on AV.
16. Disassemble and store UAS.
17. Operator level maintenance knowledge.
18. Overall situational awareness during flight.
19. Airspace knowledge, awareness, and procedures.

Note: *Items are not required, but may be performed as part of the mission scenario.

Performance Standard. IAW the references, checklists, SUAS Evaluation Guide, and ETF, the student shall complete all requirement items with a passing grade of "Qualified".

Initial System Condition. System completely disassembled and packed in its cases.

System Configuration. Per scenario as briefed by SUAS-E.

Prerequisite.
1. Be current per Table 1-4.
2. Be designated in writing by the unit commanding officer.

Range Training Area. Minimum requirements:

1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.

2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. SUAS Evaluation Guide.
4. Local Unit SOPs.
5. Applicable Range SOP.
6. Applicable System Manuals.

Applicable SUAS. RQ-12A.

EVAL-2995 0.3 I,R L then L (N) SUAS-E

Task. SUAS Evaluation on RQ-20A.

Scenario. Evaluate SUAS knowledge and ability to safely and effectively operate the SUAS. The evaluation flight shall be administered by a SUAS-E according to the SUAS Evaluation Guide. In situations where a SUAS-O is unavailable to serve as MO, the SUAS-E may serve as the MO once the individual under evaluation completes the full system setup to include mission planning and upload.

Requirement. According to the SUAS Evaluation Guide, the student shall complete each of the below:
Preflight
1. Closed book examination with a minimum grade of 80%.
3. SUAS Evaluation discussion period.

Flight
1. Pre-mission planning / crew brief.
2. Identify system components.
3. Knowledge of hand controller buttons and display.
4. Assemble AV.
5. Set up GCS.
6. Perform preflight and pre-takeoff checklist.
7. Launch AV.
8. Navigate to objective area.
11. Perform hand-off procedures*
12. Perform secure data link/password procedures*
13. Navigate to recovery area.
14. Land and recover AV.
15. Perform post-flight checks on AV.
16. Disassemble and store UAS.
17. Operator level maintenance knowledge.
18. Overall situational awareness during flight.
19. Airspace knowledge, awareness, and procedures.

Note: *Items are not required, but may be performed as part of the mission scenario.

Performance Standard. IAW the references, checklists, SUAS Evaluation Guide, and ETF, the student shall complete all requirement items with a passing grade of “Qualified”.

Initial System Condition. System completely disassembled and packed in its cases.

System Configuration. Per scenario as briefed by SUAS-E.

Prerequisite.
1. Be current per Table 1-4.
2. Be designated in writing by the unit commanding officer.

Range Training Area. Minimum requirements:
1. Launch/Landing Zone (LZ) dimensions: Cleared surface area of at least 200m by 200m to allow for AV launch and landing.
2. Airspace dimensions: A minimum of 2km by 2km or a 2km radius about a point, with a vertical component of surface to 1200ft AGL. Tall obstacles may obstruct LOS during flight.

References.
2. OPNAVINST 3710.7U (Chapter 14) NATOPS General Flight and Operating Instructions (UAS Policies and Operations).
3. SUAS Evaluation Guide.
4. Local Unit SOPs.
5. Applicable Range SOP.
6. Applicable System Manuals.

Applicable SUAS. RQ-20A

208. SUAS SYLLABUS SUMMARY. Table 2-4 summarizes the training syllabus outlined in this T&R Manual.

Table 2-4. SUAS Syllabus Summary.

<table>
<thead>
<tr>
<th>STAGE</th>
<th>EVENT CODES</th>
<th>EVENT TITLE</th>
<th>TOTAL EVENTS</th>
<th>FLT HRS</th>
<th>POI TYPE</th>
<th>DEVICE (IQT)</th>
<th>TIME OF DAY</th>
<th>INSTRUCTOR REQUIRED</th>
<th>PREREQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ11</td>
<td>1200</td>
<td>Conduct heads up/head down flight</td>
<td>0.6</td>
<td>I,R</td>
<td>L</td>
<td>L</td>
<td>D</td>
<td>IQT-I SUAS-I</td>
<td>BUQ-I Course</td>
</tr>
<tr>
<td>RQ11</td>
<td>1210</td>
<td>Manually edit waypoints and reroute AV, LL flight and LL AUTOLAND</td>
<td>0.6</td>
<td>I,R</td>
<td>L</td>
<td>L</td>
<td>D</td>
<td>IQT-I SUAS-I</td>
<td>1200</td>
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<tr>
<td>RQ11</td>
<td>1220</td>
<td>Conduct target acquisition using the RQ-11B DDL</td>
<td>0.7</td>
<td>I,R</td>
<td>L</td>
<td>L/S</td>
<td>(N)</td>
<td>IQT-I SUAS-I</td>
<td>1210. 1250 only when conducted at night</td>
</tr>
<tr>
<td>RQ11</td>
<td>1230</td>
<td>Conduct silent (covert) target area surveillance</td>
<td>0.5</td>
<td>I</td>
<td>L</td>
<td>NA</td>
<td>(N)</td>
<td>IQT-I</td>
<td>1220. 1250 only when conducted at night</td>
</tr>
<tr>
<td>RQ11</td>
<td>1240</td>
<td>Conduct day mobile operations from a moving vehicle</td>
<td>0.6</td>
<td>I</td>
<td>L</td>
<td>NA</td>
<td>D</td>
<td>IQT-I</td>
<td>1210</td>
</tr>
<tr>
<td>RQ11</td>
<td>1250</td>
<td>Introduction to basic night flight skills</td>
<td>0.3</td>
<td>I</td>
<td>L</td>
<td>NA</td>
<td>N</td>
<td>IQT-I</td>
<td>1210, 1240</td>
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<tr>
<td>RQ11</td>
<td>1260</td>
<td>Introduction to advanced night flight skills</td>
<td>0.7</td>
<td>I</td>
<td>L</td>
<td>NA</td>
<td>N</td>
<td>IQT-I</td>
<td>1250</td>
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## EVENT CODES

<table>
<thead>
<tr>
<th>STAGE</th>
<th>EVENT CODES</th>
<th>EVENT TITLE</th>
<th>TOTAL EVENTS</th>
<th>FLT HRS</th>
<th>POI TYPE</th>
<th>DEVICE (IQT)</th>
<th>DEVICE (REFRESH/CURRENCY)</th>
<th>TIME OF DAY</th>
<th>INSTRUCTOR REQUIRED</th>
<th>PREREQ</th>
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<tbody>
<tr>
<td>RQ11</td>
<td>1270</td>
<td>Conduct AV hand-offs during point reconnaissance night mobile operations</td>
<td>0.5</td>
<td>I,R</td>
<td>L</td>
<td>L/S</td>
<td>(N)</td>
<td>IQT-I SUAS-I</td>
<td>1240. 1250 only when conducted at night</td>
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<tr>
<td>RQ11</td>
<td>1280</td>
<td>Operate RQ-11B using an Untrained Assistant</td>
<td>0.5</td>
<td>I</td>
<td>L</td>
<td>NA</td>
<td>D</td>
<td>IQT-I</td>
<td>1210</td>
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<td>RQ11</td>
<td>1290</td>
<td>Culmination Flight for RQ-11B DDL</td>
<td>0.6</td>
<td>I</td>
<td>L</td>
<td>NA</td>
<td>(N)</td>
<td>IQT-I</td>
<td>1200, 1210, 1220, 1230, 1240, 1250, 1260, 1270, 1280</td>
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**TOTALS**: 10 | 5.6

<table>
<thead>
<tr>
<th>RQ-12A WASP AE DDL IQT</th>
<th>CORE SKILL INTRODUCTION (1000)</th>
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<tbody>
<tr>
<td>RQ12 1300</td>
<td>Conduct heads up/heads down flight</td>
</tr>
<tr>
<td>RQ12 1310</td>
<td>Manually edit waypoints, LL Flight, Manual Landings</td>
</tr>
<tr>
<td>RQ12 1320</td>
<td>Conduct In Depth Familiarization with all Flight Modes</td>
</tr>
<tr>
<td>RQ12 1330</td>
<td>Conduct Target Acquisition using RQ-12A</td>
</tr>
<tr>
<td>RQ12 1340</td>
<td>Conduct Day Mobile Operations</td>
</tr>
<tr>
<td>RQ12 1350</td>
<td>Introduction to basic Night Flight Skills</td>
</tr>
<tr>
<td>RQ12 1360</td>
<td>Introduction to advanced Night Flight Skills</td>
</tr>
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<td>RQ12</td>
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<td>RQ12</td>
<td>1395</td>
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**TOTALS:** 11 events, 4.6 FIT HRS

**RQ-20A PUMA AE DDL IQT**

**CORE SKILL INTRODUCTION (1000)**

<table>
<thead>
<tr>
<th>RQ20</th>
<th>1400</th>
<th>Conduct heads up/head down flight</th>
<th></th>
<th>0.5</th>
<th>I,R</th>
<th>L</th>
<th>L</th>
<th>D</th>
<th>IQT-I</th>
<th>SUAS-I BUQ-I Course</th>
</tr>
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<tbody>
<tr>
<td>RQ20</td>
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**TOTALS**  11  5.1

**ALL ENVIRONMENT (AE) IQT**

<p>| AE 1500 | Conduct heads up/heads down flight (RQ-20A) | 0.6 | I | L | NA | D | IQT-I | BUQ-I Course |
| AE 1510 | Conduct heads up/heads down flight (RQ-12A) | 0.5 | I | L | NA | D | IQT-I | BUQ-I Course |
| AE 1520 | Manually edit waypoints, LL Flight, Manual Landings | 0.6 | I | L | NA | (N) | IQT-I | 1500 or 1510. 1560 only when conducted at night |
| AE 1530 | Conduct In Depth Familiarization with all Flight Modes | 0.5 | I | L | NA | (N) | IQT-I | 1520. 1560 only when conducted at night |
| AE 1540 | Conduct Target Acquisition using SUAS | 0.5 | I | L | NA | (N) | IQT-I | 1520. 1560 only when conducted at night |
| AE 1550 | Conduct Day Mobile Operations | 0.6 | I | L | NA | D | IQT-I | 1520 |
| AE 1560 | Introduction to basic Night Flight Skills | 0.3 | I | L | NA | N | IQT-I | 1520,1550 |
| AE 1570 | Introduction to advanced Night Flight Skills | 0.7 | I | L | NA | N | IQT-I | 1560 |
| AE 1580 | Conduct AV handoffs during Recon/Mobile Operations | 0.5 | I | L | L | (N) | IQT-I | 1550. 1560 only when conducted at night |
| AE 1590 | Operate SUAS using Untrained Assistant | 0.5 | I | L | NA | D | IQT-I | 1520 |</p>
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**SUAS MQT**

| MQT 2010 | Introduction to local area flying operations | 2.0 | I, R | NA | NA | NA | SUAS-I | Complete IQT and be designated as a SUAS-O on SUAS in which being trained |
| MQT 2020 | Refine reconnaissance techniques in a tactical scenario | 0.5 | I | L | NA | (N) | SUAS-I | 2010 |
| MQT 2030 | Conduct Overwatch and security operations in support of a fixed position | 0.5 | I | L | NA | (N) | SUAS-I | 2010 |
| MQT 2040 | Track mobile targets | 0.5 | I | L | NA | (N) | SUAS-I | 2010 |
| MQT 2050 | Overwatch of friendly mobile operations | 0.5 | I | L | NA | (N) | SUAS-I | 2010 |
| MQT 2060 | Use SUAS to support the terminal control of fires (surface, naval gunfire, aviation) | 0.5 | I | L | NA | D | SUAS-I | 2010 |

**TOTALS**

**6** | **4.5** |
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**DESIGNATION (DESG) AND REQUIREMENTS (EVAL) (2900–2999)**

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DESG

2920
SUAS-O Designation for RQ-12A

1. Complete RQ-11B IQT Course
2. Be recommended by Unit SUAS-PM
3. Be designated in writing by unit CO

2930
SUAS-O Designation for RQ-20A

1. Complete RQ-11B IQT Course
2. Be recommended by Unit SUAS-PM
3. Be designated in writing by unit CO

2945
SUAS-I Designation for RQ-11B DDL

1. Complete IUT 2800, 2810, 2820, 2835.
2. Be recommended by SUAS-E via Unit SUAS-PM
3. Be designated in writing by unit CO

2950
SUAS-I Designation for RQ-12A

1. Complete IUT 2800, 2810, 2820, 2840.
2. Be recommended by SUAS-E via Unit SUAS-PM
3. Be designated in writing by unit CO
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