*TC 3-04.61 (TC 1-600)

Unmanned Aircraft System Commander's Guide and Aircrew Training Manual

January 2014

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Headquarters Department of the Army

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Training Circular
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Headquarters
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UNMANNED AIRCRAFT SYSTEM COMMANDER'S GUIDE AND AIRCREW TRAINING MANUAL

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***This publication supersedes TC 1-600, dated 23 August 2007.**

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Preface

Training circular (TC) 3-04.61 standardizes aircrew training programs (ATPs) and flight evaluation procedures by providing specific guidelines for executing unmanned aircraft system (UAS) crewmember training. It is based on the training principles outlined at the Army Training Network, located on the web at: https://atn.army.mil/index.aspx, under the Training Management tab, Army Doctrine Publication (ADP) 7-0, or current Army Training Doctrine. It establishes crewmember qualification, refresher, mission, and continuation training and evaluation requirements. This manual applies to the multi-mission unmanned (MQ-5) and reconnaissance unmanned (RQ-7) crewmembers and their commanders.

This is a stand-alone document. All the requirements of Army regulations (ARs) must be met. Implementing this manual conforms to AR 95-23. This manual, in conjunction with other Army publications, will help UAS commanders at all levels, develop a comprehensive ATP. By using the aircrew training manual (ATM), commanders ensure that individual and crew proficiency match their units' mission, and unmanned aircraft crewmembers (UACs) routinely employ standard techniques and procedures.

UACs will use this manual as a "how to" source for performing crewmember duties. This manual provides performance standards and evaluation guidelines so that crewmembers know the level of performance expected. Each task has a description that describes how it should be done to meet the standard.

Standardization operators (SOs), instructor operators (IOs), and unit trainers (UTs) will use this manual and AR 95-23 as the primary tools to assist the commander in developing and implementing an effective ATP. TC 3-04.11 does not apply to the UAS ATP.

This Training Circular applies to the Active Army, the Army National Guard (ARNG), the Army National Guard of the United States (ARNGUS), and the United States Army Reserve (USAR) unless otherwise stated.

The proponent of this publication is United States (U.S.) Army Training and Doctrine Command (TRADOC). Send comments and recommendations on Department of the Army (DA) Form 2028 (Recommended Changes to Publications and Blank Forms) or automated link: http://www.apd.army.mil through the unit commander to: Commander, United States Army Aviation Center of Excellence (USAACE), ATTN: ATZQ-TDT-F, Building 4507 Andrews Ave., Fort Rucker, Alabama 36362-5000. E-mail questions and/or recommended changes to: usarmy.rucker.avncoe.mbx.atzq-tdt-f@mail.mil or online at https://www.us.army.mil/suite/page/655026.

This publication has been reviewed for operations security considerations.

Chapter 1

Introduction

The combat unit training objective is to conduct combined arms training (CAT). Therein, effective individual and crew training programs form the foundation for an UAS unit training program. Once the unit establishes individual and crew training programs, it must integrate them into an effective collective training program. As one of the commander's primary training documents, TC 3-04.61 links individual and unit collective tasks. The commander also uses ADP 7-0 to link the unmanned aircraft (UA) operator's manuals, technical manuals (TMs), ATMs, and individual training programs to the collective training program.

TRAINING

1-1. Combat operations have proven that Army UAS crews are full-fledged members of the combined arms team. Throughout air movements, air assault, reconnaissance, and UAS operations, Army aviation provides land component commander speed, agility, flexibility, and lethality often under diverse and difficult conditions throughout the fight.

1-2. UAS units and aircrews are continually faced with operational challenges requiring individual, crew, and unit proficiencies to operate in a very complex operating environment and sometimes unfamiliar fighting conditions. It is not uncommon for an aircrew to perform the duties normally associated with higher leaders in air-ground integrated operations. The requirement to train as we fight is highlighted by these operational realities.

ARMY DOCTRINE PUBLICATION 7-0 IMPLICATIONS

1-3. The principles of training established in ADP 7-0, applies to all units, including UAS units.

1-4. Train to sustain proficiency, or in other words, sustain proficiency within the band of excellence applies to all units. UAS commanders must include UA maintenance in their band of excellence. The commander’s challenge comes with the often competing demands of keeping maintenance within the band while sustaining training excellence. Individual, crew, and collective proficiency increases during surges of UAS training, such as field training exercises (FTXs), Army training and evaluation program (ARTEP) assessments and combat training center (CTC) rotations. However, during these same periods of high training intensity, UA maintenance operational readiness rates will gradually decrease. Conversely, as training intensity slows, UA maintenance operational readiness rate should increase.

1-5. Well-trained units with well-maintained equipment are safe units. One way to ensure that both training and UA maintenance remain within the band of excellence is to ensure that UAS units properly plan, resource, and execute necessary recovery periods. This recovery period must be captured on the short and near-term training plans. Recovery time will allow units to focus on attaining needed proficiency in individual and crew skills, while simultaneously concentrating on UA maintenance. During periods of intense training, UA accumulate deferred maintenance deficiencies. Therefore, the maintenance posture may be low within the band of excellence, if not below the band of excellence at the conclusion of a major training exercise or period of sustained gunnery training. The commander’s goal is to coordinate training and maintenance so that both remain within the band of excellence. If one or the other falls below the band, commanders must adjust their training/maintenance program to ensure the low component quickly returns to within the band of excellence.

1-6. UAS units must have a green training cycle to sustain proficiency. Additionally, during their green cycles, UAS units will need external resources from other units to train. UAS units require CAT with elements such as an infantry platoon or artillery section. This should be a training event resource and not part of a separate tasking for mission support from the infantry or artillery. Unit training cycles should be used in conjunction with supported and supporting units to accomplish collective training of their mission-essential task list (METL).

STANDARDIZATION PROGRAM

1-7. The fielding of UA, such as the MQ-5B and RQ-7B, while exponentially increasing the warfighting capabilities of UAS forces, creates diverse operational and training challenges. These increased capabilities require individual and crew proficiencies in very complex mission equipment packages, sometimes compounded by harsh flight environments. An ATP that focuses on operator currency rather than proficiency will no longer satisfy UAS readiness requirements, and will be a detriment to training and safety. The objectives of a standardization program are the improvement and sustainment of proficiency and readiness among Soldiers and units throughout the Army. Standardization is accomplished through the universal application of approved practices, procedures, and standards.

1-8. The UAS commander is responsible for the unit's standardization program. The UAS commander must include standardization throughout the overall training strategy. The commander's primary standardization staff members include subordinate commanders, unit standardization officers, unit tactical operations officers, master gunners and standardization instructor operators. Standardization must be implemented in all training tasks. Implementers must remember that standardization is not an end in itself. Standardization enables units of any size—crews, multiple-UA formations, teams, squads, companies, or brigades—to readily function together to accomplish the warfighting combined arms mission. (Army Standardization Policy [AR -34-4] describes the Army standardization program in further detail.)

AVIATION TRAINING REFERENCES

1-9. Aviation has a large library of training documents. For UAS units, this starts in the regulatory arena with AR 95-23 and works down to the individual/crew level with the ATM and the UA appendices of the ATM. The UAS gunnery program is addressed in FM 3-04.145. The associated collective tasks are in the unit tasks lists (UTLs) and the 15-series Soldier training publications. A new addition to the UAS training tool box is aircrew coordination training–enhanced (ACT-E). ACT-E is an interactive multimedia product that allows commanders to embed their aviation training and safety philosophy into each operator and ensure they understand the aspects of risk management.

1-10. Integration of lessons learned from training and ongoing operations provides a critical tool that allows the Army to enhance training based on current trends and the operational environment. Successful integration of lessons learned depends on two things: the submission of observations, insights, and lessons from the field, and the consideration of lessons learned when developing unit training strategies. The aviation toolbox uses https://www.usaace.army.smil.mil as the means to accomplish both processes.

RESPONSIBILITIES

COMMANDER

1-11. Commander. In accordance with (IAW) ADP 7-0, the commander—

- Is the primary training manager and trainer for the unit.
- Is responsible for safety programs, standardization programs, and develops an effective ATP.
- Trains based on the unit’s wartime mission; maintains standards, and evaluates proficiency.
- Provides the required resources and develops and executes training plans that result in proficient individuals, leaders, and units.
- Integrates UAS into the entire spectrum of operations in the units' operational environment.

- Have subordinate leaders (officers and noncommissioned officers [NCOs]), instructor operators, and standardization officers/NCOs to help plan and prepare UAS training.

Note. Commanders must understand and use subordinate leaders to support the execution of the standardization program—in synchronization with the ATP.

BRIGADE COMMANDER

1-12. The brigade commander is responsible for the following: planning, integrating, and providing guidance and resources for battalion training (live and virtual training), which includes—

- Training battalion commanders and evaluating companies.
- Brigade safety and standardization programs and the ATP.
- Supporting the division or corps commander's combined arms training goals and wartime mission essential tasks.
- Integrating UAS into the entire spectrum of operations in the brigade, division, or corps battle space.
- Training subordinate leaders such as operations staff officers (S-3s), standardization instructor operators, IOs, aircraft commanders (ACs), crew chiefs (CEs), ground crewmembers authorized to conduct maintenance operational checks (MOCs), and UTs to implement the ATP.

STATE ARMY AVIATION OFFICER

1-13. The State Army Aviation Officer (SAAO) serves as the principal UAS staff officer to their respective Adjutant General in all matters concerning ARNG UAS. The SAAO is also responsible for the following:

- Establishing and overseeing (supervising) the state/territory ARNG UAS program, including UAS safety, maintenance, standardization, operations, and training.
- Providing guidance on UAS matters to all UAS and unit/facility commanders.
- Coordinating use of ARNG UAS assets by the various organizations within the state/territory.
- Supervising (as the full-time support SAAO) Army aviation support facility, Army aviation flight activity (AAFA), limited Army aviation support facility (LAASF), and Army aviation operating facility supervisors within the state/territory.
- Serves as Chair of the State/Territory Standardization Committee.

BATTALION COMMANDER

1-14. Battalion commanders are responsible for the following:

- Executing the ATP as the primary training manager for the battalion.
- Having administrative authority IAW AR 95-23.
- Training company commanders and evaluating platoons.
- Training and integrating the company into combined arms training.
- Participating in the subordinate company’s training development process and ensure they utilize the live and virtual resources available to maximize their effectiveness.

Note. Battalion commanders must understand and use subordinate leaders to support the execution of the standardization program in synchronization with the ATP.

OPERATIONS STAFF OFFICER

1-15. The operations staff officer (S-3) is responsible for the following:

- Planning operations and conducting training as the commander's principal staff officer.
- Determining and allocating training and mission resources, planning and conducting training inspections, and compiling training records.

- Identifying training requirements to prepare and conduct training programs.
- Executing the ATP as primary assistant to the commander.

Note. The platoon leaders, IOs/SOs, UTs, and ACs assist the commander in ensuring crews are properly trained.

COMPANY/TROOP COMMANDER

1-16. The company/troop commander is responsible for the following:

- Integrating the company/troop into the combined arms fight and the management of the company's ATP.
- Acting as the administrative authority IAW AR 95-23 as commander of the ATP.
- Integrating the platoons and executing company training.
- Training platoon leaders.
- Ensuring that Soldiers and aircrews are properly trained at the individual, crew, and unit collective levels.

PLATOON LEADER

1-17. The platoon leader is responsible for the following:

- Training the crew. (Unit IOs assist the platoon leaders in ensuring crews are properly trained.)
- Ensuring their aircrews are proficient in tactics, techniques, and procedures (TTP) outlined in the appropriate FMs and ATM appendix.
- Developing proficiency in the system and to attain mission coordinator (MC) status.
- Gaining the basic understanding of aviation maintenance management and maintenance training requirements.
- Assisting the commander in developing and implementing all unit safety programs.

Note. Platoon leaders are at a critical point in their aviation careers. Their challenge is to become technically and tactically proficient aviation leaders.

Note. Platoon sergeants play a key role in the professional development of a platoon leader's aviation maintenance expertise.

OPERATIONS TECHNICIAN

1-18. The UAS operations technician is responsible for the following:

- Developing UAS requirements and identifying appropriate configuration to satisfy mission requirements.
- Coordinating airspace and frequency requirements and acts as the Army liaison for all UAS missions.
- Articulating requirements for UAS capabilities and integrating UAS into collection strategies.
- Assisting All-Source and Imagery analysts with analysis of UAS data to satisfy priority intelligence requirements.
- Providing information to cue other collection assets and assist targeting by coordination re-tasking of the UAS.
- Supervising UAS standardization and safety programs IAW all applicable guidance.
- Acting as advisor and subject-matter expert for all UAS-related issues.

SAFETY OFFICER

1-19. The safety officers are responsible for assisting the commander in developing and implementing all unit safety programs.

STANDARDIZATION INSTRUCTOR OPERATOR

1-20. The brigade/battalion/company standardization instructor operator assists the commander in developing and executing the unit ATP. SOs, IOs, and CEs are responsible for the following:

- Providing quality control for the ATP via the commander's standardization program.
- Serving as the primary technical and tactical experts for the standardization program.
- Providing expertise on unit individual, crew, and collective training to the commander.

Note. SOs and IOs will be ACs at all levels (platoon SO/battalion SO).

AIRCRAFT COMMANDER

1-21. The aircraft commander (AC) is responsible for the following:

- The unit's first level trainer.
- Proficiency operating the UA and all aspects of the unit METL.
- Safe operation of the UA, the safety of all crewmembers, and the conduct of all operational and training aspects of a specific mission.
- Performance of maintenance functions; must be able to objectively access and document the UA performance according to appropriate maintenance standards.

Note. The skills required to train fellow operators and to be an effective AC are gained by actively participating in training events, mentoring by UAS leaders, and seeking professional development. A critical aspect of a unit's AC program is to ensure that the ACs chosen—regardless of rank or position—have the maturity required to execute AC duties. (See chapter 10 for recommended AC selection and designation program.)

UNIT TRAINER

1-22. The unit trainer (UT) is responsible for the following:

- Instructing in areas of specialized training (for example light amplification by stimulated emission of radiation [laser], weapons, payload, and airspace).
- Assisting in unit training programs and in achieving established training goals.
- Being AC qualified.

UNMANNED CREWMEMBER

1-23. The unmanned crewmembers (UACs) perform duties that are directly related to the in-flight mission of the UA. The UAC is responsible for the following:

- Preparing, launching, recovering, and/or maintaining the UAS.
- Controlling the flight of a UAS or the operation of its mission equipment.
- Remaining current IAW the appropriate ATM appendix in this ATM.
- Taking advantage of every opportunity to become and remain tactically and technically proficient crewmember, including executing his or her individually tailored self-development plan to meet designated goals. Individual operators should have the ultimate goal of achieving AC status.

CREW CHIEF

1-24. The crew chief (CE) is responsible for the following:

- Preparing, launching, recovering, and/or maintaining the UAS.
- Coordinating actions of all ground crewmembers and will coordinate all actions as directed by the AC.
- Taking advantage of every opportunity to become and remain tactically and technically proficient crewmember, including executing his or her individually tailored self-development plan to meet designated goals.
- Training and evaluating CEs and other ground crewmembers.
- Assisting the SO with supervision and management of the ground crewmember training program.

GROUND CREWMEMBER

1-25. The ground crewmember (technical inspector, avionics technician, and so forth) performs duties that directly support the in-flight mission of the UA but are not essential to the operation of the UA. If the ground crewmember is performing CE duties, he or she will be fully integrated into the ATP and must meet all training requirements applicable to CEs.

MAINTENANCE CHIEF

1-26. The maintenance chief helps the commander develop and manage the unit's maintenance program. The maintenance chief is responsible for the following:

- Assisting the commander as the primary advisor for all maintenance programs.
- Maintaining a high level of UA proficiency as a CE.
- Scheduling UA using the maintenance flow chart to ensure mission completion and the most efficient use of maintenance assets.

Note. Maintenance chiefs will be CEs (see paragraph 1-24).

MISSION COORDINATOR

1-27. The mission coordinator (MC) is responsible for the following:

- Coordinating all external needs as well as crew coordination.
- Maintaining control overall operations from pre-mission through post-mission, to include disseminating information.

FLIGHT SURGEON/AVIATION PHYSICIAN ASSISTANT

1-28. The flight surgeon/aviation physician assistant (FS/APA) is responsible for the following:

- Acting as the Commander's primary advisor on the health and welfare of unit members and their families.
- Acting as the Commander's primary trainer/evaluator for all annual aero-medical requirements.
- Monitoring the training environment to ensure the mental and physical well-being of unit crewmembers. Also, the FS/APA provides medical training, support, and advice to crewmembers and commanders.
- Directing access to commanders at all levels and participates in all major inspections. The FS/APA will maintain results and files of these inspections.
- Participating as a member of all aviation safety and standardization councils.

MASTER GUNNER

1-29. The commander will designate a master gunner. The master gunner is the commander's gunnery technical advisor who helps the commander and the staff plan, develop, and conduct gunnery training. The master gunner's primary duty is to help maintain the continuity and focus of the commander's gunnery training program. The master gunner duties include—

- Organizes range firing exercises.
- Sets up range firing exercises:
  - Coordinates target arrays.
  - Coordinates exposure times for targets.
  - Coordinates maneuver box verification.
  - Coordinates setup of all ranges to ensure they meet the standards in IAW FM 3-04.140.
- Prepares a surface danger area diagram and range overlay, if required:
  - Prepares scaled ranges or rehearsal areas, if required.
  - Ensures proper conduct of range firing exercises.
  - Supervises the crews to ensure proper pre-gunnery checks are completed.
  - Conducts remedial training on site, as needed.
  - Ensures that a standard aircrew evaluator program is implemented.
  - Ensures standardization of all gunnery related evaluations.

INDIVIDUAL, CREW, AND COLLECTIVE TRAINING

1-30. To design and manage an effective ATP, the commander must analyze individual, crew, and collective training.

Note. This ATM describes training requirements for crewmembers. It will be used with AR 95-23 and other applicable publications. The ATM and the unit's METL are used by the commander to combine individual training with crew training.

INDIVIDUAL TRAINING

1-31. Individual training, the building block to crew training, is the responsibility of the aviation platoon leader, with assistance from the unit IO. The operator's manual and the ATM guide the platoon leader and the IO in training the individual to mission-ready standards. UACs must ensure that they satisfy all ATP requirements.

CREW TRAINING

1-32. Crew training is the first step in developing a unit collective training plan. It is the building block for team training. The platoon leader ensures that the crew is proficient in ATM tasks and in the tactics, techniques, and procedures outlined in other appropriate publications.

1-33. The commander, subordinate leaders, and trainers must implement the crew coordination program into crew training. Crew coordination is critical training—it improves mission performance and enhances safety. To effectively employ modern Army UASs with their complex missions, more than one crewmember must perform crew tasks.

COLLECTIVE TRAINING

1-34. Collective training encompasses all training, including combined arms operations. The unit's METL links crew and collective training. These tasks are collective tasks that support the unit's wartime mission. Along with this ATM, ADP 7-0 helps the commander link individual and crew training with the tasks required to execute the wartime mission. The mission training plan (MTP), applicable FMs, and unit

standing operating procedures (SOPs) establish the tasks to be performed, the conditions under which the tasks are performed, and the standard that the unit must maintain for unit readiness.

COMBINED ARMS TRAINING

1-35. Combined arms training is pinnacle in the preparation of combat power. It is collective training associated with mission command, movement and maneuver, intelligence, fires, sustainment, and protection. Combined arms training integrates all associated combat systems and applies that capability on the battlefield at the critical place and time. Combined arms training is normally executed at the battalion task force level and above. However, collective training at any level is considered combined arms training when it is conducted with another combat arm. Some examples of collective training are—

- Training to support brigade or division exercise evaluations.
- CTC rotations, deployment exercises.
- Combined arms live-fire exercises (CALFEX).
- Brigade command post exercises.
- Battle command training programs.

INDIVIDUAL AND COLLECTIVE TRAINING INTEGRATION

1-36. To achieve maximum training results from limited resources, planning must be detailed and flying hours that are devoted solely to individual training must be kept to a minimum. Integrating individual continuation training into collective training maximizes every hour of flight time. Units must incorporate collective training into every element of the ATP.

INDIVIDUAL TASKS AND COLLECTIVE MISSION-ESSENTIAL TASKS

1-37. Tasks are clearly defined, measurable activities that Soldiers and units must perform. These specific activities contribute to the accomplishment of missions or other requirements.

1-38. The link between the collective mission-essential tasks and the individual tasks that support them is critical to the battle-focused training concept. The commander plans, prepares, executes, and evaluates training based on the METL. The commander selects critical battle tasks from the subordinate unit's METL and emphasizes the execution of those tasks during training and evaluation.

TRAINING AIDS, DEVICES, SIMULATORS, AND SIMULATIONS

1-39. It is difficult to train and sustain a modern UAS unit at an acceptable level of proficiency without using training aids, devices, simulators, and simulations (TADSS). Resources, environmental restrictions, personnel turbulence, and peacetime safety constraints put serious limitations on the dictum to "train as we fight." ATPs must reflect structured training programs that maximize the use of available TADSS for individual, crew, and collective training. Structured technical and tactical training programs, combined with supervision and after action reviews (AARs), are necessary for effective individual, crew, and collective simulation training periods. Again, the UAS combined arms training strategy (CATS) maximizes the use of UAS simulators for individual, crew, and collective training tasks.

1-40. UAS has a very thorough complement of simulators to enhance the individual, crew and collective training events. From the individual/crew level, most of the UA have simulators that enable commanders to tailor their training programs and apply a requisite amount of rigor to the tasks. The TADSS has collective fidelity, so that commanders can build their collective training efforts and have the capability during mission and gunnery rehearsal with the full ability for AARs.

1-41. Leveraging the UAS simulators and simulation will only be as effective as the leadership is with training management and understanding the training capabilities. UAS commanders at all levels enjoy a considerable training capability and capacity as a result of the Army’s significant investment in UAS training. The current execution of Army force generation is a significant challenge, but also presents

opportunities to exploit simulation for readiness level (RL) progression and as complementary building blocks for gunnery, call for and adjust fire, manned/unmanned teaming, and collective training.

SITUATIONAL TRAINING EXERCISES

1-42. Situational training exercises (STXs) are limited, mission-related exercises. STXs train crews or crewmembers to execute one collective task or a group of related tasks and drills through practice. (The terms "situational exercise" and "scenario" are used synonymously.) Based on the unit METL, commanders may modify or expand STXs to meet special mission requirements. These exercises aid in the transition from individual task proficiency to collective task proficiency. The STX—

- Focuses training on weaknesses identified in previous training and evaluations.
- Provides repetitive training on parts of missions.
- Saves time by providing information needed to develop training.
- Allows the UAC, ground crewmember, or unit to practice selected critical parts of the mission before rehearsing the entire mission.

1-43. Commanders may develop STXs as a training and ATP management tool. If used, the STXs should permit simultaneous accomplishment of individual and collective tasks.

1-44. The commander develops STXs that support METL requirements by—

- Selecting the battle task to be performed. A battle task is a task that must be accomplished by a subordinate unit organization if the next higher headquarters is to accomplish a mission-essential task.
- Establishing the conditions and standards for the selected battle task (using the appropriate ATM appendices/MTP).
- Developing a mission statement to support the battle task. One STX may have numerous mission statements.
- Identifying the company METL task that supports the battle task.
- Developing collective supporting tasks (using MTP tasks).
- Applying time standards.
- Identifying references.

1-45. STXs should have realistic training objectives. The commander must ensure that the STXs **do not** become "canned" training. The training goal must be clearly defined, and all participants in the training must understand the objectives.

1-46. ARTEP MTPs give units a clear description of what and how to train to achieve wartime mission proficiency. ARTEPs elaborate on wartime missions in terms of comprehensive training and evaluation outlines (T&EOs). ARTEPs also provide exercise concepts and related training management aids to help field commanders plan and execute effective unit training. The applicable ARTEP/MTP gives examples for developing and using STXs.

BATTLE ROSTERING

1-47. Battle rostering is the designation of two or more individuals to routinely perform as a crew. Studies show that certain specific performance areas may benefit from battle rostering. Commanders may battle roster crews at their discretion. However, commanders must be aware that prolonged battle rostering may produce crew complacency, overconfidence, implicit coordination behaviors, and nonstandard procedures, which result in a degradation of crew proficiency. Therefore, battle rostering is most beneficial when used for short periods, such as in training exercises and ARTEPs.

Note. When battle rostering crews, commanders should consider individual, flight, and unit mission experience. Commanders should also consider individual personalities and maturity.

RISK MANAGEMENT

1-48. Commanders are responsible for the effective assessment of risk when they establish a unit training program. Chapter 6 provides a simple decision-making process that will help the commander balance training demands against risk. Commanders should consider both the individual and the crew when they assess mission risks. Commanders also must use risk-management concepts continually to prevent the unnecessary loss of Soldiers and equipment.

AIRCREW COORDINATION

1-49. Aircrew coordination is a set of principles, attitudes, procedures, and techniques that transforms individuals into an effective crew. It is a vital part of the overall ATP. As directed by DA, all crewmembers must become aircrew coordination qualified.

1-50. Aircrew coordination should be emphasized during RL progressions. It will be evaluated during the annual proficiency and readiness test (APART).

1-51. Including aircrew coordination in ATM task descriptions reflects the philosophy that a preflight, flight, or post-flight task is not an individual undertaking; each task can be performed more effectively and safely by the coordinated efforts of the entire crew. ATM revisions will include individual and crew-coordinated actions in the task descriptions.

QUALIFIED INSTRUCTORS

1-52. An SO or IO must be qualified IAW chapter 4 of this ATM to conduct the pre-training and final evaluations of crewmembers. UTs may conduct the academic and flight training, but may not conduct the evaluations. A qualified SO or IO can qualify other SOs and IOs.

DOCUMENTATION

1-53. The aircrew coordination qualification will be annotated on the individual's DA Form 7122-R (Crew Member Training Record). It also will be noted in the remarks section of the individual's DA Form 759 (Individual Flight Record and Flight Certificate–Army).

CREW STATION DESIGNATION

1-54. The commander will designate a crew station(s) and duties authorized for each crewmember. The individual’s DA form 7120-R (Commander’s Task List) must clearly indicate all crew station designations and duties authorized. Crewmembers will be trained and must maintain proficiency in each crew station they are designated to occupy. SO and IO must maintain proficiency in both seats. Operators will be evaluated in each seat during APART evaluations. This does not mean that all tasks must be evaluated in each seat. The appendices list which tasks are to be completed in which seats. Failure to require UACs to perform all authorized duties will degrade individual and collective task skills.

SYMBOL USAGE AND WORD DISTINCTION

SYMBOL USAGE

1-55. The diagonal (/) indicates three options—for example, SO/IO means one or the other (**SO or IO**) or both (**SO and IO**).

WORD DISTINCTIONS

1-56. **Warnings, cautions, and notes** are defined as follows:

- A warning identifies and highlights an essential operating or maintenance procedure, practice, condition, statement, which if not strictly observed, could result in injury to, or death of, personnel or long term health hazards to the person performing that procedure.

- A caution identifies and highlights an essential operating procedure or maintenance procedure, practice, condition, statement, which, if not strictly observed, could result in damage to, or destruction of, equipment or loss of mission effectiveness.
- A note highlights an essential operating procedure or maintenance procedure, condition, or statement.

1-57. **Will, must, should, may, and can** are words that distinguish between mandatory, preferred, and acceptable methods of accomplishment, as follows:

- Will or must indicates a mandatory requirement.
- Should, indicates a preferred, but non-mandatory, method of accomplishment.
- Can/may indicates an acceptable method of accomplishment.

AIRCRAFT IDENTIFICATIONS

1-58. Aircraft identifications conventions are as follows:

- Aircraft basic mission (class/type). Identifies the primary function and capability of an aerospace vehicle (such as attack, fighter, helicopter, patrol, transport, trainer, or unmanned). Aircraft basic mission is represented by a letter of the alphabet (such as unmanned [Q-1], fighter [F-16], transport [C-135], trainer [T-38], and bomber [B-1]).
- Modified mission. Identifies modifications to the basic mission of an aircraft. The modified mission identification appears to the left of the basic mission symbol (such as reconnaissance [RQ-7B], multi-mission [MQ-1C], tanker [KC-135R], cargo [CH-47D, and antisubmarine [SH-60B].
- Aircraft design (model). Identifies major changes within the same basic mission. Design numbers appear to the right of the basic mission symbol, separated by a dash (such as Q-5, F-18, H-60, and C-17).
- Aircraft series. Identifies the production model of a particular design number representing major modifications significantly altering systems components. Consecutive series symbols appear to the immediate right of the design number (such as RQ-7A and RQ-7B; KC-135A and KC-135R; and AH-64A and AH-64D).

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Chapter 2

Aircrew Training Program

This chapter describes requirements for qualification, RL progression, and continuation training. Crewmember qualification requirements will be IAW AR 95-23 and this ATM.

GOAL AND APPLICABILITY

2-1. The ATP consists of qualification, refresher, mission, and continuation training. The goal of the ATP is to produce mission-ready UAS units.

2-2. The ATP applies to crewmembers that perform duties controlling the flight of a UAS or the operation of its mission equipment as well as preparation, launch, and recovery tasks essential to operate the UAS.

Note. Upon signing into the unit, all UACs in an operational status are members of the unit's ATP. Operators must present their individual aircrew training folder (IATF) and individual flight record folder (IFRF), if applicable, to the commander or the commander's designated representative IAW AR 95-23. RL status is determined by the commander's evaluation.

INDIVIDUAL/CREW QUALIFICATION

2-3. Operators arrive at the unit with various levels of experience. They are recent graduates of a UAS qualification course or they are already proven operators with varying levels of UAS background. These UACs progress in RL based on a commander’s evaluation, to RL 1 by demonstrating proficiency in tasks required by the appropriate ATM appendix and those tasks selected by the commander based on the unit’s METL. Prior to designation as RL 1, training must be conducted and assessed by the appropriate UAS trainers. This process is explained in detail in this TC. This is a prescriptive process mandated by AR 95-23 and must be strictly followed to ensure standardization across the force.

2-4. The ATP is the commander’s program for training combat-ready crewmembers. This training covers the entire spectrum from task proficiency at the individual level, to crew proficiency, and finally to unit proficiency in executing mission-essential tasks necessary to accomplish successful joint and combined operations as defined in FM 7-15. At a minimum, all ATPs will have—

- A description of the benefits to be gained through standardization.
- Objectives to be achieved.
- The procedures or actions to be standardized described in detail.
- A specific plan for implementation.
- An effective procedure for enforcement.
- Delineated responsibilities.

2-5. The ATP applies to all Army UAS operators in operational flying positions. Other individuals authorized to perform crewmember duties with Army UAS will comply with AR 95-23 and all appropriate supplements to AR 95-23 and the appropriate ATM appendix.

2-6. Commanders use publications such as ATMs, ARTEPs, UTLs, MTPs, FM 3-04-series, ADP 7-0, and the CATS to develop the unit's ATP. The first step in this process is an evaluation of the unit's METL to determine training requirements.

2-7. The role of a warrant officer (WO) and NCO leader/trainer (implementer) in ATP development is as follows:

- WO and NCO leaders and trainers are the primary unit personnel tasked with implementing the ATP, especially at the individual and crew training levels.
- As the commander develops the ATP, input from the unit's implementers is vital. Individual and crew training is the foundation on which the ATP is built. WOs and NCOs implement and advise the commander on required tasks, applicability of mission and additional tasks to unit roles and METL-based missions, geographical factors that affect training, operational employment, training assets, and recurring training issues.
- After analysis of unit METL, implementer input, and higher commander's guidance, commanders develop a supporting individual CTL for each crewmember. (Chapter 5 of this TC contains more detailed guidance on the CTL.) Commanders will then establish a short-range, long-range, and near-term training plan to ensure crews gain and maintain proficiency in unit collective tasks. Implementers must be familiar with the commander's training intent and with the three training plans to successfully implement the ATP.

2-8. The commander will establish an ATP appendix to the unit's SOP. This appendix will address specific requirements for the following:

- The conduct of training.
- Crewmember and crew evaluation.
- AC training, assessment, and evaluation.
- Assessment of the ATP effectiveness.
- Revision of the ATP.
- The requirements from Department of the Army Pamphlet (DA Pam) 385-90, as applicable.
- Refer to chapter 10 for examples of SOP contents.

MISSION QUALIFICATION

2-9. RL 1 operators are those who have completed RL progression training and have demonstrated the proficiency to be a member of a battle-rostered crew. RL 1 operators train as crews to sustain and continually improve base task proficiency, improve proficiency in the conduct of the unit's unique METL requirements, and refine the skills necessary to perform as part of the unit.

2-10. The use of simulation is very useful in the conduct of training. UAS simulators are excellent for use in training emergency procedures, maneuvers that are infrequently conducted in the UA, and as a rehearsal tool for complex portions of operations. UAS simulators can also be used to correct negative trends found through analysis of accidents and to practice those skills in a low risk environment. As the fidelity of the UAS simulators improves, environmental training can be very beneficial to the crews.

TRAINING YEAR

ACTIVE ARMY, ARMY NATIONAL GUARD, AND USAR

2-11. The ATP training year is divided into semiannual training periods. For active Army, ARNG and USAR crewmembers, the first training period begins the first day following the end of their birth month and continues for six months. The second training period begins the first day of the seventh month and continues through the end of the crewmember's birth month. For example, the first training period for a crewmember born on 15 April begins 1 May and ends 31 October. The second training period begins 1 November and ends 30 April.

DEPARTMENT OF THE ARMY CIVILIANS

2-12. The unit commander designates the training year for Department of Army civilians (DACs) crewmembers.

FLIGHT ACTIVITY CATEGORIES

2-13. All UAS operator positions will be designated by the brigade-level commander as one of three flight activity categories (FACs)—FAC 1, FAC 2, or FAC 3. For units that are not organic or attached to a brigade or where a brigade level command does not exist within the state, the SAAO will assign FAC designations. The commander designates the FAC level, based on organizational position, on each individual crewmember's CTL. Flight task requirements for each table of organization and equipment (TOE) or table of distribution and allowances (TDA) position determines FAC designation. Commanders will not change a FAC designation merely to reduce the individual or unit flying-hour requirements, proficiency requirements, or to accommodate an individual's preference. FAC designations are for positions, not individual operators.

2-14. Crewmembers that are over-strength/over-structure to modification table of organization and equipment (MTOE)/TDA operational flying positions, and assigned to excess, can be designated FAC 1, FAC 2, or FAC 3 as determined by the brigade-level commander and required by resource constraints. Waivers to FAC 3 requirements must be approved IAW AR 95-23.

2-15. Operators in the first 3 years of their initial operational assignment(s) in their assigned UA after graduation from a UAS qualification course will not be assigned to FAC 3 positions.

Note. Crewmembers assigned to an excess position are not authorized an alternate or additional UA.

Note. FACs **do not** apply to DACs, CEs, ground crewmembers, ground observers, or WOs who hold a U.S. Army occupational specialty of 150U and officers holding a U.S. Army aeronautical rating that have not completed the Headquarters, Department of the Army (HQDA) approved UAS qualification course and are performing payload operator duties on a limited basis.

FLIGHT ACTIVITY CATEGORY 1

2-16. FAC 1 positions require a high degree of flight proficiency in the tactical employment of the assigned UA. The higher semiannual flying-hour minimums required of FAC 1 operators assigned to FAC 1 positions reflect this need for increased flight proficiency. External operators (EOs) and all aircraft operators (AOs) assigned to TOE units (except those listed below) are classified as FAC 1. Operators with less than three years of their initial operational assignment(s) in their assigned UA after graduation from a UAS qualification course will be assigned to FAC 1 or 2 positions and be assessed FAC 1 flying hour minimums. Commanders may designate any operational flying position FAC 1 consistent with mission requirements and resource constraints.

FLIGHT ACTIVITY CATEGORY 2

2-17. FAC 2 duty positions (platoon sergeants, first sergeants, and platform qualified 150U) integrated into the unit's ATP require the same level of proficiency in individual and crew tasks as FAC 1 duty positions, but less in mission tasks. FAC 2 crewmembers' mission task proficiency should be at a level sufficient to minimize training up to the FAC 1 level. Commanders must judiciously select FAC 2 mission and additional tasks to ensure maximum readiness within resource constraints. Commanders will not expect FAC 2 crewmembers to be immediately available to perform collective mission tasks that are not part of their training program. All UACs assigned to TOE units will be designated at least FAC 2.

FLIGHT ACTIVITY CATEGORY 3

2-18. Brigade commanders may designate certain positions as FAC 3 based on unit requirements. Operators assigned to FAC 3 operational UAS positions must be qualified in their primary UA. However, operators are prohibited from performing crewmember duties with Army UAS. They **do not** have currency requirements, and they are not subject to RLs. Commanders would not use the operators in combat operations without providing refresher or mission training. To designate a position as FAC 3, an accredited UAS simulator must be available for the crewmember's use. A crewmember in a FAC 3 position must be

qualified in the UA for which the simulator was developed. The following simulator requirements for FAC 3 operators should not be waived.

- FAC 3 operators must maintain the UAS simulator flying-hour minimums stated in the appropriate ATM appendix. The commander will specify UAS simulator task and iteration requirements on DA Form 7120-R. The commander may prorate these requirements IAW this publication.
- Within 90 days after being assigned FAC 3 and once annually thereafter, operators must demonstrate to an IO their proficiency in base tasks listed in the appropriate ATM appendix in this ATM. TOE units are not authorized FAC 3 positions for 15Ws (these positions primarily exist at the schoolhouse or Noncommissioned Officer's Academy [NCOA]).
- Operators designated FAC 3 must maintain a current flight physical IAW AR 40-501.
- Operators designated FAC 3 will perform all of their training in the UAS simulator designated by the commander. FAC 3 operators must complete the following requirements:
- A minimum of one iteration of each task listed in the appropriate ATM appendix in this ATM.
- Annual operator's written examination.
- Annual ACT-E sustainment module for their primary UA.
- Gunnery Tables (GT) IAW FM 3-04.140 with compatible UAS simulators.

OPERATIONAL AND NONOPERATIONAL FLYING POSITIONS

2-19. Flying duty positions are further divided into operational and nonoperational positions. All operators assigned to an operational flying position must be integrated into an ATP. Operators assigned to nonoperational or any other non-flying duty positions (non-UAS units) are not required to be integrated into an ATP, but may have other requirements such as medical. Additionally, operators assigned to nonoperational or any other non-flying duty position are prohibited from performing crewmember duties (AR 95-23).

2-20. Commanders must check the credentials of any operator not assigned to their formation, but flying with their unit. When an operator flies with a unit for anything other than an authorized demonstration flight, the operator must not be otherwise prohibited from performing crewmember duties and must be considered as part of the UAC inventory.

2-21. All operators in UAS service, whether or not assigned to flying duty positions, must meet Class IV medical fitness standards (AR 40-501), and be issued a medical clearance on DA Form 4186 (Medical Recommendation For Flying Duty).

2-22. All operators must receive an annual DA Form 759 closeout (FM 3-04.300). When assigned to locations without ATP support, local commands must develop procedures to ensure IATFs and DA Form 759s are managed and annual requirements are completed.

COMMANDER'S EVALUATION

2-23. The commander's evaluation determines the proficiency and initial RL of newly assigned crewmembers. This evaluation consists of a records review and possibly a proficiency flight evaluation (PFE). The evaluation results in an initial RL designation.

- Active Army. The commander or designated representative will complete the evaluation within 45 calendar days after the crewmember signs in to the unit or after the effective date of the crewmember's flying status orders, whichever occurs last.
- Reserve Component. The commander or designated representative must complete the evaluation within 45 calendar days after the effective date of the crewmember's operational flying status orders or the effective date of transfer.

RECORDS REVIEW

2-24. The crewmember is required to turn in the IATF and the IFRF IAW AR 95-23. Unit commanders or their designated representative will review the crewmember's IATF and IFRF. Unit commanders or their designated representative will compare the individual's qualifications and tasks performed in crewmember's previous assignment with the tasks required by the assigned duty position. If the appropriate RL can be determined from the review, the commander will document the RL on the individual's DA Form 7122-R.

PROFICIENCY FLIGHT EVALUATION

2-25. If the initial RL cannot be determined by the records review or if the commander desires, the crewmember will undergo a proficiency flight evaluation. At a minimum the PFE will include base and mission tasks designated by the commander in the unit ATP SOP. The results of the PFE will determine the crewmember's RL. The commander will document the RL on the individual's DA Form 7122-R. The local area orientation (LAO) flights may be completed during the PFE. LAOs being completed in conjunction with PFEs may not be completed in a UAS simulator.

READINESS LEVEL CONSIDERATIONS

2-26. To be designated RL 1, based solely on a records review, a crewmember must have satisfactorily completed all APART requirements within the previous ATP year, a current DA Form 4186, a LAO, and met ACT-E requirements.

- Commanders may not assign an initial RL 2 or RL 1 to graduates of a UAS qualification course, who are on their first utilization tour, solely on the basis of a records review. For initial designations other than RL 3, the commander must also consider the results of a PFE.
- If at the time of initial RL designation, 1 year has passed since the UAC has completed any element of an APART (standardization flight evaluation or UAS operator's manual examination), but the crewmember has flown within the preceding 180 days, the UAC must complete that element before designation as, or progression to RL 1. If crewmembers **do not** complete the element satisfactorily, they will be designated RL 3 until those tasks required for that evaluation are completed satisfactorily. Graduates of a UAS qualification course who are on their first utilization tour are exempt from this requirement.
- A crewmember having not flown within the previous 180 days must be designated RL 3 for individual/refresher training.
- A crewmember, previously designated as an RL 1 crewmember may be designated RL 1 based solely on a records check when reassigned to a similar type battalion or brigade (METL, CTL, or ATP) upon completing the LAO. ARNG crewmembers that transfer between units or support facilities within the same state can retain their previously designated RL status if they will be participating in flight activities in the same type of UA in their new assignment.

REQUIRED TRAINING

2-27. After determining the initial RL, the commander will direct qualification, refresher, mission, or continuation training for the crewmember as applicable. Time allotted for completing the required training will start accruing on the date of the RL designation. If recommended by the evaluator, crewmembers may credit the tasks satisfactorily completed on the PFE toward completion of their RL training requirements.

AIRCREW TRAINING PROGRAM PROGRESSION

2-28. Aviation commanders use a series of RLs (training gates) to track implementation and accomplishment of the Army's crawl, walk, and run training methodology. RL training develops individual and crew proficiency in tasks that support collective tasks. RL 1 crewmembers train to sustain and improve collective task proficiency. RLs identify the training phase in which crewmembers are participating and measure crewmember readiness. Commanders evaluate each duty position to determine how it can best

support the unit's METL. The commander develops CTLs of base, mission and additional tasks to include the tasks in each flight mode required to accomplish the unit's mission. Commanders also specify semiannual flying-hour and simulation device requirements IAW the appropriate appendix listed in this ATM. The use of simulation is critical in the development and integration of the Army crawl-walk-run methodology of training the formations.

2-29. The CTL is a commander's directive to the crewmember that mandates specific training and evaluation requirements. The CTL requirements are battle focused, task-based requirements derived from the unit's METL, UTL and the appropriate ATM appendix. Task based aviation CATS assist the commander in the development of individual CTLs. The CTL designates authorized crew duty stations and specifies the hours, tasks, iterations, frequency, evaluation requirements, and ATP responsibilities the crewmember must meet during the training year.

2-30. AR 95-23 establishes procedures, policy, and responsibilities for crewmember training, standardization requirements, management of aviation resources, and the ATP. Chapters 2 through 4 of this TC provide specific guidance on implementing the commander's ATP.

2-31. Crewmembers must have a current DA Form 4186 (or equivalent IAW AR 40-501) authorizing performance of aviation duties signed by the commander.

READINESS LEVELS

2-32. RL training begins with the development of proficiency at the individual level and progresses through crew to collective proficiency. RLs identify the training phase in which the operator is participating and measure readiness to perform assigned missions. RLs also provide a logical progression of individual and crew training based on task and mission proficiency.

Note. RLs **do not** apply to FAC 3 UACs, ground crew members (GCMs), ground observers, or WOs who hold a U.S. Army occupational specialty of 150U and officers holding a U.S. Army aeronautical rating that have not completed the HQDA-approved UAS qualification course and are performing payload operator duties on a limited basis.

Note. RLs **do not** apply to DACs, civilian contractors and CEs.

Note. Unless otherwise designated by the commander, the only ATP requirement of an RL 3 or RL 2 UAC is to progress to the next higher RL within the time prescribed in chapter 2 of this TC.

PROGRESSION

2-33. Active Army UACs, USAR technicians, and USAR Active Guard and Reserve UACs have 90 consecutive days to progress from one RL to the next. USAR and ARNG crewmembers have 1 year to progress. RL progression will exclude days lost due to—

- Temporary duty (TDY) or deployment to a location where the UAC is unable to operate an UAS.
- Medical or nonmedical suspension from operations.
- Leave approved by the unit commander.
- Grounding of UAS.
- UAS that are unavailable or in transit due to unit deployment/redeployment and UA preset/reset.

2-34. If the exclusion period exceeds 45 consecutive days, operators must restart their current phase of RL progression. Operators will restart on that date and have 90 consecutive days to progress to the next RL. If the exclusion period exceeds 90 days for those ARNG and USAR crewmembers, which have 1 year to progress, restart their current phase of RL progression.

2-35. An operator may progress to the next RL in less time than prescribed in paragraph 2-34 by demonstrating proficiency to an SO/IO.

2-36. During RL progression, crewmembers must demonstrate proficiency in each mode of flight (day, night, electro-optical (EO), or infrared (IR) as required by the ATM and CTL for each task. The provision pertaining to the more demanding mode of flight does not apply (for example, performing the task at night may not substitute performing the day task during RL progression). RL progression evaluations may be continuous, but each RL designation will be listed separately on the DA Form 7122-R. For example, when progressing from RL 3 to RL 1, RL 2 designation will be annotated on DA Form 7122-R.

2-37. When a crewmember is reclassified to RL 2 or RL 3 because of a flight deficiency, the crewmember needs to demonstrate proficiency in only the tasks that were graded unsatisfactory.

2-38. When an operator has not progressed within the required period, the unit commander will take action IAW AR 95-23.

READINESS LEVEL 3 (QUALIFICATION/REFRESHER TRAINING)

2-39. An operator is RL 3 while undergoing qualification or refresher training. Refresher training is for an operator to regain proficiency in academics and all base tasks for the duty position. An operator progresses from RL 3 to RL 2 by demonstrating proficiency in all ATM base tasks to a SO/IO. RL 3 crewmembers are only authorized to perform actual flight with an SO/IO.

- A crewmember returning to an operational flying position after not having flown UAS simulator or UA within the previous 180 days must be designated RL 3 for refresher training. Refresher training should include academic courses. The crewmember will receive training and demonstrate a working knowledge of the applicable topics in paragraph 3-27 and complete the operator's written examination.
- There are no task or iteration minimums or APART requirements while an operator is designated RL 3. However, to smoothly transition from RL 3 to RL 2, the commander may establish minimum hours and iterations with assistance from the SO/IO.
- The SO/IO who conducted/completed the training will enter name, rank, and duty position for any RL progression training entries on DA Form 7122-R.
- Crewmembers must have a current DA Form 4186 signed by the commander before starting flight tasks.
- Maximum use of UAS simulators is encouraged.

2-40. UACs can be designated RL 3 for progression or deficiency. Each refresher training program is designed to attain proficiency in base tasks.

- **RL 3 for Progression.** Refresher training used during integration into the unit ATP following the commander's evaluation. All base tasks will be trained and evaluated in each mode of flight (more demanding mode of flight does not apply) required on the CTL IAW the appropriate appendix in this ATM. Upon completion of the training, UACs are designated RL 2 for mission training.
- **RL 3 for Deficiency.** Refresher training used after an evaluation indicates a UAC deficiency in base task(s). Only those tasks found deficient are required to be trained and evaluated in the mode of flight the deficiency occurred. Upon completion of the training, crewmembers are normally redesignated RL 1. If mission tasks were also found deficient, progress the UAC to RL 2 for deficiency.

2-41. During RL 3 progression—

- Specific requirements, tasks, and modes of flight in the appropriate ATM appendix must be accomplished.
- Crewmembers progress from RL 3 to RL 2 by demonstrating proficiency in all ATM base tasks and appropriate academic subject area to an SO/IO.
- When crewmembers fail to progress to RL 2 within 90 days, commanders must investigate, determine the reason, and take appropriate action IAW AR 95-23.

2-42. Commanders may reduce a UAC to RL 3 status for mitigating circumstances, such as lengthy illness, TDY, or failure to maintain proficiency. Commanders are authorized to suspend operators 30 days for a

nonmedical suspension. Commanders should consider removal from flight status and military occupational specialty (MOS) reclassification or separation for crewmembers that demonstrate a pattern of failure to maintain currency or proficiency.

2-43. Crewmembers designated RL 3 will not perform any mission (2000-series), additional (3000-series), or maintenance (4000-series) tasks until progression is complete.

AIRCRAFT REFRESHER TRAINING

2-44. When designated RL 3, crewmembers will receive refresher training in the crew station(s) in which they are authorized to perform crew duties.

ACADEMIC TRAINING

2-45. The crewmember will receive training and demonstrate a working knowledge of the applicable subject areas and topics in paragraph 3-32 and complete the operator's written examination.

FLIGHT TRAINING

2-46. The crewmember will receive training and demonstrate proficiency from either crew station in each base task and in the modes marked with an "**X**" (mandatory annual task iteration requirement) of table A-1 page A-2 and table B-1, page B-2. The crewmember will complete GTs IAW FM 3-04.140. Crewmembers must demonstrate proficiency in required base tasks and be designated RL2 prior to undergoing mission training. Table 2-1 provides a listing of refresher academic topics that crewmembers are required to have a working knowledge of prior to being designated RL 2 .

Table 2-1. Refresher academic guide

Introduction	Landing gear (retractable)
Department of Defense (DOD) flight information pubs (FLIP) and maps	Engines and related systems
Crew coordination	Propellers
SOP requirements	Fuel system
Map reading (military and civilian)	Navigation equipment
Visual flight rules (VFR) minimums, procedures and maps	Electrical system
Weight and balance requirements	Environmental system
Forms	Anti-Ice/de-Ice (as applicable)
Publications required for operating the UA	Performance charts
Instrument planning and procedures (as applicable)	Sensors (plug-in optronic payload [POP] 300)
Operating limitations and restrictions	Aeromedical factors
Aircraft emergency procedures and malfunction analysis	Aerodynamics

READINESS LEVEL 2 (MISSION TRAINING)

2-47. An operator who has completed RL3 training or has been initially designated RL 2, based on the commander's evaluation, will begin training on mission and additional tasks as designated by the unit commander. Mission training programs help RL 2 operators to verify and develop their ability to perform specific tasks (selected by the commander) that support the unit's METL. Because the goal is proficiency in mission-related tasks, commanders should tailor their task list to meet specific unit needs. An operator progresses from RL 2 to RL 1 by demonstrating proficiency in all selected mission and additional tasks, applicable academic subjects, and in each flight mode and condition specified on their DA Form 7120-1-R to an SO/IO. An operator has 90 consecutive days (ARNG and USAR crewmembers have 1 year) to

progress to RL 1. There are no task or iteration minimums or APART requirements while an operator is designated RL 2.

2-48. To transition from RL 2 to RL 1, the commander may establish minimum hours and iterations with assistance from the SO/IO. RL 2 crewmembers are only authorized to perform actual flights with an AC/UT/SO/IO as described below:

- Local directives and SOPs may add tasks to be trained in addition to ATM flight tasks. Any additional training/evaluation tasks must be annotated on the crewmember's CTL.
- All crewmembers must complete a LAO flight before progressing to RL 1.
- Academic mission training. The topics in table 2-2 may be used as a guide to develop an academic mission-training program. The commander should tailor mission academic training to fit the specific needs of the unit's mission and METL. In order to assist the unit in conducting mission training, interactive modules can be obtained via https://ikn.army.mil/apps/ikn_website/index.cfm?organization=uastb.
- Commanders may authorize RL 2 UACs to fly with an AC and perform all tasks in each mode of flight previously evaluated as "**S**" (satisfactory) by an SO/IO.
- RL 2 crewmembers may train with a UT for mission training, but must be evaluated by an SO/IO before designation to RL 1.
- When crewmembers fail to progress from RL 2 within 90 days, the commander must investigate, determine the reason, and take appropriate action IAW AR 95-23.

Table 2-2. Academic mission guide

ATP requirements	Fire support/call for fire
IATF/IFRF	Downed UA procedures
Mission statement and employment methods	Mission equipment
Terrain analysis	Tactical airspace coordination
Navigational chart, map, and tactical overlay interpretation	Laser operations
Battlefield environment	Laser performance detractors
Fratricide prevention	Levels of interoperability
Tactical reports	Cooperative engagements

READINESS LEVEL 1 (CONTINUATION TRAINING)

2-49. An operator who has completed RL 2 training is considered mission ready and designated RL 1. The operator must perform those tasks designated by the unit commander for the operator's TOE or TDA position. Once designated RL 1, the UAC must complete APART requirements during the 3-month period ending the last day of the UACs birth month. A UAC is fully qualified and proficient in base, ATP required mission and additional tasks, and all applicable academics. UACs are responsible for maintaining proficiency in those tasks. RL 1 crewmembers sustain and improve proficiency in these tasks as they accomplish the continuation training requirements established in the appropriate appendix.

2-50. Crewmembers designated RL 1 must complete the following ATP requirements as established by the commander and listed on the CTL:

- Semiannual and annual task iterations in all modes of flight designated by the commander on the CTL.
- Semiannual flying hour minimums designated by the commander on the CTL.
- Annual standardization flight evaluation.
- Annual operator's written examination.
- Annual ACT-E sustainment module for their primary UA.
- All other requirements designated by the commander to be completed as part of the ATP such as chemical, biological, radiological, nuclear, and high-yield explosive (CBRNE) training; high-intensity radio transmission area training; and so forth.

Note. Crewmembers will be processed IAW AR 95-23 for failure to meet any of the above ATP requirements.

Note. Crewmembers may receive credit for ACT-E sustainment training, operator's manual examination, and APART tasks/evaluations completed during RL progression training if they were evaluated as satisfactory (**S**) within their corresponding 3-month annual evaluation window. Additional, commander-designated ATP requirements met prior to RL 1 designation may be credited at the discretion of the commander.

ACADEMIC CONTINUATION TRAINING PROGRAM

2-51. Units must develop a viable academic training program to reinforce crewmember aviation skills and knowledge to attain and sustain technical and tactical proficiency. Academic training may be conducted in any suitable environment (for example, a classroom, hangar, flight line, or field site). Academic training may be oral instruction, written instruction, computer-based training, or distance learning and may be conducted either individually or in groups. Topics listed in paragraph 3-32 should be considered in the development of the unit's academic training program. Instructors should take advantage of commercial, Federal Aviation Administration (FAA) publications and websites to find relevant topics to share during academic training sessions.

2-52. Removal from RL 1 requires the following:

- **Training deficiency.** A crewmember removed from RL 1 for a training deficiency and redesignated RL 2 or RL 3 must still meet all RL 1 ATP requirements including flying-hour requirements. ATP requirements met while RL 2/3 will be applied to RL 1 requirements. To be redesignated RL 1, those crewmembers must demonstrate proficiency in only those tasks and in the mode of flight graded unsatisfactory to an SO/IO. Removal from RL 1 will be documented on the UAC's DA Form 7122-R and **MUST** be signed by the commander.

Note. When UACs RL is downgraded due to a training deficiency, the UAC has 90 days to complete the required training.

- **Regressing crewmembers.** Crewmembers failing to demonstrate proficiency in any base tasks during any evaluation will be designated RL 3. The commander will establish a crewmember training plan for the crewmember. The crewmember who is found to be below standard must be trained and subsequently demonstrate proficiency in the base task(s) determined to be below standard to an SO/IO, as appropriate, before being reinstated to the appropriate RL status. A crewmember regressed to RL 3 must meet existing flying hour and task iteration requirements.
  - **Academic training.** After any unsatisfactory evaluation, the commander will establish academic requirements applicable to the base task(s) that were evaluated as unsatisfactory. The crew member will receive training and demonstrate a working knowledge of these topics to an IO.
  - **Flight training.** The commander will determine the task(s) to be trained as part of the crew member's training plan. At a minimum, the crew member must receive training and demonstrate proficiency in only the task(s) evaluated as unsatisfactory. The commander may establish additional task(s) for training and evaluation as part of the crew member's training plan.
  - **Other than a training deficiency**. A crewmember has until the end of the training period to complete ATP requirements. If a crewmember is removed from RL 1 for other than a training deficiency before the end of the training period (for example, a permanent change of station [PCS] departure), the ATP requirements no longer apply.

DEPARTMENT OF THE ARMY CIVILIANS, UNITED STATES ARMY RESERVE MILITARY, AND ARMY NATIONAL GUARD TECHNICIANS

2-53. DACs, USAR personnel, and ARNG technicians must comply with the appropriate ATM appendix for the annual standardization flight evaluation. DAC operators instructing USAACE-approved programs of instruction must accomplish all UAS APART requirements specified in the appropriate ATM appendix. The flight evaluations are conducted during a designated quarter and include only those tasks necessary to meet the requirements in the individual's job description. Flight evaluation(s) for alternate or additional UA need not be conducted during the same APART period as the primary UA. In addition, USAR and ARNG technicians must—

- Satisfactorily complete the annual hands-on performance test components of the APART and the operator's manual examination by the end of the APART period.
- Comply with all ATM requirements for UA designated by their military commander or technician supervisor.

COMMANDER'S CERTIFICATION

2-54. The commander's certification is the final cross check to ensure that an individual's ATP requirements have been met. ATP commanders must annually certify each crewmember's DA Form 759. The commander will annotate whether the crewmember has or has not completed individual ATP requirements or qualifications. If a crewmember did not complete the requirements, the commander must include the reason. (The appropriate remarks are in FM 3-04.300.) If requirements were not met in the primary, additional, or alternate UA, commanders will investigate IAW AR 95-23, take action, and ensure events are posted to DA Form 7122-R and DA Form 759 during the annual closeout. Investigations may result in removal from flying duty, extension, waiver, suspension or MOS reclassification.

EXTENSIONS, WAIVERS, AND SUSPENSIONS

EXTENSIONS

2-55. Extensions will be IAW AR 95-23 and entered on DA Form 7122-R and DA Form 759, as appropriate. Extensions will specify all requirements on DA Form 7122-R and be signed by the appropriate authority. Once the extended requirements have been completed, an entry on the DA Form 7122-R is required. If an extension exceeds the close out date, it will be annotated on the DA Form 759. Once the extended requirements have been completed, an entry is required on DA Form 7122-R and DA Form 759 during the next closeout.

WAIVERS

2-56. Waivers will be IAW AR 95-23 and annotated on DA Form 7122-R and DA Form 759 during the annual closeout. Waivers will specify all waived requirements on DA Form 7122-R and be signed by the appropriate waiver authority. Waivers in memorandum format **do not** require an additional signature on DA Form 7122-R; however, the waiver will specify the waiver authority and specify all waived requirements. Waivers will be retained in the miscellaneous section of the IATF until annotated on DA Form 759 during the next closeout.

SUSPENSIONS

2-57. Suspensions and removal from flight status for UACs will be IAW AR 95-23.

- **Medical suspension**. Prescribed by AR 95-23 and annotated on DA Form 7122-R and DA Form 759.

- **Nonmedical suspension**. The ATP commander may impose a nonmedical suspension not to exceed 60 days and will be annotated on DA Form 7122-R and DA Form 759. Nonmedical suspension for UACs in excess of 60 days must be IAW AR 95-23.

Note. Suspensions for UACs for disciplinary, medical, administrative, or performance will be processed IAW AR 95-23 and annotated on DA Form 7122-R and DA Form 759.

AIRCREW TRAINING PROGRAM FORMS AND RECORDS

2-58. The ATP records system provides commanders with a comprehensive performance record on each UAC in their unit. Examples of completed ATP forms with instructions are provided in chapter 5.

INDIVIDUAL AIRCREW TRAINING FOLDER

2-59. Commanders will ensure that an IATF is prepared and maintained for each UAC and CE performing duties, whether assigned or attached to their unit. Units will maintain a DA Form 7122-R for all personnel designated as MC.

DEPARTMENT OF THE ARMY FORM 7120-R SERIES

2-60. Commanders will use DA Form 7120-R, DA Form 7120-1-R (Crew Member Task Performance and Evaluation Requirements), DA Form 7120-2-R (Crew Member Task Performance and Evaluation Requirements Continuation Sheet), and DA Form 7120-3-R (Crew Member Task Performance and Evaluation Requirements Remarks and Certification) to inform crewmembers of all ATP requirements. The CTL is a working document. A separate set of these forms is required for additional, alternate, and UA not defined as similar by this ATM in which the crewmember performs duties.

2-61. All RL 1 base tasks (and maintenance tasks for personnel authorized to perform functional check operator [FCO] duties on DA Form 7120-R) are as outlined in the appropriate ATM appendix. Operators are prohibited from performing any other tasks or maneuvers not listed on their CTL, unless authorized by their commander. Commanders should use, at a minimum, the following authorization criteria:

- Consider crew qualifications and experience.
- Perform a risk assessment.
- Weigh the risk versus the reward.
- Decide if other support is required.
- Brief crew on a DA Form 5484 (Mission Schedule/Brief).

DEPARTMENT OF THE ARMY FORM 7120-R

2-62. Only those UA (or UA not defined as similar by the appropriate ATM appendix) in which a crewmember is qualified and expected to perform duties will be listed on DA Form 7120-R.

2-63. DA Form 7120-R is used to designate crewmember authorized flight duties/stations and semiannual UA and simulation device flying-hour and evaluation requirements for crewmembers.

2-64. The commander signs and dates the form authorizing the crewmember to perform flight duties at the indicated crew stations prior to the crewmember's first flight. The crewmember will sign and date the CTL to certify he or she has been briefed on and understands the ATP requirements prior to the first flight. Upon initial RL 1 designation, the crewmember will be briefed on task iteration, flying-hour minimums, evaluation requirements and all other requirements incurred by this designation. UACs are not authorized to perform duties unless a DA Form 7120-R, signed by the UAC and the ATP commander, is present in his or her IATF.

DEPARTMENT OF THE ARMY FORMS 7120-1-R AND 7120-2-R

2-65. Commanders use DA Form 7120-1-R to list task performance and evaluation requirements. Other commander designated ATP iteration requirements may also be listed, such as collective training tasks, UAS simulator scenarios, STXs. DA Form 7120-2-R is a continuation of DA Form 7120-1-R if additional space is required.

DEPARTMENT OF THE ARMY FORM 7120-3-R

2-66. DA Form 7120-3-R records all remaining ATP requirements not listed elsewhere on the CTL and any additional information relating to the crewmember's ATP. The crewmember will certify completion of all ATP requirements no later than the last day of their birth month.

DEPARTMENT OF THE ARMY FORM 7122-R

2-67. DA Form 7122-R is a permanent record of significant events in an individual crewmember's aviation career. Because of the permanent nature of this document, exercise care when making entries. When the crewmember leaves the unit, forward all DA Forms 7122-R with the IATF. The losing unit will retain a photocopy of the DA Forms 7122-R for a period of 1 year after the crewmember departs.

DEPARTMENT OF THE ARMY FORM 4507-R SERIES

2-68. Use this form, along with DA Form 4507-1-R (Maneuver/Procedure Grade Slip) and DA Form 4507-2-R (Continuation Comment Slip) for training programs or evaluations that requires a series of flights. Uses may include, but are not limited to qualification, refresher, and AC evaluations. A set of these forms will be retained in the IATF until the completion of the training and a summary of the event is entered on the DA Form 7122-R.

FLYING-HOUR REQUIREMENTS

2-69. Minimum hours. The minimum hours required for a crewmember's primary UA requirements are in the applicable ATM appendix. **Do not** confuse the minimum hours indicated in the ATM as the definitive factor for determining aircrew proficiency. The flying-hour requirements are the minimum hours a crewmember will fly during continuation training. Prolonged periods of flight inactivity may reduce a crewmember’s proficiency, even if the total minimum hour requirement is met.

FLYING-HOUR/SIMULATION REPROGRAMMING

2-70. Commanders may adjust flying-hour minimums during the crewmember's first semiannual period, but not after the crewmember completes the first semiannual period. When commanders exercise the option to adjust, they must clearly annotate the new semiannual minimums on the crewmember's task list. Commanders also must make the appropriate entries in the remarks section of the crewmember's DA form 759. Adjusting minimums helps a commander manage flying hours to meet training and mission requirements. For example, if the commander knows a UAC will be partially unavailable in one semiannual period, the commander could allow that crewmembers to fly up to 65 percent of the annual flight hours required in one semiannual period and 35 percent in the other. If the minimums for the first semiannual period were designated as 35 percent and the flying hours exceeded 35 percent, the commander may reduce the second period by the excess amount so that the annual flying-hour requirement is not greater than required. However, the minimums for the second period may not be less than 35 percent of the annual requirement.

FLYING HOUR/SIMULATOR MINIMUMS PRORATING

2-71. The minimum will be one-sixth of semiannual requirements and/or one-twelfth of annual requirements for each full month remaining in the training period. Any previous flying-hour requirement no longer applies. Commanders prorate flying-hour/UAS simulator minimums when a UAC—

- Is newly designated RL 1.

- Has the primary UAS re-designated.
- Changes duty position, which involves a change in the FAC level.

2-72. Other prorating adjustments. Reduce flying-hour minimums by 1 month for each 30-day period that the crewmember was unable to fly. Days unable to fly, in different absence categories, may be added together for 30-day totals. Concurrent days will not be added together. For example, if a crewmember medically grounded for 30 days is sent TDY for 20 of those 30 days, only 30 days could be prorated. At the end of the training period, add the total number of days the crewmember was unable to fly the UA/simulator due to the following:

- TDY or deployment to a location where the crewmember is unable to fly.
- Medical or nonmedical suspension from flight.
- Grounding of UA by HQDA.
- Leave approved by the commander (Reserve Component [RC]-authorized absences by the commander).
- Aircraft non-availability due to movement to deployment/ redeployment or UA preset/reset. This must be annotated on DA Form 7122-R and should coincide with the brigade commander's "start training date" required by AR 95-23.

ADDITIONAL AND ALTERNATE UNMANNED AIRCRAFT

2-73. There are no minimum flying-hour requirements for additional or alternate UA. Commanders may designate a minimum flying-hour requirement to include UAS simulator, if available to meet mission requirements. The crewmember must maintain UA currency and the commander must specify flying-hour, task iteration, and evaluation requirements based on the unit mission to ensure operators are proficient in ATM tasks.

TASK AND ITERATION PRORATION

2-74. During the training year, all RL 1 crewmembers must complete one iteration of each task on their list in each of the modes indicated. The commander may increase these requirements as training and proficiency requirements if a crewmember is initially designated RL 1 as follows:

- If more than 6 months remain in the crewmember's training year, the crewmember must complete one iteration of each task in each of the modes indicated on the list. The commander may increase the requirements.
- If less than 6 months remain in the crewmember's training year, the crewmember will not have task and iteration requirements unless specified by the commander.

Note. A task iteration performed at night may be substituted for a day task iteration.

2-75. If the crewmember is removed from RL 1 or FAC 3, the provisions of paragraph 2-52 apply.

LOCAL AREA ORIENTATION

2-76. LAO is an important part of the training program for newly assigned UACs. It is divided into four general areas: Aircrew information reading files (AIRF), airfield operations and procedures, airfield layout and facilities, and LAO flight. Upon completion, the LAO will be recorded as an event on DA Form 7122-R and will include the hours flown in each mode during the LAO flight (This is not duty or seat specific.).

AIRFIELD OPERATIONS AND PROCEDURES

2-77. The commander will ensure that crewmembers are given a tour of and a briefing on the airfield operations facilities. The tour should include the flight planning room (location of maps and other flight planning aids) and airfield operations office. If the weather facility is located on the airfield, it also should be part of the tour.

2-78. The briefing should include—

- Certificate of Authorization requirements.
- Notice to Airmen (NOTAM).
- Obtaining maps and charts procedures.
- Ensuring operations security of the airfield procedures.
- Obtaining weather information procedures.
- Obtaining range and restricted-area information procedures.
- Information on local aeromedical facilities and phone numbers.
- A review of VFR requirements for the airfield and local area.
- A review of airspace in the local area.
- A review of the local area map should include—
  - Boundaries.
  - Flight corridors.
  - Reporting points.
  - Noise abatement procedures.
  - Prominent terrain features and visual navigation aids.
  - Functional check flight areas.
  - Obstacles or hazards to flight.
  - Tactical training and range areas.
  - Restricted, no-look, no-fly and no-look/no-fly areas.
  - Airfields, helipads, and frequently used landing zones (LZs).
  - High-intensity radio transmission areas.
  - A review of lost-link procedures and ditch points.

AIRFIELD LAYOUT AND FACILITIES

2-79. The commander will ensure that crewmembers are given a tour of the airfield area to include—

- Petroleum, oils and lubricant facilities.
- Crash rescue facilities.
- Air traffic control (ATC) facilities.
- Simulation and procedural training devices.

LOCAL AREA ORIENTATION FLIGHT

2-80. Before progressing to RL 1, crewmembers must receive a LAO flight. (Units may conduct this flight along with other training.) The commander will determine which orientation items are required for the flight and whether it should be accomplished both day and night. This cannot be conducted in a UAS simulator. UACs may receive credit for the LAO while in a ground control station (GCS) and not physically at a set of controls. Items peculiar to the local area or those that cannot be adequately covered during the ground portion will be pointed out, demonstrated, or discussed during the flight. The orientation flight should include familiarization with local:

- Boundaries.
- Flight corridors.
- Reporting points.
- Prominent terrain features and visual navigation aids.
- Noise abatement procedures.
- Maintenance test flight areas.
- Restricted areas and no-fly areas.
- Tactical training and range areas.
- Airfields, helipads, and frequently used LZs/drop zones (DZs).

- Obstacles or hazards to flight.
- Ditch points.

Note. Army commands, particularly those operating near sensitive borders, may establish additional requirements or restrictions for LAO.

AIRCREW INFORMATION READING FILES

2-81. UAS units will establish an AIRF. The AIRF should be divided into general and specific functional areas. It should contain reference material on UAS standardization, safety, and armament (if applicable) as well as regulations, directives, SOPs, and other appropriate publications. Units will post information as it is received. Pertinent new information should be maintained in the front section of each general and specific file area until the information expires or is permanently incorporated into the AIRF or the SOP.

ENVIRONMENTAL TRAINING

2-82. UAS units will have the following in their SOPs:

- An explanation of the effects of the environment on the unit's flight operations.
- A comprehensive academic and flight training program that develops and sustains crewmember proficiency in that environment.
- For RL 1 operators, assurance that the training has been satisfactorily completed before the crewmember performs flight operations in the unique environment as described in FM 3-04.203.

COMBAT IDENTIFICATION TRAINING

2-83. Commanders of TOE units will establish a combat identification (CID) training program in the ATP portion of the unit SOP using TC 3-17 as a reference. The CID process has the following four key purposes:

- Identify and classify objects in the operational environment as friend, enemy or neutral entities.
- Achieve fires effects on enemy targets in a timely manner.
- Increase combat effectiveness by focusing combat power on threat elements.
- Minimize/eliminate fratricide and collateral damage.

2-84. The CID program will include training on the CID process and its primary components: accurate situational awareness, positive target identification and properly applying the rules of engagement. Combat identification is an essential part of all UAS actions on the battlefield. Joint combat identification is the process of attaining an accurate characterization of detected objects in the joint operational environment to the extent that high confidence, timely application of military options, and weapons resources can occur. This encompasses the entire spectrum of operations on the battlefield from attack/reconnaissance to life/cargo missions, force protection, and fratricide prevention. Because airborne platforms are a major contributor to situational awareness on the battlefield, aircrews must be capable of making an accurate combat identification of friendly, threat, and relevant civilian vehicles.

2-85. All TOE UAS units will use the recognition of combat vehicles (ROC-V) software (available at: https://rocv.army.mil) to train combat vehicle identification. Commanders will establish the following in the ATP CID section of the unit SOP:

- ROC-V as the minimum training standard for visual and thermal imagery.
- Any additional threat, friendly, and civilian vehicles relevant to the current theater.
- The minimum standard for evaluation.
- Annual training requirements as a minimum.

2-86. ROC-V annual requirements will be annotated on DA Form 7120-3-R. Additional SOP requirements designated by the commander as part of the ATP will be annotated on DA Form 7120-R series (CTL) appropriately.

Note. CID training is mandatory for TOE units. It is optional, but encouraged for TDA units.

UNMANNED AIRCRAFT SYSTEMS GUNNERY

2-87. The UAS gunnery program begins with individual qualification and progresses through crew qualification to unit collective training. Commanders will use FM 3-04.140 and DA PAM 350-38 to develop a progressive and continuous UAS gunnery program. The following guidelines **do not** imply that the commander should conduct live-fire gunnery training only once a year. Live-fire gunnery training should be conducted as often as aircraft, ammunition, and range resources will allow. UAS gunnery applies to all units that operate UA with weapons systems (this includes laser designators [LDs]).

COMMANDER'S EVALUATION TABLES

2-88. IAW FM 3-04.140, the GT FM 3-04.140 crew practice course (CPC) consists of those skills essential to build a solid crew coordination foundation. These skills are paramount to the safe operation of the assigned UA platform. The individual operator is not required to conduct RL progression as a crew; however, if the GTs are conducted as a crew, it meets the requirement of both RL progression and CPC. GTs are to be conducted quarterly IAW FM 3-04.140. If a records review reveals that an assigned operator has not met the annual GT requirements, the commander may require the operator to fire GTs based on the individual operator's level of experience and time passed since last qualification.

GUNNERY CONTINUATION TRAINING

FLIGHT ACTIVITY CATEGORY 1

2-89. All FAC 1 RL 1 crews must successfully complete annual gunnery requirements IAW FM 3-04.140 and DA PAM 350-38.

FLIGHT ACTIVITY CATEGORY 2

2-90. FAC 2 RL 1 operators must successfully complete live-fire gunnery IAW FM 3-04.140 and DA PAM 350-38. If resources will not allow all FAC 2 RL 1 operators to complete live fire GT, those FAC 2 RL 1 operators designated as SO/IO who are combat crewed must be prioritized to fire. If the operators cannot meet this requirement because of insufficient resources (as determined by the unit commander), operators must satisfactorily complete gunnery exercises IAW FM 3-04.140 in a compatible UAS simulator.

FLIGHT ACTIVITY CATEGORY 3

2-91. GTs are IAW FM 3-04.140 for UAS aircrews with compatible UAS simulators.

GUNNERY QUALIFICATION

2-92. UAS gunnery training is an integral part of a unit's training program. FM 3-04.140 provides commanders with training strategy information and guidance to develop and incorporate gunnery training to their ATP. FM 3-04.140 defines gunnery standards, required GTs, and scoring criteria for virtual and live-fire gunnery events. It provides the commander with the standard for measuring the individual, crew, and collective gunnery skills of his or her unit. It is up to the commander to use this assessment to tailor his or her ATP accordingly.

2-93. The commander sustains his or her unit's gunnery skills by incorporating the TTP defined in FM 3-04.140 into every scheduled training event. As a result of applying the principles of FM 3-04.140, effective gunnery training is conducted every time a mission is planned and executed, an UA is run-up, and an AAR is conducted. For UAS aircraft, every mission should include complete weapons initialization and bore sighting. As is the case with ground combat units, aviation units must also incorporate proficiency with UA

weapons into their overall training program. To fully benefit from live GTs, commanders must include UAS simulator scenarios as part of their aerial gunnery skills qualification prior to live fire.

2-94. The Army standard for individual aviation gunnery training is 85 percent of a company's assigned aircrews must be qualified using the applicable GTs IAW FM 3-04.140 within the preceding 12 months. The Army standard for aviation unit gunnery training is for 85 percent of the battalion's/squadrons assigned aircrew to have completed the applicable GTs IAW FM 3-04.140 within the preceding 12 months. The training program outlined in FM 3-04.140 will assist in attaining this standard. This training program matches the ammunition requirements in DA PAM 350-38. Commanders must ensure deviations from the program as described in FM 3-04.140 are reported on the unit status report. The Commander must designate the operator in writing.

2-95. After qualification, an individual and crew are considered gunnery qualified for 12 months (until the end of the following training year for RC). To retain gunnery qualification, the individual must satisfactorily complete gunnery crew qualification annually.

OPERATOR FUNCTIONAL CHECK TRAINING REQUIREMENTS

PREREQUISITES

2-96. Commanders are authorized to designate individuals to conduct operational functional checks if required. Candidates are to be selected from the most qualified/experienced operators that have qualified in the type and model of UA. The crewmember that performs operational functional check duties will receive training and demonstrate proficiency in all flight tasks in the appropriate technical manual/ATM appendix.

QUALIFICATION REQUIREMENTS

2-97. Operator functional check qualification training will be conducted at the unit level, as required. The crewmember undergoing qualification training will receive academic and flight training and must demonstrate proficiency in all operator tasks listed in the appropriate technical manual/ATM appendix.

GROUND CREWMEMBER REQUIREMENTS

2-98. UAS ground crewmembers (mechanics, technicians, and technical inspectors) perform duties on the UAS that are essential to specific phases of the flight mission. They will be—

- Designated in writing by the UAS unit commander (technical inspectors only).
- MOS and additional skill identifier qualified to perform specific UAS operations.
- Trained to perform their duties IAW this ATM, systems technical manuals, and the unit's training SOP.

2-99. UAS ground crewmembers that are authorized to start, run up, taxi, and conduct launch and recovery operations IAW AR-95-23 will—

- Be designated, in writing, by the unit commander.
- Undergo appropriate normal and emergency procedures training conducted by an SO/IO.
- Be selected for each flight and/or series of flights and listed on DA Form 5484.
- Be trained to perform CE duties IAW the unit SOP.
- Be evaluated semiannually by a SO/IO on all functions that they are required to perform.
- Have tasks to be performed and evaluation requirements listed on DA Form 7120-R series and maintained in an IATF. (Minimum task requirements are listed in the appropriate appendix of this manual.)

AIRCRAFT COMMANDER REQUIREMENTS FOR STANDARDIZATION INSTRUCTOR OPERATOR/INSTRUCTOR OPERATOR

2-100. All Active Army UAS operators holding an SO/IO qualification with UA assigned to their platoon or company that have been assigned for at least 180 days and have been RL 1 for at least 180 days **MUST** be an AC in their primary UA. Thereafter, UAS operators holding an SO/IO qualification **MUST** become an AC in their primary UA no later than 180 days after they progress to RL 1, after assignment to the unit, or mobilize with UA available, whichever occurs first.

2-101. The 180-day AC requirement excludes days lost due to—

- TDY or deployment to a location where the crewmember is unable to fly.
- Medical or nonmedical suspension from flight.
- Grounding of UA by HQDA.
- Leave approved by the unit commander.
- Aircraft non-availability due to movement to deployment, redeployment, and UA preset/reset (less than 50 percent of unit UA assigned are not available).
- Documented flight cancellations due to weather and/or maintenance that have had a significant impact on flight operations, as well as restrictions to flight operations due to no fly times from the host country in which the unit operates.

2-102. Brigade commanders can waive this 180-day AC requirement for operators being assigned to units for less than 12 months or for units that will not have UA available for at least 12 months. This waiver will be in a memorandum format included in the miscellaneous section of the operator's IATF, annotated on the DA Form 759 closeout, and a copy given to the individual once signed.

2-103. If the above requirements are not met, the commander will process the operator IAW AR 95-23.

SERIES QUALIFICATION TRAINING REQUIREMENTS

2-104. Unit commanders are authorized to conduct series qualification at unit level (for example RQ-7A to RQ-7B). UACs receiving the training must have attended the initial UAC qualification course for the UAS being flown. To become qualified in a UAS series, a UAC must complete—

- **Academic Training**. The UAC will receive training and demonstrate a working knowledge of the applicable topics in paragraph 3-32 and complete the operator's written examination.
- **Flight Training**. The UAC must demonstrate proficiency to an SO/IO in all base tasks and mission tasks as designated by the commander.

ANNUAL CHEMICAL, BIOLOGICAL, RADIOLOGICAL, NUCLEAR, AND HIGH YIELD EXPLOSIVE TRAINING

2-105. Commanders will establish a CBRNE training program in the ATP portion of the unit SOP IAW this ATM. CBRNE training is required for all units unless waived by the appropriate authority. For units without the appropriate equipment and/or units commanders that determine they **do not** have a CBRNE training requirement, they may request a unit ATP waiver IAW AR 95-23.

MISSION-ORIENTED PROTECTIVE POSTURE

2-106. Conducting UAS operations while in mission-oriented protective posture-4 (MOPP-4) presents special challenges. The protective over-garment and gloves restrict movement and the protective mask restricts vision. The Army is continuously upgrading MOPP gear for aircrews to alleviate these challenges. Crewmembers can overcome these restrictions by training as often as possible while wearing MOPP-4 gear. The level of proficiency training will be based on the commander's assessment of the unit's METL.

2-107. In units with TOE allocation of equipment, the first O-6 in the chain of command will evaluate the unit's mission and determine whether CBRNE training is required. If CBRNE training is required, all FAC 1 positions, those FAC 2 positions designated by the commander, and all CE and maintenance operators will conduct CBRNE training as established in the appropriate appendix in this ATM. CBRNE iteration requirements will be annotated on DA Form 7120-1-R IAW chapter 5 of this ATM.

2-108. This training increases crewmembers' confidence in their ability to successfully accomplish their mission. It also enables commanders to see how CBRNE operations affect their unit's ability to accomplish specific missions and how these operations impact on time and personnel requirements.

2-109. While conducting CBRNE training wearing MOPP-4, the commander will ensure:

- Flight crews use extra caution when performing flight duties when the wet bulb globe temperature is above 75 degrees Fahrenheit. Ideally, this training should be conducted during the cooler months of the year.
- Emergency procedure training may be conducted if an IO is present and not wearing a protective mask IAW the appropriate appendix in this ATM. Emergency procedure training should be performed in the UAS simulator or while the UA is still on the ground.
- The CBRNE flight training outlined below may be conducted by a qualified crew, unless stated otherwise, meeting the minimum crew requirements IAW the operator's manual.

TASK REQUIREMENTS

2-110. This publication outlines tasks that the commander must select for training. The commander also may select tasks associated with the unit's mission.

TRAINING PROFICIENCY

2-111. The CBRNE annual requirements listed will provide aircrews with an individual familiarity of flight operations under CBRNE training environment. This training can be expanded beyond the minimums outlined in this ATM as commanders desire to bring aircrews from a level of familiarity to a level of crew proficiency. The number of hours and iterations required to train each crewmember depends on the unit's mission and the commander's assessment of the unit's needs for proficiency. The commander must decide how much training is needed for proficiency in unit CBRNE operations. Once crewmembers are trained, they can maintain proficiency through collective CBRNE flight training.

TRAINING

2-112. Crewmembers will receive CBRNE training in the tasks listed below and any additional CBRNE tasks on the CTL:

- Task 1022, Perform Preflight Inspection.
- Task 1024, Perform Engine-Start/System Check.
- Task 1034, Perform Unmanned Aircraft System Taxi (as applicable).
- Task 1040, Perform Normal Takeoff and Climb (A only).
- Task 1145, Perform Normal Landing (A only).
- Task 1800, Perform After-Landing Tasks.

EVALUATIONS

2-113. The CBRNE tasks outlined here are the minimum required tasks for annual CBRNE evaluations. The evaluation will be conducted IAW this publication. This evaluation will be documented in the crewmember's IATF. The evaluation will be conducted at any time during the ATP year and may be aligned with the APART. Units may conduct CBRNE evaluations as part of the commander's no-notice program, in conjunction with the APART, or during a STX. The CBRNE flight evaluation will be conducted on the UA for the CE and will be conducted operating the UA or simulator for the operator as directed by the commander.

AEROMEDICAL TRAINING

2-114. The commander, assisted by the FS, develops an aeromedical sustainment training program that meets the unit's specific needs. Consideration will be given to the unit's mission, area of operations, and environments that the unit may operate. Because of the medical and technical nature of the aeromedical training program, commanders should involve their supporting FS in developing the program. Commanders can obtain further assistance in developing a unit aeromedical sustainment training program from the Dean, U.S Army School of Aviation Medicine, ATTN: HSHA-AVN, Fort Rucker, Alabama 36362. The aeromedical sustainment training program will be conducted IAW TC 3-04.93. The following website contains lesson plans and student handouts for required annual training that are available for downloading at: https://www.us.army.mil/suite/folder/7284062. Users must be logged into AKO to access this link.

MULTIPLE UNMANNED AIRCRAFT DESIGNATION

2-115. The commander designates a primary UA for each crewmember. When a crewmember must perform duties with more than one UA, the commander designates an alternate/additional UA. Crewmembers must perform the appropriate task iteration, fly the appropriate flying hours, and complete APART requirements in the primary, and (if applicable) any additional or alternate UA IAW AR 95-23.

PRIMARY UA

2-116. The UA mission type/design (RQ-7B, MQ-5B, MQ-1C) designated by the commander or required by the TOE or TDA position to which the crewmember is assigned.

SERIES GROUPED UA

2-117. UA grouped together based on complexity of the operator to UA interface (control panels/menus, payloads, control stations, and UA performance) as defined by the ATM for currency. Task, iteration, flying hour, and evaluation requirements will be specified in the ATM and included on one CTL (such as RQ-7A/RQ-7B). RQ-5A and MQ-5B are not of the same series because they are under different missions (reconnaissance and multipurpose).

SIMILAR UA

2-118. UA defined as having similar operating and controlling characteristics. UA not listed within a series group, but share one ATM may be included on one CTL. For example: All RQ-7B variants (RQ-7B-80, RQ-7B-70, and RQ-7B-60) are similar.

ADDITIONAL UA

2-119. UA is in the same category (fixed-wing or rotary-wing) as the primary UA, but **do not** meet similar UA requirements. Additional UA will have a separate CTL (such as MQ-1C and MQ-5B).

ALTERNATE UA

2-120. UA is in the opposite category (fixed-wing or rotary-wing) of the primary UA. Alternate UA will have a separate CTL.

2-121. Commanders should consider risk versus reward when assigning similar, additional, or alternate UA to operators flying highly complex, advanced UA.

AIRCREW TRAINING MANUAL TASKS

2-122. This section describes the tasks essential for maintaining crewmember skills. It defines the task, title, number, conditions, and standards by which performance is measured. A description of crew actions, along with training and evaluation requirements, is also provided. It does not contain all the maneuvers that can be performed while operating the UA.

TASK CONTENT

TASK NUMBER

2-123. A ten-digit TRADOC number and title identify each task. For ease of identification, the last four digits of this number are 1000/2000/3000/4000-series indicating they are base, mission, additional or FCO tasks, respectively.

- The 1000-series tasks are base tasks. A base task is common to all UACs authorized to perform duties in a particular UA, regardless of FAC level, unit METL or duty position. Base tasks cover those baseline skills, knowledge, and procedures necessary to operate the UA and selected installed equipment.
- The 2000-series tasks are mission tasks to support the unit's METL, which the commander may select. Commanders may further tailor the selection of mission tasks to match a crewmember's duty position. Mission tasks also standardize conditions, standards, performance steps and evaluation requirements of equipment not installed on all UA of a series.
- The 3000-series tasks are additional tasks (see chapter 7 of this ATM for 3000-series unit task development). They are tasks that the commander determines are essential to METL accomplishment and are not included in the ATM. The commander assigns these tasks a 3000-series number and lists them separately on the CTL. When an additional task is developed by the unit, the commander must perform a risk analysis for performance of the task, and determine training required for standardization personnel to attain proficiency in the task. The additional tasks must include—
  - Task number.
  - Title of the task.
  - Conditions under which the task is performed.
  - Standards for performance of the task.
  - Description of how the task is performed.
  - Considerations for performance of the task (such as environmental, safety, and crew coordination).
  - Training/evaluation requirements.

Note. Additional tasks designated by the commander as mission essential are not included in this ATM. The commander will develop conditions, standards, and descriptions for those additional tasks.

- All 4000-series tasks are FCO tasks. These maintenance tasks cover those procedures, knowledge and skills required to perform maintenance and functional test flights. Refer to AR 95-23 for definitions and responsibilities of the FCO.

TASK TITLE

2-124. The task title identifies a clearly defined and measurable activity. Titles may be the same in several appendices, but the tasks are written for the specific UA.

CONDITIONS

2-125. Tasks are performed in the situation that the conditions specify. The conditions specify the situation (normal operation, wartime, training, or evaluations) under which the task will be performed. They describe the important aspects of the performance environment. UACs must meet all conditions before receiving credit for the task iterations. Common conditions include—when an UT, IO, SO, or FCO is required for the training of the task while operating the UA, that individual will be at one set of flight controls while the training is performed.

STANDARDS

2-126. The standards describe the minimum degree of proficiency or standard of performance for accomplishing the task under ideal conditions. The terms, "without error," "properly," and "correctly" apply to all standards. Many standards are common to several tasks. Individual instructor operator techniques are not standards, nor are they used as grading elements. Unless otherwise specified in the individual task, the common standards below apply. Alternate or additional standards will be listed in individual tasks. All tasks must—

- Perform crew coordination actions IAW chapter 6 and the task description.
- Not exceed UA limitations.
- Utilize applicable terminology IAW ATP 1-02.1.

DESCRIPTION

2-127. The description explains one or more recommended techniques of completing the maneuver to the standards and will allow safe accomplishment of the maneuver in most circumstances. Deviations from the task description may be acceptable provided all the standards are still met and the safety of the UA and crew is not in question. These actions apply in all modes of flight during day, night, EO/IR, instrument meteorological condition, or CBRNE operations. This manual cannot address all situations and alternate procedures may be required. When specific crew actions are required, the task will be broken down into crew actions and procedures as follows:

- Crew actions. These define the portions of a task performed by each crewmember to ensure safe, efficient, and effective task execution. The designations A and P **do not** refer to AC duties. When required, AC responsibilities are specified. For all flight tasks, the following responsibilities apply.
  - Both crewmembers. Perform crew coordination actions and announce malfunctions or emergency conditions. Monitor engine and systems operations and avionics (navigation and communication), as necessary.
  - The AC. The AC is responsible for the conduct of the mission and for operating, securing and servicing the UA they command. The AC will ensure that a crew briefing is accomplished and that the mission is performed IAW ATC instructions, regulations and SOP requirements. The AO when operating the UA while configured as "both" (A and P) must be AC qualified. The EO when operating the UA must be AC qualified.
  - The AO. The AO is responsible for completing tasks as assigned by the AC.
  - The A (operator on flight controls). The A will indicate the crewmember that controls and/or monitors the actual flight of the UA from within a GCS, launch and recovery site, portable GCS or similar device. The A is responsible for UA control, obstacle avoidance, navigation, in-flight computations and the proper execution of emergency procedures. The A, when verbally being described or referenced is called the "operator on flight controls". The A will announce any deviation from normal operating procedures and the reason. The A will announce changes in altitude, attitude, airspeed or direction.
- Procedure.
  - The P (operator on payload controls). The P will indicate the crewmember that is responsible for operation of the payload to include weapons and sensors. Operators on the payload employing weapons systems will be qualified and current IAW U.S. Army directives. The P is responsible for communication, weather scans, cross-check calculations for fuel and airspeed, takeoff and landing procedures and assisting the A as necessary. When possible, the P should complete those emergency procedure steps that **do not** directly involve manipulation of controls. When present for launch and recovery, the P should assist the A with obstacle clearance. Verbally, the P is referred to as the "operator on payload controls", depending on context.
  - The external operator (EO). The EO will indicate the crewmember that controls and/or monitors the actual flight of the UA from the external flight control box. The EO is responsible for UA control, obstacle avoidance, and the proper execution of emergency

procedures. The EO will announce any deviation from normal operating procedures and the reason. The EO will announce changes in altitude, attitude, airspeed or direction.

NIGHT CONSIDERATIONS

2-128. Where applicable, night considerations are included.

REFERENCES

2-129. The references are sources of information relating to that particular task. Certain references apply to many tasks. Besides the references listed with each task, the following common references apply as indicated.

- Flight tasks (while engines operating).
  - AR 95-23.
  - AR 95-20.
  - FM 3-04.203.
  - FM 3-04.240.
  - Applicable operator's manual and checklist (CL).
  - Federal Aviation Regulation (FAR)/host-country regulations.
  - Unit/local SOPs.
  - Aircraft logbook.
  - DA PAM 738-751.
  - Current USAACE-approved student handouts.
  - DOD FLIP.
- Tasks with environmental considerations.
  - FM 3-04.203.
  - FM 3-04.240.
- Medical tasks.
  - TC 3-04.93
  - AR 40-8.

Chapter 3

Evaluations and Tests

This chapter describes evaluation principles and considerations. It also contains guidelines for conducting academic and hands-on performance testing. Evaluations are a primary means of assessing standardization and crewmember proficiency. Evaluations will be conducted IAW AR 95-23 and this ATM.

GENERAL

3-1. An evaluation is a tool used to ensure crewmembers develop and maintain base, mission, and additional task proficiency to established standards. An individual's lack of proficiency may indicate a need for increased task iterations and/or frequency for that particular crewmember. While evaluations are primarily a method to assess individual proficiency, an adjustment in the ATP may be required if a sufficient number of crewmembers of a unit fail to demonstrate proficiency in a specific task or tasks.

GRADING EVALUATIONS

3-2. Grading evaluations will be IAW the appropriate appendix in this ATM. Evaluators will adhere to published standards. However, if other than ideal conditions exist, the evaluator must make allowances for those conditions during the grading of each maneuver (for example, gusty winds near the limit of UA operational limitations).

CONDUCTING EVALUATIONS

3-3. Prior to conducting flight evaluations, evaluators will brief tasks that the crewmember being evaluated must perform.

3-4. While conducting flight evaluations, evaluators will—

- Perform the crew duties normally assigned to other crewmembers performing the tasks and missions being evaluated.
- Perform aircrew coordination actions prescribed in the appropriate ATM appendix.

3-5. SOs are authorized to train and evaluate all operators and CEs as directed by the ATP commander. IOs are authorized to train all operators and CEs and evaluate all operators and CEs except for other IOs and SOs. IOs are authorized to evaluate other IOs and SOs only when reestablishing UA currency.

3-6. An FCO is the only authorized UAC to conduct training and evaluation for all FCOs.

3-7. CEs that are designated by the commander are authorized to train and evaluate all CEs. To reestablish currency, a designated CE may evaluate all CEs.

3-8. When a crewmember is being evaluated as an instructor/evaluator, the instructor/evaluator must include role reversal as a part of the evaluation. Role reversal is a planned situation when the instructor/evaluator assumes the role of the crewmember being evaluated, and the evaluated crewmember assumes the role of the evaluator.

Note. Role reversal may be accomplished during the oral and/or flight portion of the evaluation.

3-9. The evaluator must clearly announce when role reversal is initiated and when it is concluded to prevent confusion and crew coordination errors while operating the UA. The AC designation does not

change. This situation allows the evaluated crewmembers to demonstrate their proficiency in training and evaluating crewmembers.

Note. Evaluators will brief the use of role reversal during the crew brief to alert all crewmembers of the intent.

HANDS-ON PERFORMANCE EVALUATIONS

STANDARDIZATION FLIGHT EVALUATION

3-10. This is an evaluation consisting of flight tasks and/or procedures conducted in each UA mission, type, design, and series group in which a crewmember is required to perform duties. Standardization flight evaluations determine the crewmember's ability to perform assigned flight duties.
The evaluation will—

- Be performed IAW AR 95-23.
- Consist of the flight evaluation described in the ATM.
- Be conducted by a designated SO, IO, or CE.
- Be IAW the CTL.

PROFICIENCY FLIGHT EVALUATION

3-11. The commander directs the proficiency evaluation and administration to any UAC in an operational flying position in any UAS-series group (paragraph 2-115) or UAS the UAC is required to operate, using the guidelines established in paragraph 2-23. This evaluation will be conducted by an SO/IO IAW AR 95-23 and the appropriate ATM appendix.

POST-MISHAP FLIGHT EVALUATION

3-12. This evaluation is conducted IAW AR 95-23, for AO and CEs involved in a Class A or B accident, or Class C accident at the discretion of the commander. Crewmembers will be suspended from flight duties until the completion of the flight evaluation. The type and nature of the evaluation will depend on the crew duties that the crewmember (SO/IO/AC/UT/AO/CE) was performing at the time of the accident. The accident circumstances should be used to make training management decisions including task frequency, training method, and environment (live or simulation). Special emphasis will be placed on evaluating the task being performed at the time of the accident under similar conditions, if possible. After the evaluation, the SO/IO, as appropriate, will debrief the examinee and make the appropriate entries on DA Form 7122-R. Post-mishap flight evaluations for CE duties will be conducted by an SO/IO or CE designated by the commander to perform the evaluation.

MEDICAL FLIGHT EVALUATION

3-13. This evaluation is conducted IAW AR 95-23. The SO/IO/CE, as appropriate, on the recommendation of the FS/commander's direction, will require the examinee to perform a series of tasks most affected by the examinee's disability. The evaluation should measure the examinee's potential to perform ATM tasks despite the disability. It should not be based on current proficiency.

3-14. After the examinee has completed the medical flight evaluation, the evaluator will document the evaluation on DA Form 7122-R and provide the results to the commander. UAC results must be forwarded to the FS for appropriate disposition.

3-15. The FS will document the recommendation to the commander on DA Form 4186.

3-16. The unit commander will make appropriate decisions concerning the examinee's flight duties and document them on DA Form 4186 and DA Form 7122-R.

NO-NOTICE EVALUATION

3-17. A comprehensive no-notice evaluation program is a valuable tool that allows commanders to monitor training effectiveness at all levels. Each commander must establish a no-notice proficiency evaluation program in the unit SOP. No-notice evaluations may be written, oral, hands-on flight evaluation in UA/compatible UAS simulator, or a combination thereof. Ten percent of these evaluations must be hands-on flight evaluations. This program measures the effectiveness of individual, crew, and collective training. Commanders use the results of no-notice evaluations to ensure unit standardization and readiness and to tailor the unit's individual, crew, and collective training programs. Each crewmember will receive at least one no-notice evaluation per year.

ANNUAL PROFICIENCY AND READINESS TEST REQUIREMENTS

3-18. The APART is a mandatory process that measures a crewmember's individual and crew proficiency and readiness. It consists of a written examination and hands-on performance tests that must be passed annually IAW AR-95-23 and the appropriate appendix in this ATM. RL 1 crewmembers must pass each component of the test during their APART period. The APART period is the 3-month period ending on the last day of the crewmember's birth month.

3-19. A crewmember designated RL 1 during the 3-month APART period must complete all APART requirements. Crewmembers receive credit for the UA operator's written examination and hands-on performance tasks performed during RL progression training if they demonstrate proficiency and are evaluated satisfactory on the tasks within the 3-month APART period. Those crewmembers participating in RL 3 or RL 2 training programs are not subject to the APART evaluations unless they were removed from RL 1 because of a training deficiency.

3-20. The UA operator's written examination is an open-book examination prepared at the local level and consists of 50 objective questions on the information indicated below. The minimum passing score is 90 percent. The examination covers the entire operator's manual. Operators must complete this examination for primary, additional, and alternate UA they are required to operate as specified by the commander.

3-21. The hands-on performance evaluation consists of oral and flight evaluations as outlined in the appropriate ATM appendix. The hands-on performance tests require evaluation of proficiency in several areas and may be separated into different flights. However, crewmembers must successfully complete all requirements during their APART period.

3-22. The standardization flight evaluation is conducted IAW AR 95-23. A SO/IO conducts this evaluation in each primary, additional, and alternate UA that a crewmember is assigned to operate.

3-23. The maintenance flight evaluation is conducted IAW AR 95-23. The evaluation will be conducted in the primary, additional, and alternate UA that a crewmember is assigned to perform maintenance flight operations.

Note. Commanders may authorize operators that complete an approved course at a USAACE-approved (for example, IO course) training site during their APART period to credit those tasks that were evaluated during the end-of-stage, end-of-phase, or end-of-course evaluation toward the completion of the APART evaluation requirement.

3-24. Commanders will process crewmembers that fail to meet ATP requirements IAW AR 95-23. As such, commanders should formally counsel individuals that fail to meet ATP requirements and document on DA Form 4856 (Developmental Counseling Form).

EVALUATION PRINCIPLES

3-25. The value of any evaluation depends on strict adherence to fundamental evaluation principles. These principles are described as follows:

- **Selection of evaluators.** The evaluators must be selected not only for their technical qualifications, but also for their demonstrated performance, objectivity, and ability to observe

and provide constructive comments. These evaluators are the SOs, IOs, and CEs that assist the commander in administering the ATP.

- **Method of evaluation.** The method used to conduct the evaluation must be based on uniform and standard objectives. In addition, it must be consistent with the unit's mission and must strictly adhere to the appropriate SOPs and regulations. During the evaluation, the evaluator must refrain from making a personal "area of expertise" a dominant topic during the evaluation.
- **Participants' understanding.** All participants must completely understand the purpose of the evaluation.
- **Participants' cooperation.** All participants must cooperate in order to accomplish the evaluation objectives. The evaluation emphasis is on all participants, not just on the examinee.
- **Identification of training needs.** The evaluation must produce specific findings to identify training needs. The examinee needs to know what is being performed correctly or incorrectly, and how to make improvements.
- **Purpose of evaluation.** The evaluation will determine the examinee's ability to perform essential hands-on/academic tasks to prescribed standards. Flight evaluations also will determine the examinee's ability to exercise crew coordination in completing these tasks.
- **Crew coordination.** The guidelines for evaluating crew coordination are based on a subjective analysis of how effectively a crew performs together to accomplish a series of tasks. The evaluator must determine how effectively the examinee employs the aircrew coordination basic qualities as outlined in chapter 4 of this ATM.
- **Evaluator's role as crewmember.** In all phases of evaluation, the evaluator is expected to perform as an effective crewmember. However, in order for the evaluator to determine the examinee's level of proficiency, the evaluator may intentionally perform as an ineffective crewmember. In such cases, a realistic, meaningful, and planned method should be developed to pass this task back to the examinee effectively. In all other situations, the evaluator must perform as outlined in the task description or as directed by the examinee. At some point, the evaluator may perform a role reversal with the examinee. The examinee must be made aware of both the initiation and termination of role reversal. The examinee must know that they are being supported by a fully functioning crewmember.

Note. When evaluating an AC, UT, SO/IO, or CE the evaluator must advise the examinee that during role reversal, the evaluator may deliberately perform some tasks or crew coordination outside the standards to check the examinee's diagnostic and corrective action skills.

Note. The SO will evaluate IOs and SOs during all APART and PFEs other than UA currency.

GRADING CONSIDERATIONS

ACADEMIC EVALUATION

3-26. The examinee must demonstrate a working knowledge and understanding of the appropriate subject areas.

FLIGHT EVALUATION

3-27. **Academic.** Some tasks are identified in training and evaluation requirements as tasks that may be evaluated academically. The examinee must demonstrate a working knowledge of these tasks. Evaluators may use computer-based instruction, mock-ups, or other approved devices to assist in determining the examinee's knowledge of the task.

3-28. **Flight or UAS simulator.** Tasks, which require evaluation under flight or UAS simulator conditions, these simulator tasks must be performed with an approved compatible UAS simulator. Task standards are based on an ideal situation. Grading is based on meeting the minimum standards. The evaluator must consider deviations (high wind, turbulence, or poor visibility, and so forth) from the ideal conditions during

the evaluation. If conditions are not ideal, the evaluator must make appropriate adjustments to the standards.

CREWMEMBER EVALUATIONS

3-29. Evaluations are conducted to determine the crewmembers' ability to perform the tasks on their CTL and to check their understanding of the required academic subjects listed in the ATM. When the examinee is an evaluator/trainer, the recommended procedure is for the evaluator to reverse roles with the examinee. When the evaluator uses this technique, the examinee must understand how the role reversal will be conducted and when it will be in effect. Initial validation of an evaluator's qualifications at a new duty station will not be conducted solely on an academic basis.

- **Performance criteria.**
  - **AO.** The AO must demonstrate a working knowledge of the appropriate academic subjects listed in paragraph 3-32. In addition, the AO must be familiar with their IATF and understand the requirements of their CTL.
  - **AC.** The AC must meet the AO requirements listed above. In addition, the AC must demonstrate technical/tactical proficiency, sound judgment, and maturity in managing the employment of the aircraft, the unit's mission, crew, and all assets regarding the operation of the UA.

Note. Trainers and evaluators. SOs/IOs/UTs will be evaluated on their ability to apply the learning and teaching process outlined in the instructor pilot handbook.

  - **UT.** The UT must meet the AC requirements listed above. In addition, the UT will be evaluated on their ability to apply the learning and teaching process outlined in the instructor pilot handbook. The UT must be able to instruct in the appropriate tasks and subjects, recognize errors in performance or understanding, make recommendations for improvement, train to standards, and document training. This individual should possess knowledge of the fundamentals of instruction and understand the requirements and administration of the ATP. The UT is not authorized to conduct evaluations.
  - **IO.** The IO must meet the AC requirements listed above. In addition, the IO must be able to objectively train, evaluate, and document performance of crewmembers, AOs, ACs, UTs using role reversal, and CEs as appropriate. The IO must possess a thorough knowledge of the fundamentals of instruction and evaluation, be able to develop and implement an individual training plan and must have a thorough understanding of the requirements and administration of the ATP. The IO designated by the commander as maintenance qualified will be evaluated annually on his or her performance of selected maintenance tasks (4000 series tasks) during the APART by a maintenance designated SO/IO.
  - **SO.** The SO must meet the AC and IO requirements listed above. The SO must be able to instruct and evaluate SOs, IOs, ACs, UTs, and CEs as appropriate, using role reversal. The SO must also develop and implement a unit-training plan and administer the commander's ATP.
  - **CE.** The CE must demonstrate an understanding of conditions, standards, descriptions, and appropriate considerations of tasks on the CTL. The CE must perform selected tasks to ATM standards while applying aircrew coordination. The CE must also demonstrate a basic understanding of the appropriate academic subjects listed in paragraph 3-32, be familiar with their IATF, and understand the requirements of the CTL.
  - **MC.** The MC must pass a semi-annual written exam and participate in the unit no-notice program. In addition, the MC must demonstrate sound judgment and maturity in managing the mission.
- **Flight evaluation criteria.**

- **Aircraft PFE.** This evaluation will be conducted IAW AR 95-23 and paragraph 3-32 of this publication. Tasks to be evaluated are IAW the appropriate appendix in this ATM.
- **APART standardization evaluation.** This evaluation will be conducted while operating the UA by an SO/IO. The operator must demonstrate proficiency in all tasks with an "**S**" in the evaluation column of the table listed in the appropriate appendix of this ATM as well as any mission/additional tasks designated in the crewmembers CTL as mandatory evaluation tasks. If the evaluated crewmember is an SO/IO, a SO must evaluate the SOs/IOs ability to instruct tasks. SO/IOs are not authorized to count flights, while not physically on the controls operating the UAS, as credit for their APART standardization flight evaluation.
- **Other flight evaluations.** These evaluations will be conducted IAW unit SOPs and local regulations.

- **Academic/oral evaluation criteria.**
  - **PFE.** This evaluation is conducted IAW AR 95-23 and this publication. The commander (or representative) will select the topics to be evaluated from paragraph 3-32.
  - **APART standardization evaluation.** The IO will evaluate topics from the subject areas in paragraph 3-32 that apply. If evaluated, topics selected will be based on the unit METL. In addition, the evaluator will have the examinee identify at least two UA components and discuss their functions.
  - **APART FCO evaluation.** The FCO will evaluate a minimum of two topics from the appropriate subject areas in paragraph 3-32 with specific emphasis on how they apply to functional check flights.
  - **Other ATP evaluations.** The SO/IO will evaluate a minimum of two topics from each subject area in paragraph 3-32 that apply.

EVALUATION SEQUENCE

3-30. The evaluation sequence consists of four phases. The evaluator will determine the amount of time devoted to each phase.

PHASE 1–INTRODUCTION

3-31. In this phase, the evaluator will—

- Review the examinee's IFRF and IATF records to verify that the examinee meets all prerequisites for designation and has a current DA Form 4186.
- Confirm the purpose of the evaluation, explain the evaluation procedure, and discuss the evaluation standards and criteria to be used.

Note. If the evaluation is for an evaluator, the individual conducting the evaluation must explain that the examinee's ability to apply the learning and teaching process outlined in the FAA-H-8083-9A will be evaluated.

Note. For UTs, the evaluation will include special emphasis on the examinee's performance in those areas in which UT duties are performed. The evaluation should ensure that the examinee can safely and effectively perform UT duties.

PHASE 2–ACADEMIC/ORAL EVALUATION TOPICS

3-32. The examinee (all RL 1 operators and/or any operator receiving an evaluation) **must** have a working knowledge and understanding of all applicable topics in the respective subject areas below. Operators undergoing RL progression are exempt from this requirement. As a minimum, the evaluator will select two topics from each appropriate subject area. An evaluator/trainer will also demonstrate an ability to instruct

and evaluate any topic. A UT will demonstrate an ability to instruct topics in the areas in which the UT performs UT duties.

- Regulations and publications (AR 95-23, AR 95-2 DA PAM 738-751, TC 3-25.26, local SOPs, Army command supplements, and regulations). Topics in this subject area are—
  - ATP requirements (TC 3-04.61).
  - DOD FLIPS and maps.
  - Flight plan preparation and filing.
  - Local airspace usage.
  - Crew coordination.
  - SOP/TACSOP requirements.
  - Map reading.
  - VFR minimums and procedures.
  - Weight and balance requirements.
  - Forms and records.
  - Publications required for using the UA.
  - IATF/IFRF.
- Aircraft systems, avionics, and mission equipment description and operation (operator's manual). Topics in this subject are—
  - GCS, data link interface box, ground data terminal (GDT), tactical automated landing system (TALS), launcher.
  - Emergency equipment.
  - Engines and related systems.
  - Fuel system.
  - Flight control systems.
  - Lighting.
  - Anti-ice/de-ice (as applicable).
  - Control panels/flight instruments.
  - Sensors (such as POP 300 payload).
  - Communications.
  - Navigation equipment.
  - Transponder and radar.
- Operating limitations and restrictions (applicable technical manuals). Topics in this subject area are—
  - System limits.
  - Power/engine limits.
  - Engine over-temperature limitations.
  - Loading/weight limits.
  - Generator limitations.
  - Electrical limits.
  - Airspeed limits.
  - Altitude limitations.
  - Crosswind limitations.
  - Maneuvering limits.
  - Weather/environmental limitations/restrictions.
  - Performance data/charts.
  - Laser limitations.
  - Other limitations.
- Aircraft emergency procedures and malfunction analysis (applicable TMs). Topics in this subject area are—

- Emergency terms and their definitions.
- Caution and warning emergency procedures.
- Engine malfunctions.
- Fires.
- Fuel system malfunctions.
- Electrical system malfunctions.
- Landing procedures.
- Flight control malfunctions.
- Mission equipment.

- Aeromedical factors (AR 40-8, Technical Bulletin (TB) MED 524, FM 6-22.5, and TC 3-04.93). Topics in this subject area are—
  - Flight restrictions due to exogenous factors.
  - Stress.
  - Fatigue.
  - Unit crew endurance program.
  - Combat stress.
  - Laser hazards.
- Fundamentals of flight (FM 3-04.203). Topics in this subject area are—
  - Physical laws and principles of airflow.
  - Flight mechanics.
  - In-flight forces.
  - Factors affecting performance.
  - Stalls.
  - Maneuvering flight (rate of climb).
  - Crosswind landings.
  - Fixed-wing environmental flight (for example cold weather or mountain operations).
- Tactical and mission operations (FM 3-04.111, FM 3-04.126, FM 3-04.513, ATP 3-09.30, FM 3-04.140, and unit SOP). Topics in this subject area are—
  - Mission statement and employment methods.
  - Aerial observation.
  - Forms of reconnaissance.
  - Tactical airspace coordination.
  - Reconnaissance operations (purpose and fundamentals).
  - Terrain analysis.
  - Navigational chart, map, and tactical overlay interpretation.
  - Battlefield environment.
  - Fratricide prevention.
  - Tactical reports.
  - Call for fire and artillery adjustment.
  - Downed UA procedures.
  - Mission equipment.
  - Tactical airspace coordination.
  - Laser operations.
  - Levels of interoperability.
  - Cooperative engagements.
  - Aviation mission planning.
- Weapon system operation and employment (FM 3-04.126, FM 3-04.140)
  - Laser operations (range/designator).

- Laser performance detractors.
- Fire control/fire commands.
- Techniques of fire and employment.
- Visual search and target detection.
- Ordinance identification.
- Weapons initialization, arming, and safety.

- Night mission operation for Hunter UAS EOs only (FM 3-04.203, FM 4-03.240). Topics in this subject area are—
  - Types of vision.
  - Dark adaptation, night vision protection, and central night blind spot.
  - Distance estimation and depth perception.
  - Visual illusions.
  - Night vision limitations and techniques.
- SO, IO, and UT (FAA-H-8083-9). Topics in this subject area are—
  - The learning process.
  - Effective communication.
  - Teaching methods.
  - Types of evaluations.
  - Planning instructional activity.
  - Flight instructor characteristics and responsibilities.
  - Techniques of flight instruction.
  - Human behavior.
  - Teaching process.
  - The instructor as a critic.
  - Instructional aides.
  - Critique and evaluations.
  - Levels of learning.
  - Principles of learning.
- Instrument planning and procedures (as applicable). The following is a guide for the administration of the evaluation. The examinee is allowed access to references during the oral evaluation (AR 95-23, FM 3-04.240, operator's manual, AR 95-10, DOD flight information publication, FAR/aeronautical information manual (AIM), general procedures guide, area procedures, local regulations and unit SOPs). Topics under this subject are—
  - Departure procedures.
  - Required weather for takeoff, en route, destination and alternate.
  - NOTAM.
  - Terminal aerodrome forecasts.
  - Aviation routine reports.
  - DOD FLIP symbology.
  - Fuel requirements.
  - Weather hazards.
  - Army aviation flight information bulletin.
  - Opening and closing flight plans.
  - Airspace—types, dimensions and requirements to operate in.
  - VFR requirements.
  - Flight plan preparation.
  - Position reports.
  - En route weather services.

- Transponder requirements.
- Arrival procedures.

PHASE 3–FLIGHT EVALUATION

3-33. If this phase is required, the following procedures apply:

- **Briefing.** The evaluator will explain the flight evaluation procedure and brief the examinee on which tasks will be evaluated. When evaluating an evaluator/trainer, the evaluator must advise the examinee that during role reversal, the evaluator may deliberately perform some tasks outside standards to check the examinee's diagnostic and corrective action skills. The evaluator will conduct or have the examinee conduct a crew briefing IAW Task 1000. At a minimum the following items will be briefed:
  - Mission.
  - Weather.
  - Flight route.
  - Performance data.
  - Control transfer procedures.
  - Engine-failure procedures.
  - Crew duties, to include emergency duties.
- **Preflight procedures**. The evaluator will evaluate the examinee's use of the appropriate TMs/CLs/TBs, and/or the integrated electronic technical manual as appropriate. The evaluator will have the examinee identify and discuss the functions of at least two UA systems.
- **Flight tasks.** As a minimum, the evaluator will evaluate those tasks listed on the CTL as mandatory for the designated crew station(s) for the type of evaluation being conducted and those mission or additional tasks selected by the commander. The evaluator, in addition to the commander-selected tasks, may randomly select for evaluation any task listed on the mission or additional task list. An IO, SO, and UT must demonstrate an ability to instruct and/or evaluate appropriate flight tasks. When used as part of the proficiency flight evaluation, the evaluation may include an orientation of the local area, checkpoints, and other pertinent information.
- **After-landing tasks**. The evaluator will evaluate the examinee's use of the appropriate TMs/CLs/TBs, and/or integrated electronic technical manual as appropriate.

PHASE 4–DEBRIEFING

3-34. Upon completing the evaluation, the evaluator will—

- Discuss the examinee's strengths and weaknesses.
- Offer recommendations for improvement.
- Notify whether the examinee passed or failed the evaluation, and discuss any tasks not performed to standards.
- Complete the applicable forms and ensure that the examinee reviews and initials the appropriate forms.

Note. Evaluator will inform the examinee of any restrictions, limitations, or revocations that the evaluator will recommend to the commander following an unsatisfactory evaluation.

Note. A training plan will be developed for the crewmember to allow them to regain proficiency in tasks that were evaluated as unsatisfactory.

Chapter 4

Aircrew Coordination

This chapter describes the background of crew coordination development. It also describes the crew coordination principles and objectives, as found in the Army ACT-E training program.

Note. Digitization of the crew compartments has expanded and redefined the lines of responsibility for each crewmember. The enhanced ability for either operator to perform most UA/system functions from the crew station breaks down the standard delineation of duties and has added capabilities and potential distractions in training and in combat. This could mean that during an unforeseen event, one operator may attempt to resolve the situation rather than seeking assistance from or even communicating that action with the other crewmember. It is essential for the AC to brief specific duties. Effective sharing of tasks relies on good crew coordination and information management.

CREW COORDINATION BACKGROUND AND PLANNING

4-1. An analysis of U.S. Army aviation accidents revealed that a significant percentage of UA accidents resulted from one or more crew coordination errors committed during and even before the flight mission. Often, an accident was the result of a sequence of undetected crew errors that combined to produce a catastrophic result. Additional research showed that even when crews actually avoided potential accidents, these same errors could result in degraded ***performance that jeopardized mission success.*** A systematic analysis of these error patterns identified specific areas where crew-level training could reduce the occurrence of such faults and break the ***chain of errors*** leading to accidents and poor mission performance.

4-2. Crew coordination patterns begin with the accomplishment of crew-level pre-mission planning, rehearsal, and after-action reviews. Pre-mission planning includes all preparatory tasks associated with accomplishing the mission. This would include assigning crewmember responsibilities and conducting all required briefings and brief-backs. Pre-mission rehearsal involves the crew collectively visualizing and discussing expected and potential unexpected events for the entire mission. Through this process, all crewmembers discuss and think through contingencies and actions for difficult segments, equipment limitations and failures, or unusual events associated with the mission, and develop strategies to cope with possible contingencies (mission, enemy, terrain and weather, troops and support available, time available, and civilian considerations [METT-TC]).

4-3. Each crewmember must actively participate in the mission planning process to ensure a common understanding of mission intent and operational sequence. The AC prioritizes planning activities so that critical items are addressed within the available planning time. Crewmembers must then mentally rehearse the entire mission by visualizing and discussing potential problems, contingencies, and assigned responsibilities. The AC ensures that crewmembers take advantage of periods of low workload to review or rehearse upcoming flight segments. Crewmembers should continuously review remaining flight segments to identify required adjustments, making certain their planning is consistently ahead of critical lead times.

4-4. After a mission or mission segment, the crew should debrief, review, and critique major decisions, their actions, and task performance. This should include identifying options and factors that were omitted from earlier discussion and outline ways to improve crew performance in future missions. Remember, this discussion and critique of crew decisions and actions must remain professional. "Finger pointing" is not the intent and shall be avoided; the emphasis should remain on education with the singular purpose of improving crew and mission performance.

CREW COORDINATION PRINCIPLES

4-5. Broadly defined, crew coordination is the cooperative interaction between crewmembers necessary for the safe, efficient, and effective performance of flight tasks. The essential principles and qualities of crew coordination are described in figure 4-1.

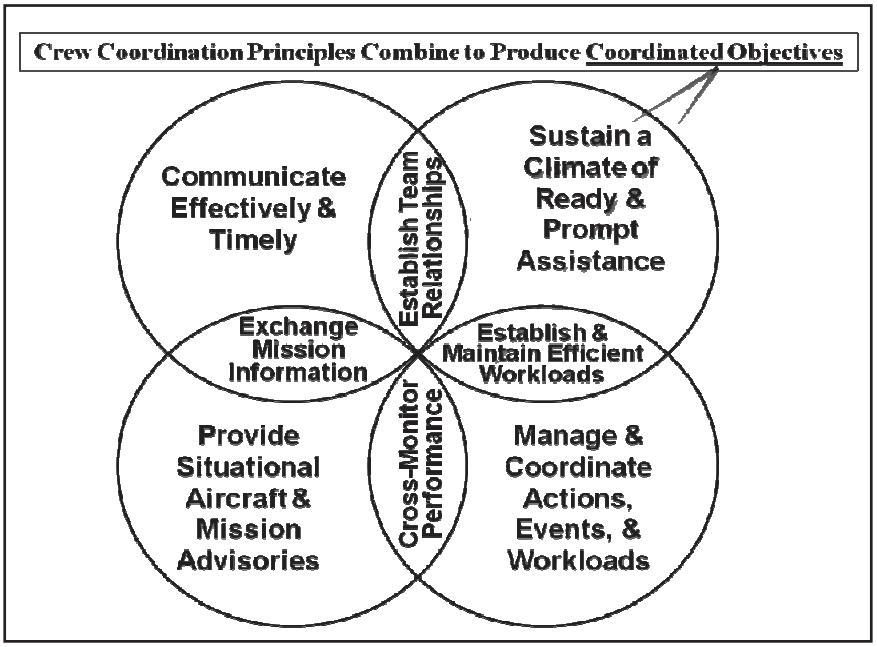


Figure 4-1. Aircrew coordination principles

COMMUNICATE EFFECTIVELY AND TIMELY

4-6. Good team relationships begin with effective communication among crewmembers. Communication is effective when the sender directs, announces, requests, or offers information; the receiver acknowledges the information; and the sender confirms the receipt of information, based on the receiver's acknowledgment or action. This enables the efficient flow and exchange of important mission information that keeps a crew on top of any situation that arises.

- **Announce and acknowledge decisions and actions.** To ensure effective and well-coordinated actions while operating the UA, all crewmembers must be kept informed and made aware of decisions, expected movements of crew and UA, and the unexpected individual actions of others. Each crewmember will announce any actions that may affect the actions of other crewmembers. In turn, communications while operating the UA must include supportive feedback that clearly indicates that crewmembers acknowledge and correctly understand announcements, decisions, or directives of other crewmembers.
- **Ensure that statements and directives are clear, timely, relevant, complete, and verified.** These are qualities that must describe the kind of communication that is effective. Considering the fleeting moments of time in a busy aviation environment, only one opportunity may exist to convey critical and supporting information before tragedy strikes. That information must be clearly understood, not confusing, and said at the earliest opportunity possible. It must be applicable to the events at hand to support the needs and security of the mission. The information must include all elements needed to make the best decision based on its urgency; and the communication must come with ability of proven confirmation and without redundancy. It must also include the crew's use of standard terminology and feedback techniques that accurately validate information transfer. Emphasis is on the quality of statements associated with navigation, obstacle clearance, instrument readouts, and emergencies. Specific goals include the following:

  - Crewmembers consistently make the required callouts. Their statements and directives are always timely. Their response to unexpected events is made in a composed, professional manner.
  - Crewmembers actively seek feedback when they **do not** receive acknowledgment from another crewmember. Crewmembers always acknowledge the understanding of intent and request clarification when necessary.
- Be explicit. Crewmembers should use clear, concise terms, standard terminology, and phrases that accurately convey critical information. Crewmembers must avoid using terms that have multiple meanings, such as "right," "back up," or "I have it." Crewmembers must also avoid using indefinite modifiers such as, "Do you see that tree?" or "You are coming in a little fast."

SUSTAIN A CLIMATE OF READY AND PROMPT ASSISTANCE

4-7. The requirement to maintain a professional atmosphere by all members of the team begins with the team leadership of the AC. However, all crewmembers must equally respect the value of other crewmember's expertise and judgment regardless of rank, duty, or seniority. Every member has a responsibility to maintain situational awareness for mission requirements, flight regulations, operating procedures, and safety. Each crewmember must be willing to practice advocacy and assertiveness should the situation demand a different course of action, as time permits. It is critical to maintain this crew climate that enables opportunity to apply appropriate decision-making techniques for defining the best course of action when problems arise. Courses of action may demand that assistance be directed to other crewmembers or could be voluntary assistance that is offered in a timely manner, depending on time constraints and information available. All crewmembers must remain approachable, especially in critical phases of flight when reaction time is at a premium.

Note. The two-challenge rule allows one crewmember to assume the duties of another crewmember who fails to respond to two consecutive challenges automatically. For example, the AO becomes fixated, confused, task overloaded, or otherwise allows the UA to enter an unsafe position or attitude. The AC first asks the AO whether they are aware of the UA position or attitude. If the AO does not acknowledge this challenge, the AC issues a second challenge. If the AO fails to acknowledge the second challenge, the AC assumes control of the UA.

FLIGHT TEAM LEADERSHIP AND CREW CLIMATE ARE ESTABLISHED AND MAINTAINED

4-8. This quality addresses the relationships among the crew and the overall climate of the flight deck. Aircrews are teams with a designated leader and clear lines of authority and responsibility. The AC sets the tone for the crew and maintains the working environment. Effective leaders use their authority, but **do not** operate without the participation of other crewmembers. When crewmembers disagree on a course of action, they must be effective in resolving the disagreement. Specific goals include the following:

- The AC actively establishes an open climate where crewmembers freely talk and ask questions.
- Crewmembers value each other for their expertise and judgment. They **do not** allow differences in rank and experience to influence their willingness to speak up.
- Alternative viewpoints are a normal and occasional part of crew interaction. Crewmembers handle disagreements in a professional manner, avoiding personal attacks or defensive posturing.
- The AO actively monitors the attitudes of crewmembers and offers feedback when necessary. Each crewmember displays the proper concern for balancing safety with mission accomplishment.

EFFECTIVELY MANAGE, COORDINATE, AND PRIORITIZE PLANNED ACTIONS, UNEXPECTED EVENTS, AND WORKLOAD DISTRIBUTION

4-9. The crew performing as a team should avoid distractions from essential activities while distributing and managing the workloads equally. Both the technical and managerial aspects of coping with normal and unusual situations are important. Proper sequencing and timing guarantees that the actions of one crewmember support and mesh with the actions of the other crewmembers. Responsible effort must be used

to ensure that actions and directives are clear, timely, relevant, complete, verified, and coordinated with minimal direction from the AC.

- Direct assistance. A crewmember will direct or request assistance when he or she cannot maintain UA control, position, or clearance. A crewmember will also direct assistance when being overloaded with tasks or unable to properly operate or troubleshoot UA systems without help from the other crewmembers. The AC ensures that all crew duties and mission responsibilities are clearly assigned and efficiently distributed to prevent the overloading of any crewmember, especially during critical phases of flight. Crewmembers should also watch for workload buildup on others and react quickly to adjust the distribution of task responsibilities.
- Prioritize actions and equitably distribute workload. Crewmembers are always able to identify and prioritize competing mission tasks. They never ignore flight safety and other high-priority tasks. They appropriately delay low-priority tasks until those tasks **do not** compete with tasks that are more critical. Crewmembers consistently avoid nonessential distractions so that these distractions **do not** affect task performance (for example, sterile cockpit) or ability to help another crewmember. Crew actions should reflect extensive review of procedures in prior training and pre-mission planning and rehearsal.

PROVIDE SITUATIONAL AIRCRAFT CONTROL, OBSTACLE AVOIDANCE, AND MISSION ADVISORIES

4-10. Although the operator on flight controls (A) is responsible for UA control, the other crewmembers may need to provide UA control information regarding UA position (airspeed, altitude, etc), orientation, obstacle avoidance, equipment and personnel status, environmental and battlefield conditions, and changes to mission objectives or evolving situations of the mission (situational awareness). Crewmembers must anticipate and offer supporting information and actions to the decision-maker, which is usually the AC. Specific goals include the following:

- Situational awareness. Crewmembers must anticipate the need to provide information or warnings to the AC or AO during critical phases of the flight or mission. The AC must encourage crewmembers to exercise the freedom to raise issues or offer information about safety or mission related matters. In turn, the crewmembers will provide the required information and warnings in a timely and professional manner. None of this could be accomplished without cross-monitoring performance and crew tasks.
- Mission changes and updates. Crewmembers should routinely update each other while highlighting and acknowledging mission changes. They must take personal responsibility for scanning the entire flight environment, considering their assigned workload and areas of scanning. Each crewmember needs to appropriately adjust individual workload and task priorities with minimal verbal direction from the AC when responding to emergencies and unplanned changes of the mission.
- Offer assistance. A crewmember will provide assistance, information, or feedback in response to another crewmember. A crewmember will also offer assistance when he or she detects errors or sees that another crewmember needs help. In the case where safety or mission performance is at risk, immediate challenge and control measures must be assertively exercised. A crewmember should quickly and professionally inform and assist the other crewmember committing the error. When required, they must effectively implement the two-challenge rule with minimal compromise to flight safety. This means that you must continually cross-monitor other crewmember's actions and remain capable of detecting each other's errors. Such redundancy is particularly important when crews are tired or overly focused on critical task elements and thus more prone to make errors. Crewmembers must discuss conditions and situations that can compromise situational awareness. These include, but are not limited to, stress, boredom, fatigue, and anger.

PRE-MISSION PLANNING AND REHEARSAL ARE ACCOMPLISHED

4-11. Pre-mission planning includes all preparatory tasks associated with planning the mission. Preparatory tasks also include assigning crewmember responsibilities and conducting all required briefings and brief

backs. Pre-mission rehearsal involves the crew collectively visualizing and discussing expected and potentially unexpected events for the entire mission. Through this process, all crewmembers think through contingencies and actions for difficult segments or unusual events associated with the mission and develop strategies to cope with contingencies. Specific goals include the following:

- The AC ensures that all actions, duties, and mission responsibilities are partitioned and clearly assigned to specific crewmembers. Each crewmember actively participates in the mission planning process to ensure a common understanding of mission intent and operational sequence. The AC prioritizes planning activities so that critical items are addressed within the available planning time.
- The crew identifies alternate courses of action in anticipation of potential changes in METT-TC and is fully prepared to implement contingency plans as necessary. Crewmembers mentally rehearse the entire mission by visualizing and discussing potential problems, contingencies, and responsibilities.
- The AC ensures that crewmembers take advantage of periods of low workload to rehearse upcoming flight segments. Crewmembers continuously review remaining flight segments to identify required adjustments. Their planning is consistently ahead of critical lead times.

APPROPRIATE DECISION-MAKING TECHNIQUES ARE APPLIED

4-12. Decision making is the act of rendering a solution to a problem and defining a plan of action. It must involve risk assessment. The quality of decision making and problem solving throughout the planning and execution phases of the mission depends on the information available, time constraints, and level of involvement and information exchanged among crewmembers. The crew's ability to apply appropriate decision-making techniques based on these criteria has a major impact on the choice and quality of their resultant actions. Although the entire crew should be involved in the decision making and problem-solving process, the mission AC is the key decision maker. Specific goals include the following:

- Under high-time stress, crewmembers rely on a pattern-recognition decision process to produce timely responses. They minimize deliberation consistent with the available decision time. Crewmembers focus on the most critical factors influencing their choice of responses. They efficiently prioritize their specific information needs within the available decision time.
- Under moderate- to low-time stress, crewmembers rely on an analytical decision process to produce high-quality decisions. They encourage deliberation when time permits. In order to obtain the most unbiased decision possible, crewmembers consider all important factors influencing their choice of action. They consistently seek all available information relative to the factors being considered.

ACTIONS ARE PRIORITIZED AND WORKLOAD IS EQUITABLY DISTRIBUTED

4-13. The quality of workload distribution addresses the effectiveness of time and workload management. It assesses the extent to which the crew—as a team—avoids distractions from essential activities, distributes and manages workload, and avoids individual task overload. Specific goals include the following:

- Crewmembers are always able to identify and prioritize competing mission tasks. They never ignore flight safety and other high-priority tasks. They appropriately delay low-priority tasks until those tasks **do not** compete with more critical tasks. Crewmembers consistently avoid nonessential distractions so that these distractions **do not** impact on task performance.
- The AC distributes mission tasks to prevent overloading of any crewmember, especially during critical phases of flight. Crewmembers watch for workload buildup on others and react quickly to adjust the distribution of task responsibilities.

UNEXPECTED EVENTS ARE MANAGED EFFECTIVELY

4-14. The quality of unexpected events addresses the crew's performance under unusual circumstances that may involve high levels of stress. Both the technical and managerial aspects of coping with the situation are important. Specific goals include the following:

- Crew actions reflect extensive rehearsal of emergency procedures in prior training and pre-mission planning and rehearsal.
- Crewmembers coordinate their actions and exchange information with minimal verbal direction from the AC. They respond to the unexpected event in a composed, professional manner.
- Each crewmember appropriately or voluntarily adjusts individual workload and task priorities with minimal verbal direction from the AC. The AC ensures that each crewmember is used effectively when responding to the emergency and that the workload is efficiently distributed.

STATEMENTS AND DIRECTIVES ARE CLEAR, TIMELY, RELEVANT, COMPLETE, AND VERIFIED

4-15. The quality of statements and directives refers to the completeness, timeliness, and quality of information transfer. It includes the crew using standard terminology and feedback techniques to verify information transfer. Emphasis is on the quality of instructions and statements associated with navigation, obstacle clearance, and instrument readouts. Specific goals include the following:

- Crewmembers consistently make the required call outs. Their statements and directives are always timely.
- Crewmembers use standard terminology in all communications. Their statements and directives are clear and concise.
- Crewmembers actively seek feedback when they **do not** receive acknowledgment from another crewmember. They always acknowledge understanding of intent and request clarification when necessary.

MISSION SITUATIONAL AWARENESS IS MAINTAINED

4-16. The quality of situational awareness considers the extent to which crewmembers keep each other informed about the status of the UA and the mission. Information reporting helps the aircrew maintain a high level of situational awareness. The information reported includes UA position and orientation, equipment and personnel status, environmental and battlefield conditions, and changes to mission objectives. Awareness of the situation by the entire crew is essential for a safe flight and effective crew performance. Specific goals include the following:

- Crewmembers routinely update each other and highlight and acknowledge changes. They take personal responsibility for scanning the entire flight environment, considering their assigned workload and areas of scanning.
- Crewmembers actively discuss conditions and situations that can compromise situational awareness. These include, but are not limited to, stress, boredom, fatigue, and anger.

DECISIONS AND ACTIONS ARE COMMUNICATED AND ACKNOWLEDGED

4-17. This quality addresses the extent to which crewmembers are kept informed of decisions made and actions taken by another crewmember. Crewmembers should respond verbally or by appropriately adjusting their behaviors, actions, or control inputs to clearly indicate that they understand when a decision has been made and what it is. Failure to do so may confuse crews and lead to uncoordinated operations. Specific goals include the following:

- Crewmembers announce decisions and actions, stating their rationale and intentions as time permits. The UAC verbally coordinates the transfer of or inputs to controls before action.
- Crewmembers always acknowledge announced decisions or actions and provide feedback on how these decisions or actions will affect other crew tasks. If necessary, they promptly request clarification of decisions or actions.

SUPPORTING INFORMATION AND ACTIONS ARE SOUGHT

4-18. This quality addresses the extent to which supporting information and actions are sought from the crew by another crewmember. Crewmembers should feel free to raise questions during the flight regarding

plans, revisions to plans, actions to be taken, and the status of key mission information. Specific goals include the following:

- The AC encourages crewmembers to raise issues or offer information about safety or the mission. Crewmembers anticipate impending decisions and actions and offer information as appropriate.
- Crewmembers always request assistance from others before they become overloaded with tasks or before they must divert their attention from a critical task.

CREWMEMBER ACTIONS ARE MUTUALLY CROSS MONITORED

4-19. This quality addresses the extent to which a crew uses cross monitoring as a mechanism for breaking error chains that lead to accidents or degraded mission performance. Crewmembers must be capable of detecting each other's errors. Such redundancy is particularly important when crews are tired or overly focused on critical task elements and thus more prone to make errors. Specific goals include the following:

- Crewmembers acknowledge that crew error is a common occurrence and the active involvement of the entire crew is required to detect and break the error chains that lead to accidents. They constantly watch for crew errors affecting flight safety or mission performance. They monitor their own performance as well as that of others. When they note an error, they quickly and professionally inform and assist the crewmember committing the error.
- The crew thoroughly discusses the two-challenge rule before executing the mission. When required, they effectively implement the two-challenge rule with minimal compromise to flight safety.

Note. The two-challenge rule allows one crewmember to automatically assume the duties of another crewmember who fails to respond to two consecutive challenges. For example, the AO becomes fixated, confused, task overloaded, or otherwise allows the UA to enter an unsafe position or attitude. The payload operator (PO) first asks the AO whether the AO is aware of the UA position or attitude. If the AO does not acknowledge this challenge, the PO issues a second challenge. If the AO fails to acknowledge the second challenge, the PO takes corrective action.

SUPPORTING INFORMATION AND ACTIONS ARE OFFERED

4-20. This quality addresses the extent to which crewmembers anticipate and offer supporting information and actions to the decision maker (usually the AC) when apparently a decision must be made or an action taken. Specific goals include the following:

- Crewmembers anticipate the need to provide information or warnings during critical phases of the flight. They provide the required information and warnings in a timely manner.
- Crewmembers anticipate the need to assist during the critical phases of flight. They provide the required assistance when needed.

ADVOCACY AND ASSERTION ARE PRACTICED

4-21. This quality concerns the extent to which crewmembers are proactive in advocating a course of action they consider best, even when others may disagree. Specific goals include the following:

- While maintaining a professional atmosphere, crewmembers state the rationale for their recommended plans and courses of action when time permits. They request feedback to make sure others have correctly understood their statements or rationale. Time permitting, other crewmembers practice good listening habits; they wait for the rationale before commenting on the recommended plans or courses of action.
- The AC actively promotes objectivity by encouraging other crewmembers to speak up despite their rank or experience. Junior crewmembers **do not** hesitate to speak up when they disagree with senior members; they understand that more experienced crewmembers can sometimes commit errors or lose situational awareness. Every member of the crew displays a sense of responsibility for adhering to flight regulations, operating procedures, and safety standards.

CREW-LEVEL AFTER ACTION REVIEWS ARE CONDUCTED

4-22. This quality addresses the extent to which crewmembers review and critique their actions during or after a mission segment, during periods of low workload, or during the mission debriefing. Specific goals include the following:

- The crew critiques major decisions and actions. They identify options and factors that should have been discussed and outline ways to improve crew performance in future missions.
- The critique of crew decisions and actions is professional. "Finger-pointing" is avoided; the emphasis is on education and improvement of crew performance.

CREW COORINATION OBJECTIVES

4-23. Crew coordination principles and objectives originate from and are fundamentally supported by a set of individual, professional skills. Each crewmember is responsible for attaining the leadership skills of effective communication, resource management, decision-making, situational awareness, team building, and conflict resolution. When crewmembers are actively using these skills and practicing crew coordination principles, results can be seen and measured to determine whether the objectives of the crew coordination program are being met. The goals of the program have been defined by four crew coordination objectives. The four objectives are as follows:

- **Establish and maintain team relationships.** Establish a positive working relationship that allows the crew to communicate openly, freely, and effectively in order to operate in a concerted manner where a climate of professional assistance is easily found and promptly provided.
- **Establish and maintain efficient workloads.** Manage and coordinate priorities and execute the mission workload in an effective and efficient manner with the redistribution of task responsibilities as the mission situation changes. Flight duty responsibilities are performed in a timely manner where mission needs are always anticipated.
- **Exchange mission information.** Establish all levels of crew and mission communications using effective patterns and techniques that allow for the flow of essential data and mission advisories among all crewmembers in a timely and accurate manner.
- **Cross-monitor performance.** Cross-monitor each other's actions and decisions to ensure workloads and crew actions are performed in a coordinated manner and to standard. Cross-monitoring crewmember performance keeps a crew ready to provide UA and mission advisories to each other and helps to reduce the likelihood of errors affecting mission performance and safety.

STANDARD CREW TERMINOLOGY

4-24. To enhance communication and crew coordination, crews should use words or phrases that are understood by all participants. Crewmembers must use clear, concise terms that can be easily understood and complied with in an environment full of distractions. Multiple terms with the same meaning should be avoided. DOD FLIP contains standard terminology for radio communications. Operator's manuals contain standard terminology for items of equipment. Table 4-1 provides a list of standard words and phrases that crewmembers may use.

Table 4-1. Examples of standard words and phrases

Standard Word or Phrase	*Meaning of Standard Word or Phrase*
Abort	Terminate a preplanned aircraft maneuver.
Affirmative	Yes.
Air target	Detected fast mover or helicopter.
Bandit	An identified enemy aircraft.
Bingo	Fuel state needed for recovery.
Blind	No visual contact of friendly aircraft/ground position. Opposite of VISUAL.

Table 4-1. Examples of standard words and phrases

Standard Word or Phrase	*Meaning of Standard Word or Phrase*
Bogey	An unidentified aircraft assumed to be an enemy.
Break	Immediate action command to perform an emergency maneuver to deviate from the present ground track; will be followed by the word “right,” “left,” “up,” or “down.”
Call out	Command by the operator on the controls (A) for a specified procedure to be read from the CL by the other crewmember.
Cease fire	Command to stop firing but continue to track.
Clear	No obstacle is present to impede aircraft movement along the intended ground track. Will be preceded by the word “nose,” “tail,” or “aircraft” and followed by the direction (for example, “left,” “right,” “slide left,” or “slide right”). Also indicates that ground personnel are authorized to approach the aircraft.
Climb	Command to change altitude up.
Come up/down	Command to change altitude up or down; normally used to control masking and unmasking operations.
Contact	(1) Establish communication with (followed by the name of the element). (2) Sensor contact at the stated position. (3) Acknowledges sighting of a specified reference point (either visually or via sensor). (4) Individual radar return within a GROUP or ARM.
Correct	Confirms a statement as being accurate or right. **Do not** use the word “right” to indicate correct.
Deadeye	Laser designator system inoperative.
Descend	Command to decrease altitude.
Drifting	An alert of the unannounced movement of the aircraft; will be followed by directions.
Execute	Initiate an action.
Expect	Anticipate further instructions or guidance.
Firing	Announcement that a specific weapon is to be fired.
Go ahead	Proceed with your message.
Go plain/red	Command to discontinue secure operations.
Go secure/green	Command to activate secure communications.
Hold	Command to maintain present position.
In sight	Preceded by the word “traffic,” “target,” “obstacle,” or descriptive term. Used to confirm the traffic, target, or obstacle is positively seen or identified.
Laser On	Start/acknowledge laser designation.
Lasing	The speaker is firing the laser.
Maintain	Command to continue or keep the same.
Monitor	Command to maintain constant watch or observation.
Negative	Incorrect or permission not granted.
Negative contact	Unable to establish communication with (followed by name of element).

Table 4-1. Examples of standard words and phrases

Standard Word or Phrase	*Meaning of Standard Word or Phrase*
No joy	Crew does not have positive visual contact with the target/bandit/traffic/obstruction/landmark. Opposite of TALLY.
Report	Command to notify.
Right	Used to indicate a direction only, not to be used in place of “correct.”
Roger	Message received and understood.
Say again	Repeat your transmission.
Slow down	Command to decrease ground speed.
Speed up	Command to increase ground speed.
Stand by	Wait; duties of a higher priority are being performed and request cannot be complied with at this time.
Stop	Command to go no further; halt present action.
Tally	Sighting of a target, non-friendly aircraft, enemy position, landmark, traffic, or obstruction positively seen or identified; will be followed by a repeat of the word “target,” "traffic," or "obstruction" and the clock position. Opposite of No Joy.
Target	An alert that a ground threat has been spotted.
Traffic	Refers to friendly aircraft that present a potential hazard to the current route of flight; will be followed by an approximate clock position and the distance from your aircraft with a reference to altitude (high or low).
Turn	Command to deviate from the current heading; will be followed by the word "right" or "left," and a specific heading or rally term.
Visual	Sighting of a friendly aircraft/ground position. Opposite of BLIND.
Unable	Indicates the inability to comply with a specific instruction or request.
Weapons Hot/Cold/Off	Indicates weapon switches are in the ARMED, SAFE, or OFF position.
Zoom In/Out	Increase/decrease the sensor’s focal length. ZOOM IN/OUT is normally followed by “ONE, TWO, THREE, or FOUR”: to indicate the number of fields of view (FOVs) to change. (Note. It is recommended only one change in or out at a time be used for the FOV.)

AIRCREW COORDINATION TRAINING-ENHANCED

4-25. ACT-E sustainment training will be completed annually during the crewmember’s ATP year. ACT-E is a two part system qualification and sustainment.

- Part I–Qualification. Operators are initially ACT-E qualified at USAACE. All other crewmembers are initially qualified by an ACT-E instructor using the most current USAACE approved qualification course.
- Part II–Sustainment. All crewmembers are required to complete the training each ATP year through the U.S. Army Blackboard server at the following website: https://ellc.learn.army.mil.
  - ACT-E qualification and sustainment training are instructor-led courses that use multimedia in a vignette-based presentation. This form of instruction allows instructors to facilitate free and open discussions, enabling crewmembers to operate more safely and effectively. Instructors must request access to register. The point of contact for the ACT-E courseware and ACT-E issues may be contacted via ruck.acte@conus.army.mil.
  - All Active Army and RC, Department of the Army civilian, and contractor operators and GCMs will receive ACT-E qualification and sustainment training.

- FAC 1 and FAC 2 crewmembers may not progress to RL 1 until ACT-E qualification is completed.
- All crewmembers will complete the ACT-E sustainment training, led by an ACT-E instructor each ATP year. Commanders must ensure that the crewmember will not exceed 15 consecutive months without having completed ACT-E sustainment or qualification training so the crewmember receives ACT-E training every ATP year.
- RL 1 and FAC 3 crewmembers failing to complete ACT-E training by the end of their APART period will be restricted from performing flight duties until the requirement is completed.
- ACT-E qualified instructors will submit information for enrollment into the ACT-E courseware site IAW procedures described at the following website: https://training.rucker.army.mil/protected/ACT_E/ACTE.html. Once approved, ACT-E initial qualification and sustainment training may be accessed through the U.S. Army Blackboard server at the following website: https://ellc.learn.army.mil.
- The following standardization personnel (SO/IO) are authorized to conduct ACT-E training as an ACT-E instructor:
- Standardization personnel (SO/IO), upon completion of an USAACE-approved IO course.
- Standardization personnel (SO/IO) who were previously instructor qualified to teach ACT or ACT-E qualification training.
- Current and qualified ACT-E instructors may also qualify other standardization personnel as ACT-E instructors.
- Instructor qualified operators may conduct initial ACT-E qualification, sustainment, and instructor qualification training for operators, CEs, and WOs with limited payload duties.
- ACT-E initial qualification and annual sustainment training will be annotated on the individual's DA Form 7122-R as an event and in the remarks section of the individual's DA Form 759 during the annual close-out.
- Flight training (UA/UAS simulator). For ACT-E qualification, crewmembers are required to undergo a 1-hour ACT-E training/evaluation flight in either the crewmembers primary UAS simulator (if available) or the UA. ACT-E qualified IOs and SOs may conduct all UAC flight training. CEs may conduct all GCM flight training.

ANNUAL AIRCREW COORDINATION TRAINING-ENHANCED EVALUATION REQUIREMENTS

4-26. Crewmembers will be evaluated on ACT-E during RL progression. Aircrew coordination will be evaluated during the conduct of every standardization evaluation to include the APART. Crew coordination is a component of every individual, crew, maintenance, standardization, and special task.

AIRCREW COORDINATION TRAINING-ENHANCED DOCUMENTATION

4-27. The ACT-E is documented as follows:

- "ACT-E initial qualification complete," will be annotated on the individual's DA Form 7122-R and in the remarks section of the individual's DA Form 759 on close out.
- "ACT-E sustainment complete," will be annotated on the individual's DA Form 7122-R and in the remarks section of the individual's DA Form 759 on close out.

WAIVERS

4-28. Waivers may be granted only for those individuals/units that are in a deployment status and cannot accomplish the ACT-E training. Waiver authority will be the first O-6 in the chain of command and will be annotated in the crewmember's IATF on DA Form 7122-R, DA Form 7120-3-R, and DA Form 759.

Individuals/units that are granted waivers because of deployments must complete the ACT-E qualification/refresher training requirements within 180 days of arrival to home station.

AIRCREW COORDINATION TRAINING-ENHANCED REFERENCE

4-29. ACT-E courseware may be accessed through the USAACE Digital Training Access Center via https://ellc.learn.army.mil. Access to AKO is required to access this site.

Chapter 5
Individual Aircrew Training Folder

LABELS AND CONTENTS

5-1. The ATP records system provides commanders with a comprehensive performance record on each crewmember in their units. The required forms can be completed by hand using dark blue ink, black ink, red ink, by computer, or utilizing DA-approved computer software. Aircrew training records are important quality control and standardization tools. Fill out forms carefully, completely, and legibly. The examples of completed DA forms in this TC illustrate the intent of the written instructions; however, they cannot cover every possible situation. Use the "Remarks" section of the forms and/or the comment slips to explain situations not clearly covered by the written guidelines. Commanders are responsible to ensure that only events and remarks pertinent to the ATP are annotated in the IATF. Commanders have the authority to remove comments entered outside the scope of the ATP.

RESPONSIBILITIES

5-2. Commanders must ensure that an IATF is prepared and maintained for each operator assigned or attached to their unit. Units will maintain a DA Form 7122-R for all personnel designated as MC. Figure 5-1 and 5-2, page 5-2, show examples of the required layout and contents for the IATF. Use DA Form 3513 (Individual Flight Records Folder, United States Army). Prepare DA Form 3513 by changing the words "flight records" on the front cover to "aircrew training." Crewmembers assigned or attached for flight duty will present their IATF to the commander or the commander's designated representative on arrival in the unit. Units will process crewmembers that are not assigned to operational flying positions IAW DA regulations, Army command directives, and installation guidance. Figure 5-1 provides a sample of an IATF label. Figure 5-2,, provides the required layout and content listing for an IATF.

Note. The Army Records Information Management System (www.ARIMS.army.mil) must be used to complete the labels in figure 5-1.

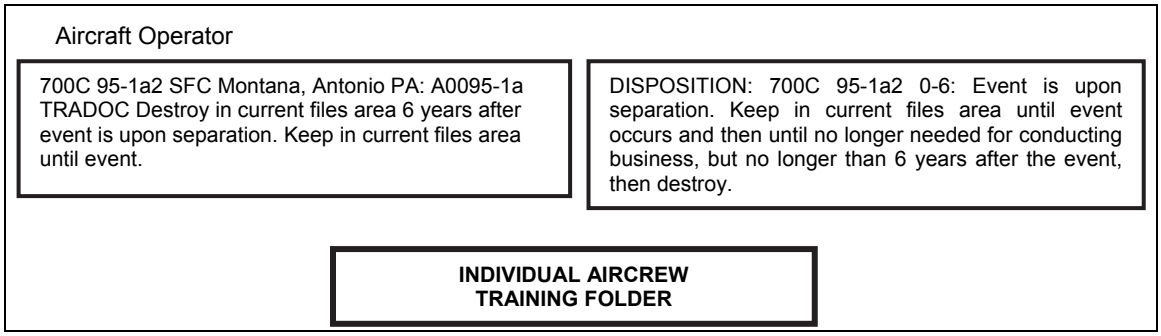


Figure 5-1. Individual aircrew training folder labels

LEFT SIDE OF FOLDER (File items in the order listed.)	*RIGHT SIDE OF FOLDER* (File items in the order listed.)
1. Current training year's DA Forms: • DA Form 7120-R (Commander's Task List). • DA Form 7120-1-R (Crewmember Task Performance and Evaluation Requirements). • DA Form 7120-2-R (Crewmember Task Performance and Evaluation Requirements Continuation Sheet) (if used). • DA Form 7120-3-R (Crewmember Task Performance and Evaluation Requirements, Remarks, and Certification). 2. The preceding year DA Forms: • DA Form 7120-R. • DA Form 7120-1-R. • DA Form 7120-2-R. • DA Form 7120-3 R.	1. Grade slips for qualification, individual refresher, crew, or mission training. (DA Form 4507-R through DA Form 4507-2-R). 2. DA Form 7122-R (Crewmember Training Record). 3. Miscellaneous. • Waivers. • Local required forms. ***Note.*** Incomplete grade slips can be maintained on top of the DA Form 7122-R until training is completed and a summary is posted to the DA Form 7122-R). (Remove these grade slips when a summary is posted to the DA Form 7122-R.)

Figure 5-2. Individual aircrew training folder contents

5-3. At the completion of the training year, provide the information required from DA Forms 7120-R and DA Form 7122-R to the authorized centralized aviation flight records system (CAFRS) personnel for DA Form 759 closeout IAW FM 3-04.300 (chapter 6 in this ATM). After an individual's release from active duty, retirement, discharge, resignation, assignment to the USAR control group, or death, the unit will process the IATF IAW AR 95-23.

DEPARTMENT OF THE ARMY FORM 7120-R SERIES

5-4. The ATP commander develops a task list to support crewmembers designated duty positions. The CTL consists of the DA Form 7120-R series and all enclosures. The CTL designates the authorized duties and flight stations the crewmember may occupy and the hours, tasks, iterations, evaluation requirements, and responsibilities the crewmember must accomplish during the training year. The CTL is initiated whenever a crewmember is integrated into a unit's ATP.

5-5. The CTL is a written agreement between the commander and the crewmember. Commanders use DA Form 7120-R, DA Form 7120-1-R, DA Form 7120-2-R, and DA Form 7120-3-R to inform crewmembers of their ATP requirements and to designate authorized flight duties, stations, and mission or additional tasks. A separate set of forms is required for each primary, additional, and alternate UA in which the crewmember performs duties. Crewmembers performing crew duties in multiple UA defined as similar may use a set of forms for each instance. Operators are prohibited from performing maneuvers not listed on their CTL until trained and evaluated in that task by an SO/IO.

5-6. Crewmembers are authorized to perform only those tasks listed on the CTL. Tasks not listed on the CTL will not be performed unless the commander has performed a risk analysis and briefed the crewmember on specific task(s) to be performed IAW chapter 3 in this ATM. A separate DA Form 7120-R is required for each aircraft not defined as similar by the appropriate appendix in this ATM which the crewmember is authorized to perform duties. The requirements established by the CTL are tailored to the proficiency training needs of the individual crewmember. Tailoring is completed using the results of the set

of forms completed during RL progression. Any tasks that received multiple "unsatisfactory" could require more iterations on DA Form 7120-1-R.

5-7. DA Form 7120-R is an active document. As such, commanders may amend DA Form 7120-R and associated enclosures throughout the crewmember's ATP training year. An event that establishes or changes requirements on the forms will be annotated by entering the date and a brief description of that event in the first, logical remarks section of the forms. Make the associated individual change(s) as necessary throughout the DA Form 7120-R and its enclosures. The ATP commander must then place their initials next to the event to certify approval of the subsequent change(s). Some events require several individual changes to the CTL; when this occurs, **do not** initial each change, only the event entry in the remarks section that caused the changes. Units are only required to initiate a new DA Form 7120-R when—

- The crewmember is integrated into the unit's ATP. Only the crewmember's biographical data in Part 1 and authorized flight duties/stations in Part 2 are required to be filled out. The DA Form 7120-R is the commander's authorization for the crewmember to perform flight duties in the designated stations and modes for the purposes of training, and will be signed by the commander and crewmember prior to the crewmembers first flight.
- The DA Form 7120-R is now a contract between the commander and the UAC. The DA Form 7120-R will be dated the day the crewmember is initially designated RL 1 and signed by the commander and crewmember.
- The crewmember begins a new ATP training year.
- Amending the existing DA Form 7120-R is impractical. Clearly mark the amended copy on the top of the form as "Amended Copy." Retain the unusable DA Form 7120-R with the amended DA Form 7120-R through its final disposition.

Note. A new DA Form 7120-R is not required for initial RL 1 designation. Once designated RL 1, the changes made to the CTL will be initialed by the ATP commander and explained on the DA Form 7120-R remarks or 7120-3-R as required. If a change in unit command occurs during the ATP year, the existing DA Form 7120-R and all enclosures remain in effect until the new form is initiated.

Note. The commander will ensure the crewmember has been briefed on any change to ATP requirements. Updating administrative data, rank changes, and spelling errors, and date errors **do not** require the commander's initials.

DEPARTMENT OF THE ARMY FORM 7120-R

5-8. Instructions for completing DA Form 7120-R are shown in the following paragraphs. Figure 5-3, page 5-7, provides an example of a completed DA Form 7120-R.

5-9. **Part I-Biographical.** This section contains personal, biographical information.

- **Name.** Enter the UACs name (last, first, middle initial).
- **Rank.** Enter the crewmember's rank (PFC, SFC, CW3, and so forth).
- **Personnel identifier (PID).** The UACs PID is a unique identification code used by the CAFRS known as the electronic data interchange personnel identifier (EDI-PI). Use of the UACs social security number (SSN) or portions of the crewmember's SSN (WL1234) is prohibited.

Note. In the event that CAFRS is not yet fielded in the current flight operations section the crewmember is assigned to, leave the PID block blank or use the CAFRS PID from the crewmember's previous unit.

Note. The PID generated by CAFRS is not to be confused with the PID used with the Unit Level Logistics System-Aviation (Enhanced), which incorporates the crewmembers initials and a portion of their SSN.

- **Birth month.** Enter the crewmember's birth month.

- **FAC.** Enter the flight activity category for the position the UAC is assigned. This block is not applicable for DACs.
- **Duty title.** Enter the crewmember's primary duty title IAW MTOE or TDA (for example, company standardization instructor operator).
- **Aircraft.** Enter the modified mission, mission type, design, and series (MQ-1C or RQ-7B) for which the DA Form 7120-R applies. Place an "**X**" in the appropriate box to show that this is the crewmember's primary, additional, or alternate aircraft. Other aircraft within a series, defined as being similar, in which a crewmember is authorized and expected to perform duties will be listed on the DA Form 7120-3-R.

5-10. **Part II-Authorized flight duties/stations.** Place an "**X**" in the appropriate blocks to show the authorized crewmember duties. Explain any authorization to perform observer duties in the remarks column.

- **Right/back seat**. Place an "**X**" in the authorized crew duty for that position.
- **Left/front seat**. Place an "**X**" in the authorized crew duty for that position.
- **Other station**. Place an "**X**" in the authorized crew duty for a station other than described above. If the duty station is other than the aircraft cabin or if further description of the cabin duty station is desired, specify that station in the remarks section of Part II (for example, the portable ground control station [PGCS]).
- **Night vision device** [NVD]. Leave blank if it does not apply.
- **Remarks.** Enter sufficient remarks to explain changes made to designated crew duties and or duty stations after this forms initiation.

5-11. **Part III-Flying-hour requirements.** Individual flying hour requirements are derived from the ATM and broken down into three segments: Annual (annual flying hour requirements) or first period and second period (semi-annual flying hour requirements). Compute training period inclusive dates for the appropriate condition—initial designation or annual designation. See the following examples:

- **Initial Designation.** Initial designation is when a crewmember is first designated RL 1 or FAC 3 after integration into the unit's ATP.
  - **Annual.** When initially designated RL 1 or FAC 3 (or RL 2 for ARNG crewmembers), the annual training period will begin that day and end the last day of the crewmember's birth month (leave blank).

Note. Only the month and year are required for all training period end dates; the last day of the month is assumed.

Example	
Crewmember Birth Month	July
Designated RL 1 (RL 2 for ARNG)	17 October 11
Annual Training Period	17 October 11 to July 12

  - **First Period.** The first training period is normally the first 6 months of an individual's annual training period. If initial designation occurs during the normal first period, the first training period will be from that date through the end of the first semiannual period. If the crewmember is designated RL 1 during the second training period, leave the date blocks blank in the first training period.

Example	
Crewmember Birth Month	July
Designated RL 1 (RL 2 for ARNG)	17 October 11
First Training Period	17 October 11 to January 12

- **Second Period**. The second training period is normally the last 6 months of an individual's annual training period. Since initial designation in this case was during the normal first period, the individual will have a complete second training period.

Example	
Crewmember Birth Month	July
Designated RL 1 (RL 2 for ARNG)	17 October 11
Second Training Period	February 12 to July 12

- **Annual Designation.** Annual designation is the initiation of a new DA Form 7120-R after the crewmember's annual closeout.
  - **Annual.** The first day of the month following the individual's birth month through the end of the crewmember's next birth month and year (leave blank).

Example	
Crewmember Birth Month	July
Annual Closeout	31 July 11
Annual Training Period	August 11 to July 12

  - **First Period.** The first day of the month following the individual's birth month, through the end of the sixth month following the birth month.

Example	
Crewmember Birth Month	July
Annual Closeout	31 July 11
First Training Period	August 11 to January 12

  - **Second Period.** The first day of the seventh month following the individual's birth month, through the end of the next birth month and year.

Example	
Crewmember Birth Month	July
Annual Closeout	31 July 11
Second Training Period	February 12 to July 12

- **Total Aircraft Hours.** Determine the number of whole months remaining in the semiannual period in which designated RL 1 (or RL 2 for ARNG crewmembers). Multiply the number of whole months in the training period times one-sixth of the semiannual requirement.

Example	
Birth Month	July
Designated RL 1 FAC 1	7 October 11
First Training Period	3 Months = 3 (1/6 x 12) = 6 hrs
Second Training Period	6 Months (12 hrs)

- **Simulator Hours.** Determine the number of whole months remaining in the training period in which designated RL 1. Multiply the number of whole months remaining in the training period times one-sixth of the semiannual requirement or one-twelfth of the annual requirement as appropriate.

Example	
Birth Month	July
Designated RL 1 FAC 1	17 October 11
First Training Period	3 Months = 3 (1/6 x 24) = 12 hrs
Second Training Period	6 Months (24 hrs)

- **Condition Specific Hours.** Enter the flying hours required under specific conditions as required by the ATM appendix or Army command/local directives (for example, CBRNE hours). The commander may specify other condition specific aircraft flying hour requirements in the bottom two blocks of Part III.

5-12. **Part IV-Evaluation requirements.** In the "Designated Period" column, enter the designated 3-month period in which the crewmember must complete each applicable evaluation listed. Use the remarks/date completed column to annotate changes to evaluation requirements during the ATP training year and to record the date each evaluation is completed.

Note. If the crewmember's evaluation requirements changes during the ATP training year, enter the change in Part IV of the DA Form 7120-R and explain it in the remarks/date completed column. The dates that the evaluations were completed also may be annotated in this column. If more space is needed, use the remarks section of DA Form 7120-3-R.

5-13. **Part V-Enclosures.** DA Form 7120-1-R, DA Form 7120-2-R, and DA Form 7120-3-R will be enclosure 1, 2, and 3, respectively. Check yes or no to indicate whether DA Form 7120-2-R is used. Commanders may add additional enclosures to this block, but must specify the form number or title of the enclosure.

5-14. **Part VI-Certification.** Enter the commander's first name, middle initial, last name, rank, and branch. The commander will sign and date the form authorizing the crewmember to perform flight duties at the indicated crew stations prior to the crewmember's first flight. Authorized duty/station difference for similar aircraft will be specified on the DA Form 7120-3-R. If the crewmember is a company commander (ATP commander), the battalion commander will sign the certification block. When the crewmember is a battalion or brigade commander, the ATP commander will sign the certification block. The crewmember will sign and date the CTL to certify he or she has been briefed on and understands their authorized flight duties/stations and ATP requirements prior to the first flight. Upon initial RL 1 designation, the crewmember will be briefed on task iteration, flying hour minimums, evaluation requirements, and all other requirements incurred by this designation. For annual designation forms, the commander and crewmember will sign and date the CTL no later than the first day of the month following the crewmember's birth month.

COMMANDER'S TASK LIST

For use of this form see TC 3-04.11; the proponent agency is TRADOC.

PART I. BIOGRAPHICAL

Name: Montana, Antonio S.	Rank: SFC	PID: CAFRS ID	Birth Month: JUL	FAC: 1
Duty Title: Instructor Operator	Aircraft Type: RQ-7B UAS	☑ Primary	☐ Additional	☐ Alternate

PART II. AUTHORIZED FLIGHT DUTIES/STATIONS

	PI	PC	UT	IP	SP	IE	MP	FCP	ME	XP	CE	FE	FI	SI	AO	MO	OR	Remarks
Right/Back Seat	☑	☑	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	P Seat
Left/Front Seat	☑	☑	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	A Seat
Other Station	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Designated AC 1 APR 12
NVG	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Designated IO 4 OCT 12
NVS	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

PART III. FLYING-HOUR REQUIREMENTS

	Annual	First Period	Second Period	Remarks/Adjustment
Dates		AUG 11-JAN 12	FEB 12-JUL 12	
Total Aircraft Hours		10	12	Prorated RL1 on 12 NOV 11
Total Simulator Hours		20	24	
Night Unaided Hours				
NVG Hours				
Hood/Weather Hours				
Other Hours (Specify)				
Other Hours (Specify)				

SAMPLE

PART IV. EVALUATION REQUIREMENTS

	Designated Period (AC/USAR) or Qtr (ARNG)	Remarks/Date Completed
Standardization Flight Evaluation	MAY 12-JUL 12	30 DAY EXT APPROVED/SAT/11 AUG 12
Instrument Flight Evaluation		
Operator's Manual Written Examination	MAY 12-JUL 12	96% SAT/13 JUN 12
NVG Flight Evaluation		
Maintenance Test Flight Evaluation		
Other (Specify)	21 AUG 11-JUL 12	SAT on 3 DEC 11
Other (Specify)		

PART V. ENCLOSURES

1. DA Form 7120-1-R (Crew Member Task Performance and Evaluation Requirements)
2. DA Form 7120-2-R (Crew Member Task Performance and Evaluation Requirements Continuation Sheet) ☑ Yes ☐ No
3. DA Form 7120-3-R (Crew Member Task Performance and Evaluation Requirements Remarks and Certification)
4. Other (Specify)
5. Other (Specify)

PART VI. CERTIFICATION

This form, its enclosure(s), and the aircrew training manual establish your Aircrew Training Program requirements.

Commander: Doug R. Cook, CPT, AV	Signature:	Date: 21 AUG 2011

I certify that I have read and understand my ATP requirements contained on this form, its enclosure(s), and the aircrew training manual.

Crew Member's Signature:	Date: 21 Aug 2011

DA FORM 7120-R, DEC 2009 PREVIOUS EDITIONS ARE OBSOLETE. APD LF v1.01.ES

Figure 5-3. Sample of completed DA Form 7120-R (operator)

DEPARTMENT OF THE ARMY FORM 7120-1-R

5-15. The ATM specifies the minimum base task performance and evaluation requirements for the individual crewmember. It also details other mandatory base and mission task requirements for crewmembers depending on circumstances such as their duty position, FAC, aircraft, and authorized flight duties. DA Form 7120-1-R details the base, mission, and additional task performance and evaluation requirements for each crewmember; therefore, commanders must ensure that all mandatory requirements for the crewmember are included. DA Form 7120-1-R details the base, mission, and additional task performance and evaluation requirements for each crewmember. See figure 5-4, page 5-9.

- **Name.** Enter the crewmember's name (last, first, middle initial).
- **Aircraft.** Enter the aircraft as stated on the crewmember's DA Form 7120-R.
- **CBRNE required.** Mark appropriately based on the commander's (O-6 or above) determination of the unit's CBRNE requirements.
- **Tasks.**
  - Base task iteration and evaluation requirements are as established in the appropriate ATM appendix (as are maintenance tasks for crewmembers designated as FCO on the DA Form 7120-R) unless otherwise noted. To mandate evaluation or to increase iterations of specific base or maintenance tasks, enter the task number followed by the task title on the blank lines provided. Remaining base/maintenance tasks will be as established in the appropriate ATM appendix.
  - Enter the mission or additional task number followed by the task title on the blank lines provided, if applicable.
  - Enter unit-specific requirements such as tactical scenarios or STXs after the last task. If more space is needed, use DA Form 7120-2-R.
  - If CBRNE training is required, task iteration and evaluation requirements are as established in the appropriate ATM appendix. The ATP commander may add tasks, iteration and evaluation requirements to the minimums outlined in the appropriate ATM appendix by following the instructions above for base tasks.

Note. Task titles may be abbreviated to fit within the space provided.

Note. For FAC 3 operators: List commander designated base task requirements on the DA Form 7120-1-R.

- **Day, night, CBRNE, and simulation.**
  - For each task listed, enter the number of times the crewmember must perform the task in the appropriate flight mode/condition column.
  - Place an "**E**" (evaluation) next to the number (for example, 3E) in the appropriate column if the task is mandatory for annual evaluations.

Note. If the crewmember's task performance or evaluation requirements change during the ATP training year, enter the change on DA Form 7120-1-R and explain it in the remarks column. If more space is needed, use the remarks section on DA Form 7120-3-R.

- **Remarks.** Use as required to fully explain changes, remarks, and or adjustments.

CREW MEMBER TASK PERFORMANCE AND EVALUATION REQUIREMENTS

For use of this form see TC 3-04.11; the proponent agency is TRADOC.

Name: Montana, Antonio S. | **Aircraft:** RQ-7B | **CBRN Requirements:** ☑ Yes ☐ No

Tasks	Day	Night	NVG	NVS	CBRN	Sim	TECH	Remarks
1000 Crew Mission Brief	3							
1013 Mission Planning System	2							
1022 Preflight Procedures	5							
1024 Engine Start/Systems Check	4							
1032 Radio Comm Procedures	3							
1040 Normal Takeoff and Climb	4							
1044 Pilotage/Dead Reckoning	3							
1045 Flight in Knob Control	4							
1048 Fuel Management Procedures	2							
1050 Automatic Flight Mode	2							
1062 Operate CRP	2							
1070 React to UAS Emergencies	4							
1080 Perform TALS Abort	2							
1085 Perform TALS Recovery	3							
1099 Operate IFF	3							
1110 Track a Static Target (EO&IR)	4							
1115 Track Moving Target	4							
1120 Perform Aerial Recon	3							
1125 Call and Adjust Indirect Fire	3							
1175 Perform Transfer Procedures	4							
1184 React to I-MC	3							
1302 Two-Way Radio Failure	2							
1402 UAS Mission Planning	2							
1800 After-Landing Checks	4							
MISSION TASKS								
2025 Conduct Digital Comms	2							
2054 Target Handover to an AH	4E							
2092 Transmit a Tactical Report	5E							

SAMPLE

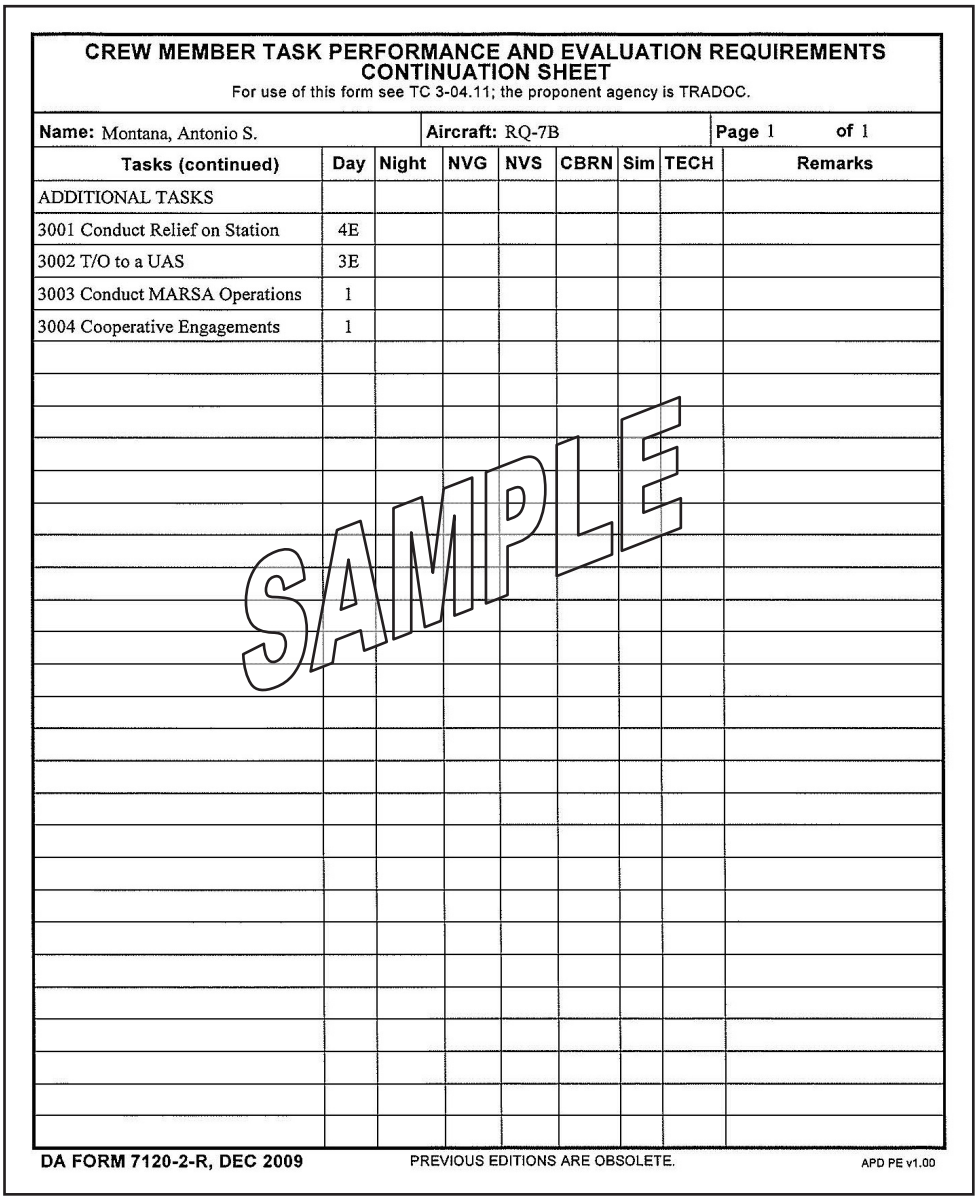
DA FORM 7120-1-R, DEC 2009 PREVIOUS EDITIONS ARE OBSOLETE. APD PE v1.00

Figure 5-4. Sample of a completed DA Form 7120-1-R (operator)

DEPARTMENT OF THE ARMY FORM 7120-2-R

5-16. Use DA Form 7120-2-R as necessary to list tasks or unit requirements when there is insufficient room on DA Form 7120-1-R. Figure 5-5 provides a sample of a completed DA Form 7120-2-R.

- **Name.** Enter the crewmember's name (last, first, middle initial).
- **Aircraft.** Enter the aircraft as stated on the crewmember's DA Form 7120-R.
- P**age**. Enter the DA Form 7120-2-R page number and total number of DA Form 7120-2-Rs.



CREW MEMBER TASK PERFORMANCE AND EVALUATION REQUIREMENTS CONTINUATION SHEET

For use of this form see TC 3-04.11; the proponent agency is TRADOC.

Name: Montana, Antonio S. | **Aircraft:** RQ-7B | **Page** 1 **of** 1

Tasks (continued)	Day	Night	NVG	NVS	CBRN	Sim	TECH	Remarks
ADDITIONAL TASKS								
3001 Conduct Relief on Station	4E							
3002 T/O to a UAS	3E							
3003 Conduct MARSA Operations	1							
3004 Cooperative Engagements	1							

SAMPLE

DA FORM 7120-2-R, DEC 2009 PREVIOUS EDITIONS ARE OBSOLETE. APD PE v1.00

Figure 5-5. Sample of completed DA Form 7120-2-R

DEPARTMENT OF THE ARMY FORM 7120-3-R INSTRUCTIONS

5-17. DA Form 7120-3-R is normally the last page of the CTL. It is used to document all additional/other training requirements prescribed by the commander as part of the crewmember's ATP. See figure 5-6, page 5-12.

5-18. **Name.** Enter the crewmember's name (last, first, middle initial).

5-19. **Aircraft.** Enter the aircraft as stated on the crewmember's DA Form 7120-R.

5-20. **Date.** For annual designation forms, this date will be no later than the first day of the month following a crewmember's birth month. For Initial designation forms, this date will be the date that the crewmember is designated RL 1 or FAC 3.

5-21. **Remarks.** Enter the crewmember's name (last, first, middle initial). Add the title of any periodic training task, recurring training and additional/other commander-designated training required as part of the ATP, but not listed on any other forms within the DA Form 7120-R-series.

5-22. **Certification.** No later than the last day of a crewmember's birth month, closeout the DA Form 7120-R series by having the crewmember sign and date the DA Form 7120-3-R certification block. The crewmember circles the "have" portion of the statement if all ATP requirements have been met by that date. If all ATP requirements have not been met, the crewmember circles the "have not" portion of the statement. Crewmembers that circle the "have not" portion of the statement must be processed IAW AR 95-23, if applicable, and an appropriate comment will be entered in the Remarks section explaining why the requirements were not met and when they will be completed.

Note. If a waiver or extension of a specified requirement is granted and all remaining ATP requirements have been met, the crewmember will circle the "have not" portion of the "Certification" block.

Note. If a crewmember is reassigned (permanent change of station) before the end of their APART period or was unable to complete APART requirements due to a temporary medical suspension, circle the "have not" portion of the Certification block and provide a brief statement explaining the event in the DA Form 7120-3-R remarks area.

CREW MEMBER TASK PERFORMANCE AND EVALUATION REQUIREMENTS REMARKS AND CERTIFICATION

For use of this form see TC 3-04.11; the proponent agency is TRADOC.

REMARKS:

Montana, Antonio, S. SFC 21 AUG 2011

1. This is an unmanned aircraft system (UAS) operator's record. For use of these forms the following symbols are defined below:
Seat: A-operator on aircraft controls, P-operator on payload controls.
Duty: AO-aircraft operator, AC-aircraft commander, IO-instructor operator, SO-standardization instructor operator.

2. Operator is authorized to perform all tasks listed in the Aircrew Training Manual (ATM), any mission task, and any additional task in any mode (D/N/S) provided you have revieiwed the task, conditions, standards, and description prior to performing or evaluating the maneuver/task.

3. Enter any pertinent remarks or additional ATP requirements not listed elsewhere in the 7120-R series on this sheet.

4. APART evaluations will be conducted IAW the ATM in the mode(s) of flight listed. A random selection of all 2000 series tasks will be selected by the evaluator. A minimum of two tasks will be evaluated to include all 1000 series emergency procedures training tasks.

ANNUAL TRAINING COMPLETED	DATE COMPLETED
5. Gunnery tables for all units with lasers/weapons	20 NOV 2011
6. ACT-E Refresher Training aligned with APART period	27 JUL 2011
7. Annual ROC-V Training IAW unit SOP	10 DEC 2011
8. Academic training IAW unit SOP	5 OCT 2011
9. Aeromedical training IAW unit SOP	10 DEC 2011

SAMPLE

CERTIFICATION:

I have/have not completed my ATP flying-hour, task performance, and evaluation requirements.

Crew Member's Signature: Tony Montana **Date:** 2 AUG 2012

DA FORM 7120-3-R, DEC 2009 PREVIOUS EDITIONS ARE OBSOLETE. APD PE v1.00

Figure 5-6. Sample of completed DA Form 7120-3-R (operator)

DEPARTMENT OF THE ARMY FORM 7122-R

5-23. DA Form 7122-R is used to permanently record crewmember evaluations and summaries of DA Form 4507-R. This form is also used to collect data during the year for input on the DA Form 759.

5-24. Figures 5-7 and 5-8, pages 5-13 through 5-14, provide samples of DA Form 7122-R.

CREW MEMBER TRAINING RECORD

For use of this form see TC 3-04.11; the proponent agency is TRADOC.

Sheet No:

Name: Montana, Antonio S. | **PID:** CAFRS ID | **Rank:** SSG | **Birth Month:** JUL

Date	A/C	Event	Duty	D	N	NG	NS	W	H	Sim	Seat	Recorded By	GR	CM Init	Rmk
20120802	—	Events posted to DA Form 759	—	—	—	—	—	—	—	—	—	W. Lorman, SGT, IO	—	AM	No
20120805	—	4186 Received	—	—	—	—	—	—	—	—	—	W. Lorman, SGT, IO	—	AM	Yes
20120805	RQ-7B	Commander's investigation	—	—	—	—	—	—	—	—	—	F. Petersen, SFC, SO	—	AM	Yes
20120811	RQ-7B	SFC complete/APART complete	IO	4.3	.7	—	—	—	—	—	A/P	M. Merkwan, SGT, IO	S	AM	Yes
20120909	RQ-7B	TDY to IO course	—	—	—	—	—	—	—	—	—	N. Petersen, SGT, IO	—	AM	No
20121002	RQ-7B	IO course completed	AC	—	—	—	—	—	—	56.8	A/P	N. Petersen, SGT, IO	S	AM	No
20121004	RQ-7B	Designated as unit IO	—	—	—	—	—	—	—	—	—	F. Petersen, SFC, SO	—	AM	No
20121008	—	Deployment to OEF	—	—	—	—	—	—	—	—	—	F. Petersen, SFC, SO	—	AM	Yes
20121012	RQ-7B	OEF LAO completed	AO	1.7	—	—	—	—	—	—	P	M. Isom, SGT, SO	S	AM	No
20121015	RQ-7B	Unit ATP waiver requested	—	—	—	—	—	—	—	—	—	F. Petersen, SFC, SO	—	AM	Yes
20121130	RQ-7B	Gunnery tables complete	AC	5.0	—	—	—	—	—	—	A/P				
20121209	RQ-7B	Class B accident	AC	—	3.1	—	—	—	—	—	A	M. Isom, SGT, SO	—	AM	Yes
20121213	RQ-7B	Post-mishap flight evaluation	AC	—	2.7	—	—	—	—	—	A	M. Isom, SGT, SO	S	AM	No
20121227	—	Aeromedical & academics complete	—	—	—	—	—	—	—	—	—	C, Stokes, SGT, IO	S	AM	No
20130104	RQ-7B	ACT-E sustainment and REC-V	—	—	—	—	—	—	—	—	—	C. Stokes, SGT, IO	S	AM	No
20130213	—	No notice oral evaluation	—	—	—	—	—	—	—	—	—	C. Stokes, SGT, IO	S	AM	No
20130501	RQ-7B	APART standby flight evaluation	IO	1.1	4.3	—	—	—	—	—	A/P	M. Isom, SGT, IO	S	AM	No
20130602	—	Redeployment from OEF	—	—	—	—	—	—	—	—	—	F. Petersen, SFC, SO	—	AM	Yes
20130606	—	4186 RCVD-FFD	—	—	—	—	—	—	—	—	—	M. Isom, SGT, SO	—	AM	No
20130705	—	Equipment unavailable-reset	—	—	—	—	—	—	—	—	—	F. Petersen, SFC, SO	—	AM	Yes
20130723	RQ-7B	IO exam complete/APART complete	—	—	—	—	—	—	—	—	—	C. Stokes, SGT, IO	S	AM	No
20130810	—	Events posted to DA Form 759										C. Stokes, SGT, IO	—	AM	No
20131016	—	Equipment back from reset	—	—	—	—	—	—	—	—	—	F. Petersen, SFC, SO	—	AM	Yes

SAMPLE

DA FORM 7122-R, DEC 2009 | PREVIOUS EDITIONS ARE OBSOLETE. | APD PE v1.00

Figure 5-7. Front sample of a completed DA Form 7122-R (operator)

Date	Remarks	Commander's Signature
20120805	Medical suspension lifted.	
20120805	VAC falied to complete APART SFE medical suspension was lifted	
	after APART period ended. Request 30-day extension.	Battalion CO signature
20120811	APART SFE was completed within 30-day extension.	
20121008	Logging of combat time authorized under provisions of issuing authority of deployment	
	orders and orders date.	
20121015	Unit extension requested for semiannual simulation flying hour requirements and CBRNE	Battalion CO signature
	evaluation during operational deployment.	
20121209	UAC was operating aircraft suring engine failure.	
20130602	Logging of combat time is no longer authorized.	
20130705	ATP requirements are suspended until equipment returns from reset.	
20131016	Self-established start training date begins today and ends 16 APR 14. Unit has 180 days to	
	complete tasks that were not completed due to operational deployment.	

SAMPLE

PAGE 2, DA FORM 7122-R, DEC 2009

APD PE v1.00

Figure 5-8. Back sample of a completed DA Form 7122-R (operator)

5-25. The following are general instructions for completion of this form:

- Type or clearly print all entries in black, dark blue, or red ink (for out of sequence date entries only).
- For blocks that **do not** require an entry, enter "**NA**" for not applicable or a dash (—).
- To make minor corrections, use correction fluid/tape or neatly line through the incorrect information and add the correct information. Use the procedures in paragraph 5-29 to make major corrections.
- Keep entries as clear and concise as possible. Use standard abbreviations and acronyms.
- Significant related events that occur (aircraft qualification or IO course en-route) during the time a crewmember departs the previous duty station and is integrated into a new ATP will be entered on DA Form 7122-R prior to the assignment entry.
- Not every possible event or occurrence can be anticipated. If situations arise that are not covered by these instructions, use sound judgment and enter the event in the most logical manner.
- DA Form 7122-R is a two-page form; however, it is likely that one page will fill before the other.
- When one page of the form is filled, close out the other page of the form by drawing a diagonal line from the first unused block to the last unused block.

5-26. Document administrative and demographic data.

- **Sheet number.** Number each sheet in numerical order.
- **Name.** Enter the crewmember's full name (last, first, and middle initial). If reproducing the form on two separate sheets of paper, enter the crewmember's name on the first line of the second sheet, in the Remarks area, followed by the sheet number with which it corresponds.
- **PID.** Until further guidance leave this blank.
- **Rank.** Enter the crewmember's rank.
- **Birth month.** Enter the crewmember's birth month.

5-27. Document training event data.

- **Date.** Enter the day, month, and year of the event. After the first entry, it is acceptable to omit the year until entry of the first event of the following year. If an entry is out of chronological order, **only the date** will be in red and the year must be included.
- **Aircraft.** Enter the alphanumeric designation of the aircraft or UAS simulator (MQ-1C or MQ-5B). If the event was performed solely in a UAS simulator, enter the UAS simulator designation (RQ-7B SIM or MQ-5B SIM).
- **Event.** Enter a short summary of the event on one line. Record events listed below:
  - Unit assignments and reassignments. Reassignment within the unit not requiring a DA 759 closeout will be treated as a change of duty. FAC and MTOE paragraph and line number will be listed for TOE units.
  - Start and completion of time-limited training programs such as each level of RL progression or AC qualification. Start times may be implied by previous entry. For example, the date that a crewmember is qualified RL 2 starts the clock for mission training and sets the suspense for RL 1 designation.
  - Proration of flying-hour minimums at the end of the training period (see paragraph 2-72) Include justification and number of months prorated in entry remarks.
  - Placement on or removal from flight status.
  - Change of duty position (for example, AC/UT/SO/IO designation), FAC, primary, alternate, or additional aircraft.
  - Completion of DA aviation-related qualification courses, both flying and nonflying.
  - All flight, oral, and written evaluations. Specify the type of evaluation; for example, no-notice evaluation, APART, written evaluation, or proficiency flight evaluation.
  - Completion of all ATP requirements for each primary, additional and alternate aircraft as applicable.

- Any nonmedical suspensions and their disposition.
- All waivers or extensions of ATP requirements granted. Entries will specify the affected requirements and when applicable, the date the requirements must be completed. Crewmembers may be suspended from flight duties until completion of the commander's investigation and the extension or waiver is granted.
- Completion of extension or waiver requirements.
- Change in unit aircraft availability/non-availability status due to movement to deployment/redeployment or aircraft preset/reset. This entry is not required if aircraft non-availability does not result in the crewmember being granted a waiver, extension, or flying-hour proration.
- Designation or removal of alternate or additional aircraft. Also, the addition or removal of similar aircraft to the listing on "Primary", "Additional" or "Alternate" aircraft DA Form 7120-R series forms.
- Involvement in any Class A, B, or C, accident or incident and the results of any post-mishap flight evaluation (if given).
- Completion of significant training where DA Form 7122-R documentation is specifically directed in the program; for example, "Takeoff/Landing Qualification complete (MQ-1)." Include the source of the training program requirements in the event remarks; for example, "Takeoff/landing qualification completed IAW Army and General Atomics POI."

Note. Record the following additional events on the 7122-R: Completion of LAO (include times for day and night); Completion of required GT; completion of ACT-E requirements; completion of environmental training; and document receipt of a "Broken Wing" award or flying-hour award for safety.

Note. **Do not** record the following events. Flights conducted solely to accomplish task iteration, flying-hour, or MOPP requirements; attendance at recurring briefings (for example, safety meetings and weather briefings), and participation in ARTEP exercises or other unit-level exercises.

- **Duty.** If applicable, enter the appropriate duty symbol. This duty symbol reflects the purpose of the flight or event, not necessarily the DA Form 2408-12 (Army Aviator's Flight Record) duty. For example, a AC flight evaluation requires entry of the duty symbol "AO" on DA Form 2408-12, but on the DA Form 7122-R, the duty symbol entered would be "AC."
- The entries on the DA Form 7120-R, Part II, and DA Form 7120-3-R (if applicable) with the commander's signature/initials and date suffice for orders authorizing duty positions. An entry on DA Form 7122-R with the commander's signature will also suffice for orders authorizing duty positions.
- **Day (D), Night (N), and Sim.** Enter the time flown, in hours and tenths of hours, under the appropriate flight modes/conditions. Enter the time flown on any single flight event or the total hours flown in multi-flight training programs. The flight modes/conditions indicated normally will agree with the DA Form 2408-12 entry.
- **Seat.** Enter the crewmember's seat position, if appropriate, for the event.
- **Recorded By.** Evaluators, trainers, operations personnel and others when authorized by the commander will enter their first initial, last name, rank and duty position. If the event was an evaluation and someone is recording it other than the evaluator, record the evaluator's name in the remarks section.
- **Grade (GR).** If the event was graded, enter an "**S**" (satisfactory) or an "**U**" (unsatisfactory). For an unsatisfactory evaluation, state the specific tasks the crewmember performed unsatisfactorily and any restrictions imposed due to the failure. Provide a recommendation to the commander for retraining and reevaluation.
- **Crewmember initials (CM Int.).** Brief the crewmember on the entry and ensure that the crewmember understands any change in status. Crewmembers will then initial this block. A crewmember's initials show that the crewmember is aware of the entry on the form and any

remarks and understands any change in status. The crewmember will immediately initial any entry resulting in a change of status such as an unsatisfactory evaluation or a suspension. The crewmember will initial routine entries such as assignment to a unit or satisfactory evaluations, as soon as practical.

- **Remark (Rmk.).** Enter "Yes," "**Y**," "No," or "**N**" in this column to show whether comments are entered in the Remarks section regarding the entry. **Do not** enter "NA" in this column or leave it blank.
- **Remarks.** Record pertinent information not shown on the front of the form in this section. **Do not** restate information entered on the front of the form; for example, "This was a satisfactory AC evaluation." There is no single correct way of entering remarks. However, they should be clear, concise, and specific. When entering remarks, use standard abbreviations and acronyms or logical shortened words.
- Enter the date in the same format as the front of the form. After the date, enter pertinent remarks. If the remarks require more than one line, **do not** repeat the date on the second or subsequent line(s). Remarks include description of unsatisfactory tasks on an evaluation or an explanation of nonmedical suspensions from flight.

5-28. Commander's Signature. Only the following events recorded on the DA Form 7122-R require the commander's signature:

- Nonmedical suspension.
- RL designation after failure of a hands-on performance test or a training deficiency.
- Extensions or waivers.
- Return to previous duties after nonmedical suspension or RL designation after failure of a hands-on performance test or a training deficiency.

Note. The commander, pertaining to the IATF, is defined as the commander responsible for the ATP. Waiver and extension authority is IAW AR 95-23, local regulations, and SOPs. The appropriate commander will sign the DA Form 7122-R, page 2, when required. Memoranda for Record granting extensions or waivers signed by the commander will be retained in the miscellaneous section of the IATF until the end of the ATP year when the waiver or extension is annotated on the DA Form 759 closeout.

5-29. Corrections to DA Form 7122-R may be needed for several reasons. Careful and timely entering of events as they occur will eliminate the need for corrections.

- Out of sequence events. If an event is not entered at the proper time and one or more events have been recorded, enter the event as you would any other event on the next available line. Use red ink when entering the date only (to include year) for the out-of-sequence event.
- Unusable form. If enough mistakes accrue to make the form unusable, transcribe the data to a new form. Place a diagonal line across the front of the unusable form, label it "transcribed," and retain this copy of the form (**permanently**) under the current form.

Note. **Do not** destroy or discard any DA Form 7122-R that contains an entry.

DEPARTMENT OF THE ARMY FORM 4507-R SERIES

DEPARTMENT OF THE ARMY FORM 4507-R (CREWMEMBER GRADE SLIP)

5-30. The DA Form 4507-R series forms will be filed on the right side of the IATF until completion of the training and the event has been documented on the DA Form 7122-R. Once the event has been entered on the DA Form 7122-R, the DA Form 4507-R series will be removed from the IATF. Figure 5-9, page 5-18, provides a sample of completed DA Form 4507-R.

CREW MEMBER GRADE SLIP

For use of this form see TC 3-04.11; the proponent agency is TRADOC.

Name: Montana, Antonio S.	**Rank:** SFC	**PID:** CAFRS ID
Unit: B-Co, 1st HBCT, 3rd ID	**Purpose:** RL Progression	
Aircraft Type: RQ-7B	**Date Started:** 20120731	**Must Complete By:**

Flight Data	Date									
	22 AUG 11	23 AUG 11	27 AUG 11	29 AUG 11	4 SEP 11	5 SEP 11	1 NOV 11	2 NOV 11	5 NOV 11	12 NOV 11
Time Today	3.9	5.9	5.7	3.9	5.3	4.9	5.5	6.0	4.3	4.1
Cumulative Time	3.9	9.8	15.5	19.4	24.7	29.6	35.1	41.1	45.4	49.5
Day Flight--Today	3.1		5.7	3.9			1.0	3.3		
Day Flight--Cumulative	3.1		8.8	12.7			13.7	17.0		
Night Flight--Today	.8					4.9		2.7	4.3	4.1
Night Flight--Cumulative	.8					5.7		8.4	12.7	16.8
Flight--Today										
Flight--Cumulative										
Sim Flight--Today		5.9			5.3		4.5			
Sim Flight--Cumulative		5.9			11.2		15.7			
Duty Position	AO	AO	AO	AO	AO	AO	AO	AO	AO	AO
Seat Position	P	P	A	A	A	P	P	A	A	P
Overall Grade	S	U	S	S	U	S	S	S	S	S
Crew Member Initials	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
Trainer or Evaluator Name, Rank, and Duty Position	W. Lorman, SGT IO	W. Lorman, SGT IO	M. Merkwan SGT IO	F. Peterson SFC, SO	W. Lorman SGT IO	P. Sibeli, SFC, SO	F. Peterson, SFC, SO	M. Merkwan, SGT IO	W. Lorman SGT IO	M. Merkwan SGT IO

SAMPLE

DA FORM 4507-R, DEC 2009 PREVIOUS EDITIONS ARE OBSOLETE. APD PE v1.00

Figure 5-9. Sample of completed DA Form 4507-R (operator)

5-31. Instructions for completing the form are as follows:

- **Name and Rank.** Enter the crewmember's name (last, first, middle initial) and rank.
- **PID.** Enter the individual's CAFRS ID.
- **Unit.** Enter the unit to which the crewmember is assigned.

- **Purpose.** Enter the purpose of the training or evaluation using standard phraseology; for example, refresher training or AC evaluation.
- **Aircraft Type.** Enter the alphanumeric designation of the aircraft or UAS simulator; for example, MQ-5B, RQ-7B, MQ-1C.
- **Date Started.** Enter the date on which the flight training program starts.
- **Must Complete By.** If the training program is time limited, enter the date on which the crewmember must complete it. If the date changes, line through the original date and enter the new date above it. Explain the change in the Comments section.
- **Date.** Enter the day, month, and year of the flight.
- **Flight Data.** This form provides a cumulative record of the time flown under those flight modes normally requiring minimum amounts. Record all flight time in hours and tenths of hours.
- **Time Today.** Enter the total time flown today.
- **Cumulative Time.** Record the total flight time accrued to date.
- **Day Flight-Today.** Enter the time flown today under day flight conditions. For flights conducted under other than day flight conditions, enter the applicable flight mode or condition in the space provided. Then record the time flown today for that flight mode or condition.
- **Day Flight-Cumulative.** Record the total time accrued under day flight conditions. For flights conducted under other than day flight conditions, enter the applicable flight mode or condition in the space provided. Then record the total flight time accrued to date for that flight mode or condition.
- **Duty Position.** Enter the crewmember's duty position for the flight.
- **Seat Position.** Enter the crewmember's seat position for the flight.
- **Overall Grade.** Enter either "**S**" or "**U**" in the overall grade block after the crewmember completes the flight. This grade reflects the evaluator/trainer's overall assessment of the flight. If the overall flight is graded a "**U**", a comment is required on DA Form 4507-2-R.
- **Crewmember Initials.** Have the crewmember initial the grade slip to certify that the crewmember has been debriefed. The initials **do not** mean that the crewmember agrees with the results.
- **Trainer or Evaluator Name, Rank, and Duty Position.** Enter the trainer's or the evaluator's first initial, last name, rank, and duty position.
- **Comments.** Enter pertinent comments on DA Form 4507-R or, if more space is required, on DA Form 4507-2-R. Enter the date of the flight and sound, objective comments. If the overall flight, or any individual task is graded "**U**", a comment is required. For unsatisfactory tasks, indicate which standards were not met and any other appropriate remarks. These comments are important for reference by other trainers or evaluators during future training or evaluation.

DEPARTMENT OF THE ARMY FORM 4507-1-R

5-32. Figure 5-10, page 5-21, provides a sample of a completed DA Form 4507-1-R.

5-33. Instructions for completing the form are as follows:

- **Trainee's/Examinee's Name.** Enter the examinee's name (last, first, middle initial).
- **Page No.** Enter the number of this page.
- **No. Pages.** Enter the total number of DA Forms 4507-1-R used.
- **Date.** Enter the day, month, and year of the flight. It is acceptable to have multiple entries for the same date to specify tasks trained/evaluated in different flight modes. In the blocks under the date, the evaluator/trainer or unit trainer grades each task performed. An unsatisfactory grade "U" requires a brief description of the deficiency in the comments section of DA Form 4507-2-R. Place a diagonal (/) in the grade blocks for all maneuvers or procedures not performed. When three or more consecutive tasks are not graded, place a diagonal line in the first and last task and connect the two with a straight vertical line.
- **Maneuver/Procedure.** Enter the task number followed by the task title as required by the unit's ATP. Units may list all tasks required by the commander's task list. Another option is to develop

separate forms for each training program; for example; NVD refresher training, RL progression, and mission training. Units may also use a highlighter pen or any other suitable method to track completion of tasks in different modes.

Note. Task titles may be abbreviated to fit within the space provided.

- Select. If the form is tailored to the training or evaluation being conducted, use as desired. If the form lists all base and mission/additional tasks, place an "X" in the selection column by each task that is mandatory for the training program or evaluation underway based on the guidance in the applicable ATM appendix, this TC, the CTL, the unit SOP, and other documents.

MANEUVER/PROCEDURE GRADE SLIP

For use of this form see TC 3-04.11; the proponent agency is TRADOC.

Trainee's/Examinee's Name: Montana, Antonio S.

SELECT	MANEUVER/PROCEDURE (Page No. 1 / No. Pages 2)	DATE									
		22 AUG 11 (P)	23 AUG 11 (P)	27 AUG 11 (A)	29 AUG 11 (A)	4 SEP 11 (A)	5 SEP 11 (P)	1 NOV 11 (P)	2 NOV 11 (A)	5 NOV 11 (A)	12 NOV 11 (P)
x	1000 Crew Mission Brief A&P	S	S	S	—	—	S	S	S	—	—
x	1013 Mission Planning System A&P	S	—	—	S	S	—	S	S	—	—
x	1022 Preflight Procedures A&P	S	S	S	—	—	S	S	S	—	—
x	1024 Engine Start/Systems Check	—	—	S	—	S	—	—	S	—	—
x	1032 Radio Comm Procedures A&P	S	S	—	S	—	—	S	S	—	—
x	1040 Normal Takeoff and Climb A&P	S	S	S			S	S	S		
x	1044 Pilotage/Dead Reckoning A&P	—	S	—	S	S	—	S	S	—	—
x	1045 Flight in Knob Control	—	—	S	—	S	—	—	S	—	—
x	1048 Fuel Management Procedures			S	—	S	—	—	S	—	—
x	1050 Automatic Flight Mode	—	—	S	—	S	—	—	S	—	—
x	1062 Operate CRP A&P	—	S	—	S	S	—	S	S	—	—
x	1070 React to UAS Emergencies A&P	S	S	S	—	—	S	S	S	—	—
x	1080 Perform TALS Abort	—	—	—	S	S	—	—	S	—	—
x	1085 Perform TALS Recovery A&P	S	—	S	—	S	S	S	S	—	—
x	1099 Operate IFF	—	—	S	—	S	—	—	S	—	—
x	1110 Track a Static Target (EO&IR) A&P	S	—	—	S	—	S	S	S	—	—
x	1115 Track Moving Target (EO&IR) A&P	S	—	—	S	—	S	S	S	—	—
x	1120 Perform Aerial Recon A&P	—	S	—	S	—	S	S	S	—	—
x	1125 Call and Adjust Indirect Fire A&P	—	S	—	S	—	—	S	S	—	—
x	1175 Perform Transfer Procedures	—	—	—	S	S	—	—	S	—	—
x	1184 React to I-IMC	—	—	—	S	S	—	—	S	—	—
x	1302 Two-Way Radio Failure	—	—	—	S	S	—	—	S	—	—
x	1402 UAS Mission Planning	—	—	—	S	S	—	—	S	—	—
x	1800 After-Landing Checks	—	—	S	—	S	—	—	S	—	—
x	MISSION TASKS										
x	2025 Conduct Digital Comms	—	—	—	—	—	—	—	—	S	S
x	2054 Target Handover to an AH	—	—	—	—	—	—	—	—	S	S
x	2092 Transmit a Tactical Report	—	—	—	—	—	—	—	—	S	S

SAMPLE

DA FORM 4507-1-R, DEC 2009 PREVIOUS EDITIONS ARE OBSOLETE. APD PE v1.00

Figure 5-10. Sample of completed DA Form 4507-1-R

DEPARTMENT OF THE ARMY FORM 4507-2-R

5-34. The DA Form 4507-2-R is used to record comments and explain DA Form 4507-R and DA Form 4507-1-R entries, as appropriate. Figure 5-11, page 5-23, provides a sample of a completed DA Form 4507-2-R.

5-35. Instructions for completing the form are as follows:

- **Trainee's/Examinee's Name.** Enter the examinee's name (last, first, middle initial).
- **Date.** Enter date of entry.
- **Comments.** Enter comments as necessary. Comments should be clear, concise and objective. These comments are important for reference by other trainers or evaluators during future training or evaluation.

CONTINUATION COMMENT SLIP

For use of this form see TC 3-04.11; the proponent agency is TRADOC.

Examinee's/Trainee's Name: Montana, Antonio S.

Date	Comments
	Use for additional information and comments or overflow from DA Form 4507-1-R.

SAMPLE

DA FORM 4507-2-R, DEC 2009 PREVIOUS EDITIONS ARE OBSOLETE. APD PE v1.00

Figure 5-11. Sample of completed DA Form 4507-2-R

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Chapter 6
Risk Management

GENERAL

6-1. Tough, realistic training, conducted to standard, is the cornerstone of Army warfighting skills. The battle-focused training environment places stress on both Soldiers and their equipment, creating a high potential for loss. As training realism increases, so does the potential for loss. If risk is not reduced, personnel and equipment losses, caused by training mishaps, pose a serious drain on warfighting assets. Accidental losses in training are no different from combat losses; the assets are gone. Commanders must find ways to protect individuals and equipment from accidents during realistic training to prepare for war. Guidance on risk management is contained in ADP 5-0, FM 5-19, and AR 385-10.

6-2. An effective risk management program is vital at all levels of aviation operations and requires the personal attention and participation of unit commanders and leaders up and down the chain. The protection of aviation Soldiers and their weapon systems is a way of life in the aviation business. An effective ATP, well thought out and planned in conjunction with appropriate regulations and guidance, is arguably the most important factor in any unit's safety program once embraced by every Soldier in the unit. Flying "by the book" does not hinder, but actually enhances a unit's battle focus. The crawl, walk, run approach to training is imperative to risk reduction, as is the active participation of commanders at all levels of the training process.

RISK MANANGEMENT CONCEPT

6-3. Risk management is the decision-making process for identifying hazards and mitigating risks across the entire spectrum of Army missions, functions, operations, and activities. It is a holistic assessment blending tactical and threat-based risk management with accidental, hazards-based risk management. Risk management is not a stand-alone process, a paper work drill, or an add-on feature to planning. Rather, it is used as a fully integrated element of planning and decision making. It may also be executed intuitively in situations that require hasty planning or immediate action. Risk management should be viewed as part of the military art interwoven throughout the Army's military decision making and training management cycles. Risk management follows a process which personnel of all ranks must continually use. The risk management steps are shown in figure 6-1, page 6-2.

6-4. Using the risk management process, leaders identify the hazards that may cause mission degradation and loss of unit combat readiness and effectiveness. These include those hazards that may cause injury and/or death to personnel or damage and/or destruction of equipment. A commander should then determine the possible impact of each hazard on the mission, take action to minimize or eliminate the hazards, and then execute the mission or modify the mission to reduce risk further.

6-5. Risk management is not a restrictive measure. It is a conscious analysis of the mission itself, possible courses of action, and the implementation of appropriate controls to ensure any risk is reduced or eliminated.

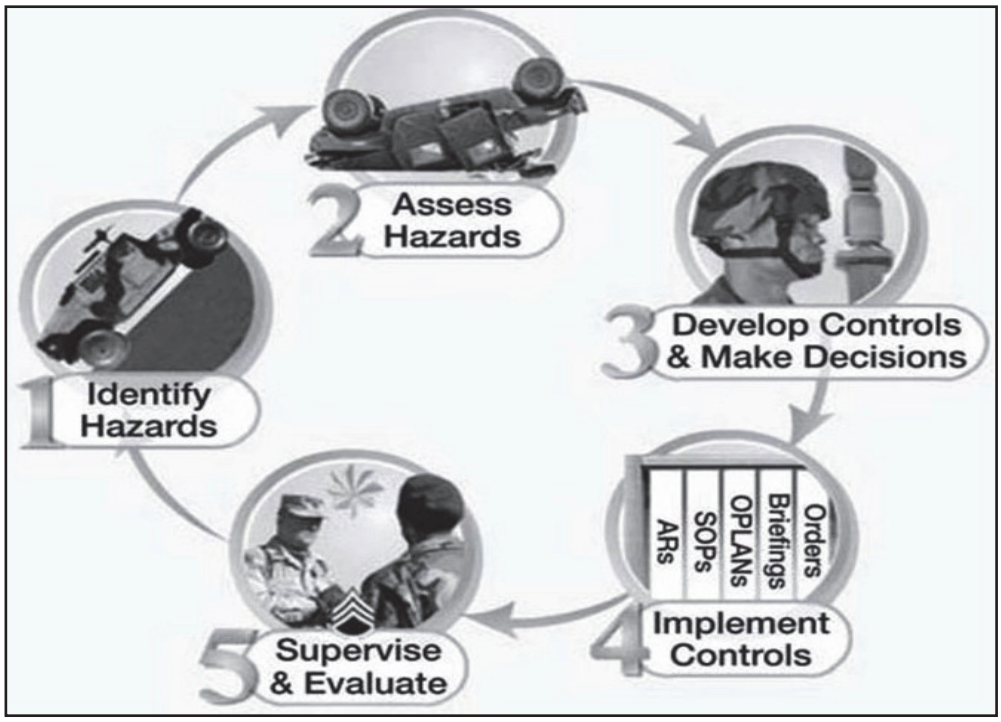

Figure 6-1. Risk management steps

6-6. The risk management process includes several terms all leaders should know as shown in table 6-1.

Table 6-1. Risk management terms and definitions

Term	***Definition***
Risk Management Process	The process of identifying and controlling hazards to protect the force.
Control	Any action taken to eliminate hazards or reduce their risk.
Hazard	Any real or potential condition that can cause the loss of an asset. These losses include injury, illness, and death of personnel; damage to or loss of equipment or property; and mission degradation.
Risk	The chance of hazard or bad consequences. Exposure to a chance of injury or loss. Risk level is expressed in terms of hazard probability and severity.
Exposure	The frequency and length of time subjected to a hazard.
Probability	The likelihood that an event will occur.
Severity	The expected consequence of an event in terms of the degree of injury, property damage, or other mission impairing factors that could occur.
Risk Assessment	The identification and assessment of hazards.
Residual Risk	Any anticipated level of risk remaining after controls have been identified and selected for hazards that may result in loss of combat power.
Risk Decision	Accept or not accept the risk(s) associated with an action; made by the commander, leader, manager, or individual responsible for performing that action.

6-7. The standard for risk management is leadership at the appropriate level of authority making informed decisions to control hazards or accept risks. Leaders are responsible and accountable for assessing their operation as a total system.

6-8. The degree of risk determines the level of decision authority. When resources to reduce risk to an acceptable level are not available, the risk issue must be elevated to the next higher command. This process continues until the information is presented to the level of command that has the resources and authority to eliminate the hazard or control the risk to an acceptable level. In this manner, a conscious and informed decision is made to either commit the resources to control the hazards or to accept the risk.

RESPONSIBILITIES

6-9. Risk management is not complex, technical, or difficult and is not limited to the brigade and battalion commanders. It is a simple decision making process and a way of "thinking through a mission" to balance mission demands against known risks. Trainers/evaluators can maintain realism in training accomplishment through risk management. In peacetime, the process must be deliberate, continuous, and must become second nature to those responsible for planning, approving, or leading activities. In combat, the process is no less deliberate, though risks may be accepted as dictated by the mission priority.

LEADERS

6-10. What is the commanders responsibility, at all levels? Who establishes what risk: extremely high (**E**), high (**H**), medium (**M**), or low (**L**)? Managing risks are a leadership responsibility. At the crewmember level, ACs and instructors/evaluators are the principal risk managers. Planning must incorporate consideration for known hazards and must address appropriate control measures to minimize exposure to these hazards. While risk management is introduced in the planning phase of a mission, for ACs, risk management responsibilities are not complete until the mission debriefing is complete. To meet these responsibilities, leaders—

- **Do not** accept unnecessary risk. If the risk can be eliminated or reduced and the mission can still be accomplished, the risk is mitigated and acceptable. Find ways to mitigate the risk (that is, change the crew mix, change the mission execution time, provide additional preparation and training, add additional supervision, and so forth) that will still allow completion of the mission. Once hazards are identified and controls recommended, compare and balance the residual risk against the mission expectation.
  - Pre-mission. The commander, or other designated risk approval authority, decides if the controls are sufficient to accept the risk. If the risk is excessive, the commander can direct additional control measures, modify controls, request the next higher commander's involvement, or reject the mission.
  - During mission execution. The commander cannot always be available to make every risk decision. While operating the aircraft when the situation, time, or other factors **do not** allow for the commander's decision, the MC, AC, instructors/evaluators, or other unit leaders become the primary risk managers. In such cases, they should use the commander's guidance, their professional experience, unit SOP, ATM, regulations, current situation, developing conditions, and so forth, as the basis on which they formulate control measures.
  - Leaders should evaluate unexpected hazards that are encountered during the course of the mission and apply the appropriate control measures.
- Make risk decisions at the proper level. Decisions made at the proper level eliminate the involvement of commanders not normally involved in the mission or commanders not authorized to accept the level of risk. ACs must know the appropriate level of approval authority based on the level of risk. The risk approval authority will vary between units and risk approval authority must at all levels be capable of mitigating risk or accepting that level of risk.
- Weigh the risks versus the benefits. The benefits gained by accepting a residual risk must clearly outweigh the potential cost in terms of life, limb, or equipment loss should an incident occur.
- Identify controls. The commander will issue guidance regarding the appropriate control measures. Once the controls are identified, ACs must ensure these controls are understood and implemented during the mission.
  - The crew mission briefing is where the AC presents these controls to the crew. The delineation of duties, such as airspace surveillance responsibilities, is an example of a hazard control established before flight.

- The unit SOP is a formal document of risk management controls. These controls are only effective when followed. "IAW the SOP" is a valid control measure only when all crewmembers are knowledgeable of the unit SOPs contents. Flight weather minimums are a good example. If the SOP requires VFR minimums for a night training flight, the commander must reinforce and support the ACs decision to abort a mission, divert, or land the aircraft when conditions fall below these standards. Pre-mission planning should include options/controls for this example.
- Crew coordination is a method of "on-the-fly" risk management by identifying unexpected hazards, establishing control measures, and evaluating these hazard controls continuously during the conduct of a mission.

- Integrate risk management into all stages of all operations. Integration begins with the pre-mission planning and continues through the completion of the mission debriefing. Consider risk management as contingency planning. The commander and staff should look at factors that could cause the mission to fail (cause loss of life, limb, or equipment) and implement controls to minimize that probability. During the debriefing, unexpected hazards for a completed mission then become expected hazards for follow-on missions.

STAFF

6-11. While crewmembers are not specifically members of the unit staff, they normally provide input to the brigade/battalion staff through their company commander. During operations, the staff normally does not occupy a crew station, but through their work, a significant portion of risk management does occur before any start switch is pressed. Some functions that the staff performs, relative to risk management, are as follows:

- Assist in the planning and identification of hazards for operations.
- Integrate risk management into operations plans and orders. In developing plans, the staff evaluates the risks, recommends controls to minimize the risks, and provides the commander with an assessment of the effectiveness of the imposed controls. In training situations, the staff—
  - Advises the commander of the controls that impact on training realism so the commander can make the risk acceptance decision.
  - Evaluates imposed safety restrictions to ensure optimal training benefit is achieved without unnecessary restrictive measures applied.
- Assess the operational risk. Using mission, enemy, terrain and weather, troops and support available, time available, and civil considerations factors to identify the risk to mission accomplishment, the staff begins to assess operational risks. The most important consideration is the outcome of the operation for the unit, higher headquarters, and adjacent units. Risk analysis is formulated using a course of action that is developed along the spectrum of frequent to seldom event occurrence. The staff reviews and expands or refines the list throughout the planning and execution of the exercise. The staff then evaluates the possible consequences of those risks from catastrophic to marginal. For example, the staff plans a multi-aircraft mission to airlift personnel or supplies. If the weather forecast is for marginal conditions, part of the planning should include the possibility of weather conditions degrading during the mission.
- Controls the staff might propose are—
  - Reinforcing those sections of the SOP pertaining to adverse weather.
  - Briefing crews regarding the current and forecast adverse weather and the possible courses of action selected by the commander.
  - Planning alternate transportation.
  - Designating recovery airfields.
  - Practicing inadvertent instrument meteorological condition (IIMC) recovery.
- The staff should also consider the possibility of more personnel or equipment arriving for transport than were expected. How will the crews accommodate this change? What impact will the additional payload have on the aircraft performance? Controls could include maximums on payload, additional sorties, backup aircraft, or other controls that would ensure mission

accomplishment with minimum risks. There are additional hazards that could be identified in this example.

SAFETY OFFICER

6-12. The safety officer—

- Is an integral part of the risk management, planning process.
- Advises the commander and staff on safety requirements and recommends controls to minimize risks.
- Participates in all phases of the military decision-making process to ensure that risk management follows the commander's intent.
- Assists all staffs in integrating the risk management process into other staff functions.
- Assists the command in supervising operations to ensure application and adherence to imposed controls and provides feedback on the effectiveness of the program.

CREWS

6-13. Crewmembers are a critical part of the risk management process. They perform the mission, and their involvement in the planning phase is crucial to identification of hazards and controls. Crewmembers must clearly understand the controls implemented to mitigate risks. During mission execution, crewmembers must perform tasks and implement control measures to standard. The employment of good crew coordination is paramount to identifying unexpected hazards (for example, enemy situation, wires, and weather) and continuously refining controls during the mission.

INDIVIDUALS

6-14. Self-discipline is critical to mission accomplishment and to an effective risk management program. The best risk management plan is worthless if the individuals performing the mission **do not** adhere to established controls or **do not** perform the tasks to standard. Individuals performing a mission are also responsible for performing risk management. While performing the mission, conditions change, hazards change, risks change, and, by necessity, risk management controls may change. The individual must constantly assess the conditions and continuously apply the principles of risk management to ensure minimum risk to themselves, fellow Soldiers, the aircraft, and the mission.

RISK MANAGEMENT TRAINING

6-15. Commanders must conduct risk management training for their unit. Training should emphasize the process and must reinforce the philosophy that Soldiers—crewmembers and ground personnel—are responsible for performing risk management; without a full range of participation, commanders may not make an informed decision.

RISK MANAGEMENT PROCESS

6-16. The following steps encompass the risk management process.

STEP 1–IDENTIFY HAZARDS

6-17. Identify the major events in the mission and list chronologically. This will help identify all hazards associated with the specified as well as implied tasks.

6-18. Complete a preliminary hazard analysis of operational events. This identifies, as early as possible, the obvious hazards expected during the mission. Early identification provides more flexibility in addressing the hazards and allows more options for controls, which maximizes a leader’s ability to complete the mission.

STEP 2–ASSESS RISKS

6-19. Determine the level of risk associated with each hazard. Commanders should ask, "can the hazard result in a fatality, damage to equipment, or mission failure?" The degree of risk associated with each particular hazard will help define the level of controls necessary. For example, risks associated with a single operator, night, tactical flight might include lack of situational awareness, inadvertent weather, over tasking, and degraded performance while risks associated with a multi-ship mission in the same environment would include mid-air collision as well. (These are usually contained in the unit SOP or designated by the command.) An example of some controls for the previous example may include a day route reconnaissance to establish minimum weather requirements, change the crew mix, adjust the mission execution time, conduct crew awareness briefings on recovery procedures, and single operator launches (recognizing and countering) training. For multi-ship operations, controls might also include a rehearsal to practice deconfliction procedures and to specify separation distances and altitudes.

STEP 3–DEVELOP CONTROLS AND MAKE RISK DECISION

6-20. All hazards cannot be eliminated. There is a point at which the command must accept the risks and direct the mission to continue, modify the mission, or abort the mission. This is not to say that the risk management process stops. The risk management process is a continual process. There may come a time during a mission, when an opportunity exists to eliminate a particular risk. That opportunity might not be apparent if the risk management process is not continual. The intent is to mitigate the probability of an accident or the severity of the consequences with prudent controls whenever the risk is evident. For example, an experienced ground crew on a night launch with sufficient personnel and good illumination still has the possibility of an engine malfunction, a human error occurring, or propeller strikes. The command has identified the controls but cannot eliminate all the risks; it accepts the residual risks, in this case, as necessary and unavoidable.

6-21. In identifying and implementing controls, commanders should—

- Eliminate the hazard. This may include changing the crew, mission time (day versus night), equipment, or aircraft type as follows:
- Guard or control the hazard. For flight operations, this might include routine radio calls to operations, crew mix, safety aircraft, emergency training, and minimum crew requirements.
- Change operational procedures to limit exposure to hazards. For example, minimize the number of systems or personnel or limit exposure to a particular hazard.
- Train and educate personnel in hazard recognition and avoidance. Some good examples include the limitations of night vision and the known performance and operational limits of the aircraft.
- Enforce the use of protective clothing or equipment that will minimize injury and damage potential. Examples include helmets, gloves, hearing protection, fire protected clothing, ground vehicle emergency kits, first aid training, and backup gear.
- Use color coding and signs to alert personnel of hazards—safety lanes in hangars, stairs, curbs, marking on aircraft for tail rotors, arming and refueling point markings, and so forth are included here.

STEP 4–IMPLEMENT CONTROLS

6-22. Integrate controls into the planning. Ensure awareness of the hazards and controls, from the commander through the individual(s) performing the task, is essential to success.

STEP 5–SUPERVISE AND EVALUATE

6-23. Leaders must enforce the controls and standards. The best risk management program is ineffective if the command does not enforce the controls. ACs are leaders while operating every aircraft on a mission and upholding standards must be a high priority. The most common cause of accidents is the failure of an individual to adhere to standards or a failure of the command to enforce a known standard.

6-24. Leaders must supervise activities of subordinate units. Battalion will supervise company operations; the company will supervise platoon operations, and so forth. Supervising a subordinate unit does not imply

interference. Only by seeing the character of operations will leaders fully appreciate risk implications or the effectiveness of the risk management program.

6-25. Leaders at all levels are responsible for supervising operations. From private to general, all Soldiers can, and must, share in the responsibility for supervising. The purpose of this supervision is to ensure that the identification of hazards and that the controls are followed. Additionally, as conditions change, the supervisor continually evaluates the effectiveness of established controls to ensure successful completion of the mission.

RISK ASSESSMENT TOOLS

6-26. Using risk assessment tools—such as matrixes and diagrams—are valuable during the planning stage of a mission. These tools **do not** internalize the entire risk management process, but they do provide a systematic approach to identifying and reducing risk. However, **do not** allow the risk assessment tools to become the overriding concern of the risk management process. Tools merely provide a measurement for leaders to gauge risk and control effectiveness.

Note. Risk assessment tools **do not** make decisions. Leaders make decisions.

PROBABILITY

6-27. Probability is the likelihood of an event (figure 6-2). This is the estimate, given what information known and what others have experienced. The probability levels estimated for each hazard are based on the mission, course of action, or frequency of a similar event. For the purpose of risk management, there are four levels of probability—frequent, likely, occasional, and seldom.

PROBABILITY – FREQUENT
Occurs very often (known to happen regularly). Given 500 or so exposures to the hazard, expect that it will definitely happen to someone. Two examples of frequent occurrences are rollovers and rear ending a vehicle.
PROBABILITY – LIKELY
Occurs several times (a common occurrence). Happens every 1,000 or so exposures. Examples are IEDs, wire strikes for aircraft, controlled flight into terrain, and accidental discharges.
PROBABILITY – OCCASIONAL
Occurs sporadically (but is not uncommon). You may or may not get through your deployment without it happening. Two examples are UXO and fratricide.
PROBABILITY – SELDOM
Remotely possible (could occur at some time). Usually several things must go wrong for it to happen. Two examples are heat-related death or electrocution.

Figure 6-2. Probability chart

RISK ASSESSMENT MATRIX

6-28. Figure 6-3, page 6-8, provides an example of a risk assessment matrix.

6-29. Catastrophic is defined as follows:

- Loss of the ability to accomplish the mission or mission failure.

- Death or permanent total disability (accident risk) of personnel.
- Loss of major or mission-critical system or equipment.
- Major property (facility) damage.
- Severe environmental damage.
- Mission-critical security failure.
- Unacceptable collateral damage.

6-30. Critical is defined as follows:

- Significantly (severely) degraded mission capability or unit readiness.
- Permanent partial disability, temporary total disability exceeding 3 months time (accident risk).
- Extensive (major) damage to equipment or systems.
- Significant damage to property or the environment.
- Security failure.
- Significant collateral damage.

6-31. Marginal is defined as follows:

- Degraded mission capability or unit readiness.
- Minor damage to equipment or systems, property, or the environment.
- Lost day due to injury or illness not exceeding 3 months (accident risk).
- Minor damage to property or the environment.

Risk Assessment Matrix

SEVERITY \ PROBABILITY	Frequent	Likely	Occasional	Seldom
Catastrophic	E	E	H	M
Critical	E	H	H	L
Marginal	H	M	L	L

E - Extremely High.....Loss of ability to accomplish the mission.
H - High.....Significant degradation of mission capabilities.
M - Moderate.....Expected degraded mission capabilities.
L - Low.....Little or no impact on accomplishing the mission.

Figure 6-3. Risk assessment matrix

6-32. One matrix cannot include all of the hazards of every mission nor can one matrix apply to all units. Commanders must determine the usefulness and content of any risk assessment tool. Commanders must consider a number of basic principles when they use these tools.

Note. Additional risk management tools can be found at: https://safety.army.mil.

6-33. Commanders must remember—

- Adding the numbers up and finding the right level of command to accept the risk is not risk management.
- The risk assessment matrix is most valuable during mission planning.
- Each element of the matrix represents a specific hazard that, in the risk assessment process, translates into risk.

6-34. Commanders should review the unit METL as they develop their risk assessment matrixes. They should assess each METL task from the highest risk to the lowest risk. Commanders should then select the

task(s) or task elements for which they want to initiate risk reduction action and approval. Their risk assessment matrixes should clearly show these critical elements.

6-35. Commanders should include additional items when developing the risk assessment matrix, when applicable. An example of a high-risk mission is a relief on station with an inexperienced crew just arriving in-country and experiencing restricted visibility due to fog. The factors that play the biggest role in this example could be lack of experience and the new area of operations. Commanders may wish to refer these types of mission elements to the next higher commander for risk reduction or acceptance because the effect of these factors greatly increases mission risk.

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Chapter 7
Unit Task Development

AIRCREW TRAINING MANUAL TASK MODEL DEVELOPMENT

7-1. Commanders are authorized to develop additional tasks for inclusion on the CTL, as needed, to accomplish the unit's mission if the appropriate ATM appendix does not adequately cover a maneuver or mission that is required. To develop an additional task, the commander will create the task in the format described in this chapter, assign a 3000-series number to the task, and add it to the individual CTL along with iteration and mode requirements. When an additional task is developed by the unit, the commander must perform a risk analysis for performance of the task, and determine training required for personnel to attain proficiency in the task. The commander will ensure that Soldiers receive the necessary academic and flight training for this new task during RL progression and will determine if there is a requirement for an annual evaluation of the task. Commanders will submit a copy of all 3000-series tasks to: Commander, USAACE, ATTN: ATZQ-TDT-F, Fort Rucker, Alabama 36362. The additional task(s) must include—

- Task number and title of the task.
- Conditions under which the task is performed.
- Standard for performance of the task.
- Description of how the task is performed.
- Considerations for performance of the task (such as environmental and safety).
- Training/evaluation requirements.
- References.

TASK FORMAT

7-2. The following format will be used to develop 3000-series tasks.

TASK NUMBER

7-3. Task numbers are uppercase; they start with 3000 and run sequentially (for example, Task 3000, Task 3001).

TASK TITLE

7-4. The task title describes the performance required of the Soldier on the job. It is frequently referred to as the task. The task title has one action verb, one object, and may also have a qualifier that describes the required action. Task titles are title case; **do not** use acronyms in the title. Using standard, well-defined verbs aids in providing quality training by—

- Providing/promoting clarity.
- Allowing analysts, task selection boards, trainers, and Soldiers to understand what the task title means.
- Helping to prevent duplication. Using standard verbs makes it simple to group tasks by verbs to avoid duplication.
- Promoting application of sound training principles.

WARNINGS, CAUTIONS, AND NOTES

7-5. See examples below.

WARNING

All WARNINGS associated with the task will follow the task title.

CAUTION

All CAUTIONS associated with the task will follow the task title or any WARNINGS.

Note. Notes may be added throughout the text of the task as appropriate.

CONDITIONS

7-6. TRADOC PAM 350-70-6 states that task conditions specify the common wartime or training conditions under which the task will be performed. If the new task must be performed while operating the aircraft, as opposed to the UAS simulator, ensure that "aircraft only" is specified as a condition. (Using the UAS simulator can be explained in the training and evaluation requirements.)

- A condition statement has two parts:
  - Cue. A word, situation, or other signal for action. An initiating cue is a signal to begin performing a task or task performance step. An internal cue is a signal to go from one element of a task to another. A terminating cue indicates task completion.
  - Descriptive data. Include information identifying when, why, and where the task is performed and the resources (materials, personnel, and equipment) required for performing the task.
- Conditions include:
  - Whether the task can be accomplished in a UAS simulator, the aircraft, academically, or a combination of these.
  - The publications and materials required to perform the task.
  - Any special equipment required for the task.
  - The flight conditions under which the task will be performed; for example, "visual meteorological conditions" (VMC) or "with reference to instruments only."
  - Any special conditions or tasks that must be accomplished prior to performing the task; for example, in an RQ-7B UAS under VMC.

STANDARDS

7-7. Each task defines all the standards that must be met. Task standards describe the minimum degree of proficiency or standard of performance to which the task must be accomplished. For UAS flight tasks, standards are based on ideal conditions.

- Standards must be observable and measurable.
- A standard statement has two parts:
  - A verb phrase identifies what the standard evaluates (that is, the process the Soldier performs, the product produced, or both).
  - The performance criteria, which establish how well a task is performed in the field.
- Examples of standards include—
  - Check and operate UAS radios as required.
  - Establish and maintain radio contact with the desired unit and/or ATC facility.

- Operate all internal/external communication systems and mission equipment (to include identification friend or foe [IFF], Blue Force Tracker, enhanced position location and reporting system, and/or Link-16).
- Describe two-way radio failure procedures IAW local procedures, the flight information handbook (FIH), comply with international civil aviation organization (ICAO) rules, or host country regulations.
- Without error, adjust system radios to the proper frequencies.
- When communicating with ATC facilities, use the correct radio communication procedures and phraseology IAW FAR, AIM, and DOD FLIP.

  Acknowledge each radio communication by using the correct aircraft call sign.
- Correctly perform crew coordination actions.
- (Perform crew coordination actions IAW chapter 4 of this ATM and the task description.

DESCRIPTION

7-8. Task descriptions are the "how to" portion of the task.

- Descriptions will normally be divided into two sections: crew actions and procedures.
- Ensure that the correct designation for the crewmember is used in the description to avoid confusion.
- Procedures identify the preferred method of accomplishing the task.
- Make sure the standards for the task are clearly defined in the "STANDARDS" section; however, it may be necessary to refer the reader to the description section for specific requirements.
- Using the words *will*, *should*, and *may* (when writing the task description) must be IAW the definitions in chapter 1 of this ATM.
- Deviations from task procedures—but not crew actions—are authorized as long as task standards and safety are not compromised.

CONSIDERATIONS (NOT MANDATORY FOR ALL TASKS)

7-9. Task considerations define the different requirements for performing the task under different flight modes (VMC, night, or different payload sensors) or under adverse environmental conditions. They must address the unique requirements of performing the task under those conditions. Examples of night considerations are shown in figure 7-1.

ENVIRONMENTAL CONSIDERATIONS:

1. Altitude, apparent ground speed, and rate of closure are difficult to estimate at night.

2. Surrounding terrain or vegetation may decrease contrast and degrade depth perception during the approach. Before descending below obstacles, determine the need for artificial lighting.

3. Use proper scanning techniques to avoid spatial disorientation.

4. Acquire, identify, track and/or designate targets using the sensor's optimum capabilities (EO, IR, for a given situation based on METT-TC.

Figure 7-1. Example of environmental considerations

REFERENCES

7-10. References list sources of information relating to the task. List only unique references; for example, FM 3-04.155, FM 3-04.140, FM 3-04.126, AR 95-23, and FM 3-04.203.

TASK EXAMPLE

7-11. Figure 7-2, provides an example of task format.

TASK 3000

Perform Close Combat Support

WARNING

All WARNINGS associated with the task will follow the task title.

CONDITIONS: TRADOC PAM 350-70-6 states that task conditions specify the common wartime or training conditions under which the task will be performed. If the new task must be performed in the aircraft, as opposed to the simulator, ensure that "aircraft only" is specified as a condition. Using the simulator can be explained in the training and evaluation requirements.

STANDARDS: Each task defines all the standards that must be met. Task standards describe the minimum degree of proficiency or standard of performance to which the task must be accomplished. For aviation flight tasks, standards are based on ideal conditions. Standards must be observable and measurable.

DESCRIPTION:

1. Crew actions.
   a. Ensure that the correct designation for the crewmember is used in the description to avoid confusion.
   b. Make sure crew actions (for example AO, AC) by all individuals involved to accomplish this task are captured.
2. Procedures.
   a. Procedures identify the preferred method of accomplishing the task.
   b. Make sure that all individual (for example AO, AC) procedures involved to accomplish this task are captured.

ENVIRONMENTAL CONSIDERATIONS:

1. Task considerations define the different requirements for performing the task under different flight modes or under adverse environmental conditions.
2. They must address the unique requirements of performing the task under those conditions.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training. Training may be conducted while operating the aircraft or simulator.
2. Evaluation. The evaluation will be conducted while operating the aircraft.

REFERENCES: FM 3-04.126, FM 3-04.140, and AR 95-23.

Figure 7-2. Example of task format

Chapter 8
Training the Unit

TRAINING STRATEGY

8-1. The training strategy is developed using the outcome of the training assessment. This training strategy is then issued to subordinate commanders through the commander's training guidance (CTG).

NEAR-TERM PLANNING

8-2. Used for the monthly training schedule, the S-3, with assistance from the UAS Technician (Tech)—

- Reviews TADSS and allocates training resources to specific trainers.
- Ensures that training events are well structured, efficient, realistic, safe, and effective.
- Must ensure that informal evaluation and feedback by trainers and senior leaders are continuous and that formal evaluations are included in training plans. (Evaluation documentation can range from annotated training and evaluation outlines to CTC take-home packages.)

LONG-RANGE PLANNING

8-3. Used for the new annual training calendar, the S-3, with assistance from the UAS technician —

- Carefully studies the brigade CTG and key training events in which the unit will participate.
- Selects appropriate training scenarios with supporting operations plans from the training support packages.
- Coordinating with the brigade, division, and the military community, chooses training event dates that **do not** conflict with other key calendar events.

8-4. The tools used to develop a long-range training plan are the battalion training strategy, the brigade and division's CTG, and the brigade and division long-range training calendar—12 to 18 months out. These calendars may be viewed by subordinate commanders during their unit training planning.

QUARTERLY TRAINING CALENDAR

8-5. When preparing the quarterly training calendar, the S-3, with assistance from the UAS technician—

- Studies the brigade CTG and the battalion annual training calendar.
- Identifies, allocates, and coordinates short lead-time resources such as local training facilities.
- Pays particular attention to CTC lessons learned when developing training objectives and tasks to include in an FTX operation order (OPORD).
- Allocates time on the aviation combined arms tactical trainer and other critical training resources.
- Cross-references each event with specific training objectives and coordinates with all supporting agencies, the battalion staff, and unit commanders.

AIRCREW TRAINING PROGRAM

8-6. ATP is an integral, not separate, part of the commander's overall unit training program and it should be briefed at each quarterly training brief. Proficient aircrews are essential to effective collective training. UAS leaders must maintain a balance between individual, aircrew, and collective training. The ATP, mandated by AR 95-23, is a structured and prescriptive management and evaluation program focused on training Army aircrews. The ATP applies to all Army operators in operational flying positions. Developed

IAW this TC and the appropriate ATM appendix, the ATP includes training of the base, mission and additional tasks necessary for the accomplishment of a unit's METL. In today's command operating environment, small unit leadership is critical to mission execution. For UAS, small unit leadership equates to AC. Training must be tailored to ensure these elements are integrated into the training regime of the units. Leader supervision and participation at all levels is essential to the successful execution of the ATP. Commanders use this TC, ATMs, UTLs, FM 3-04.140, and the CATS to develop the unit's ATP.

8-7. The ATP, with the factors that affect it, is a major consideration in developing the long-range training plan. Consideration must be given to—

- Individual operator proficiency.
- Aircrew proficiency (battle-rostered crews).
- The unit maintenance program.
- Flight-hour allocation to supported units when UAS training is conducted during supported unit missions.
- Individual and aircrew training that is usually accomplished while not in a support role; for example, emergency procedures training, flight evaluations, and instrument proficiency training.
- Operator training accomplished in crew and collective simulators/simulations.

8-8. Units are required to have an ATP addressing specific requirements for conducting training, evaluation, assessment, and program revision. Commanders should use multi-echelon training objectives, scenarios and STXs to facilitate the development, execution, and continual assessment of their training program. Scenarios and STXs for individual, crew, and collective training must be mutually supportive and progressive in intensity and complexity. Effective individual and crew training programs form the foundation for a UAS battle-focused training program. These programs produce combat ready crews and are the basis for the unit's collective training program. Collective training must focus on combined arms/joint operations across the spectrum of the unit's METL. Limited resources, environmental restrictions, new and sophisticated aircraft mission equipment packages, and multiple contingency operations will all impact on the commander's ability to train and maintain proficiency at all levels.

Chapter 9
Collective Training Factors

INDIVIDUAL AND COLLECTIVE TRAINING INTEGRATION TRAINING

9-1. To achieve maximum training results from limited resources, planning must be detailed and flying/simulator hours must be dedicated to maintaining individual and crew proficiency as outlined by the UAS CATS. The integration of individual continuation training into collective training makes maximum use of every hour of flight time. Units must incorporate collective training into every element of the ATM. The link between the collective mission essential tasks, and the ATM and additional (3000 series) tasks that support them, is critical to the battle focused training concept. The commander plans, prepares, executes, and evaluates training using mission related scenarios based on the unit's METL. The commander selects critical battle tasks from the unit's METL and emphasizes the execution of these tasks during training and evaluation. These critical battle tasks become subordinate unit's METL. All aviation enablers (manned assets, air traffic services (ATS) must be integrated into collective training events at every opportunity like gunneries, FTXs, and command post exercises.

9-2. Integration of battle command training within the collective tasks will ensure that the commanders and staffs have the capability to provide command and control to the formations in the most efficient means. The battle command training strategy identifies the requirements and resources needed for battle command training to provide commanders the tools to train individual operators, leaders, and battle staffs across the entire spectrum of operations. It enhances battlefield decision-making of leaders at all echelons.

COLLECTIVE TRAINING EXERCISES

9-3. During the training year, commanders will schedule exercises based on the type of collective training their unit requires as prior assessments dictate. As outlined in ADP 7-0, the crawl-walk-run method of training fits well into collective training exercises also. Individual and crew training are the crawl stage of training. The STX and other small exercises, which focus on one battle task or a single METL task, are the walk stage. The FTX, CTC, and so forth are the run stage of training. Again, commanders cannot skip stages. STXs are mission-related, limited exercises designed to train one collective task or a group of related tasks and drills through practice. Often synonymously used are the terms situational exercise and scenario. Based on the unit's METL, commanders may modify or expand existing STXs to meet special mission requirements. These exercises aid in transitioning from individual and crew proficiency to collective task proficiency.

9-4. The following training exercise benefits uses a STX as a model but these benefits apply to all levels of training exercises (STX, FTX, CTC). STXs will—

- Focus training on weaknesses identified in previous training and evaluations through the critique and after action review.
- Provide repetitive training on parts of missions.
- Save time by providing information needed to develop training.
- Allow the operator, crew, or unit to practice selected critical parts of the mission before rehearsing the entire mission.

9-5. Commanders should develop STXs as a training and ATP management tool. Preconstructed STXs, based on a thorough training needs analysis, provide limited scope, short-term exercises that are central to sustainment training. STXs should permit simultaneous accomplishment of base, mission, additional and collective tasks.

9-6. Input from the unit's implementers allows the commander to structure collective training that includes individual and crew proficiency training. Performing collective training tasks will then enhance and sustain individual proficiency. This following guidance is for proficiency sustainment for individual and crew training:

- Implementers are not required to develop the unit collective scenarios and STXs but are critical to their successful development.
- Implementers should review all individual and crew training scenarios and STXs to verify that all tasks on the CTL are included for performance by crewmembers in sustainment training.
- Scheduling of CTL or METL iterations should be monitored to ensure that task iterations are performed at a pace that maintains proficiency and does not peak or wane.

9-7. The following steps will help the commander develop STXs that support METL requirements:

- Select the battle task(s) to be performed. A battle task is a task that must be accomplished by a subordinate unit organization if the next higher headquarters is to accomplish a mission essential task.
- Establish the conditions and standards for the selected battle task. Use the appropriate ATM appendix/MTP.
- Develop a mission statement to support the battle task.
- Identify the company battle task that supports the battalion METL task. For example—
  - Supported battalion METL task. Conduct combat operations.
  - Company battle task. Conduct a deliberate attack.
  - Identify collective supporting tasks. Use MTP tasks.
  - Apply time standards.
  - Identify required references/resources.

9-8. All training exercises should have realistic training objectives. Any training exercise that focuses on improving the proficiency level of a unit and replicates actual combat conditions, as nearly as possible, will have a beneficial effect on training. This is especially true at battalion level and below. Virtual and constructive simulation training cannot replace live training. However, the commander can supplement, enhance, and complement live training to sustain unit proficiency within the "Band of Excellence". Based on resources available (such as time, ammunition, simulations, and range availability), commanders determine the right mix and frequency of live, virtual, and constructive training to ensure efficient use of allocated training resources. The commander must ensure that the STXs **do not** become routine training flights. The commander will clearly define the exercise goal and all participants must understand the objectives in their role(s).

9-9. The ARTEP/MTP gives units a clear description of what and how to train to achieve wartime mission proficiency. The ARTEP/MTP elaborates on wartime missions in terms of comprehensive T&EO. The ARTEP/MTP also provide exercise concepts and related training management aids to help field commanders plan and execute effective unit training. The applicable ARTEP/MTP gives examples for developing and using STXs.

COMBAT TRAINING CENTER PREPARATION

9-10. CTC rotations are valuable training tools when units have the opportunity to plan, prepare, execute, and assess/recover. Units must plan far enough in advance and use the ARTEP/MTP, CATS, unit METL, and ATP when planning a CTC rotation to maximize the benefit from the resources allotted.

9-11. Environmental training for CTC rotations is critical. Home-station training should replicate as closely as possible the actual CTC conditions. It is not possible to replicate the exact conditions of the CTC at home station; therefore, unit commanders should plan time for flight crews to spend time during force buildup at the CTC to become proficient in the new environment. Additionally, commanders should take full advantage of UAS simulator training to replicate the CTC conditions during their preparation.

9-12. Commanders must be cautious since some UAS units that deploy to a CTC too often during the same training year, may actually experience a drop in overall training and equipment readiness. This law of

diminishing returns is most prevalent in assault and general support battalions. For example, as a unit returns from a CTC rotation and prepares to move into the assessment and recovery phase of the training cycle. A unit may skip, or severely curtail, the assessment, recovery, and planning phases of the training cycle and move directly back into the preparation and execution phases. For these reasons, a unit might actually find itself at a lower state of training and overall readiness at the conclusion of a subsequent CTC rotation than it was after the completion of the first.

TRAINING SIMULATORS

9-13. Simulation systems make staff and unit training easier to plan and execute and less expensive. Brigade and battalion simulation, Joint Army Navy Standard, aviation combined arms tactical trainer, and the aviation training exercise are all examples of the simulation systems and exercises available for collective training. Simulations greatly decrease the cost of training while allowing the staff and unit to train on tasks too expensive and possibly too dangerous to perform on a routine basis during a field exercise. As with all training, whether live, virtual, or constructive, leaders must be actively involved during all stages of planning and execution. Some of the benefits commanders and other leaders will gain through simulation are as follows:

- Simulation is a low-distraction and low-risk environment. Training takes place without the added attention commanders must give to non-mission essential tasks. Leaders can focus on the battle skills pertinent to the particular simulation.
- Leaders go through all of the planning, rehearsal, and execution steps necessary for actual missions. However, when discrepancies arise, the leadership can stop the planning, rehearsal, or execution and guide subordinates to accomplish a particular step correctly.
- A simulation provides a chance for leaders to assess, validate, and change SOPs, TTPs and so forth.
- Many simulations have a playback capability. Commanders can start the simulation over at any moment within the battle to retrain a deficient task.
- Leaders can freeze the battle, conduct an AAR on recently simulated events, and return to the battle at the instant it was stopped. This affords the commander the ability to change the course of the battle to accomplish those collective tasks that the simulation was designed to train or reinforce.
- Often commander's can observe the unit through a stealth mode. Commanders can see and hear what the crew sees and hears. Commanders can then correctly assess their actions and may discover tasks that may require additional training.
- Collective simulation training is a chance to train task force staffs or units that have previously not operated together. Commanders and staffs can work as a cohesive unit on the battlefield only after having performed collective tasks together prior to actual combat.
- Ground units, ranges, training centers, and so forth may not be available when the commander schedules the unit for training. Through simulation, the commander can have all of those assets required to properly conduct beneficial training at the time the unit requires that training.
- The commander and other leaders can focus on weaknesses that need improvement and identify strengths that may not have been readily visible through live training events.
- There is also a reinforcing benefit to many supporting tasks.

BATTLE ROSTERING

9-14. Battle rostering should complement the UAS standardization and aircrew coordination programs. When commanders battle roster crews, they should consider the individual operator's flight and unit experience, individual personalities, and individual maturity. Prolonged battle rostering without consistent evaluation may lead to crew complacency, overconfidence, implicit coordination behaviors, and nonstandard procedures. Battle rostering is most beneficial when used for short periods, such as during training exercises, operational deployments, recent redeployments, and gunnery training. Battle rostering increases combat readiness and performance by creating a stable atmosphere, where individual strengths are complemented, weaknesses are minimized, and crew coordination is enhanced. Battle rostering takes

the above considerations and creates a team that maximizes the combat performance characteristics of that crew and UA. Therefore, battle rostering is most beneficial when used in coordination with a solid aircrew coordination program.

9-15. Commanders should consider the individual's UAS, flight, and unit experience during the battle-rostering process. They also should consider individual personalities and maturity. For example, a E-4 AC, experienced in the unit's mission, could be battle-rostered with a newly assigned E-6. When there is a change in crew personnel, the commander must determine the proficiency of the newly constituted crew and understand that additional training may be required.

9-16. Although beneficial, commanders must be aware that prolonged battle rostering of the same crewmembers may produce crew complacency, overconfidence, implicit coordination behavior, and nonstandard procedures, which result in a degradation of crew proficiency. Thus, battle rostering is beneficial, but only when used for short periods-such as training exercises, STXs, operational deployments, and gunnery training.

UNMANNED AIRCRAFT COLLECTIVE GUNNERY

9-17. The UAS gunnery program begins with the GTs IAW FM 3-04.140. Commanders will use FM 3-04.140 and DA PAM 350-38 to develop a progressive and continuous UAS gunnery program. UAS crews have no team GT requirements. UAS crews must qualify GTs IAW FM 3-04.140 prior to participation in platoon/company/troop qualifications or combined arms live-fire exercises (CALFEX). The advanced tables provide the UAS commander with a tool to train and assess the unit's collective gunnery skill. These tables emphasize—

- Command and control.
- Situational awareness.
- Tactical placement/movement within the battle area.
- Communications flow of tactical information.
- Target acquisition.
- Engagement priorities.
- Fire distribution.
- Discipline of fires.

9-18. Commanders must consider the following factors when developing collective gunnery training programs:

- The unit master gunner is the primary special staff instructor for all gunnery-related matters.
- Ammunition is resourced using DA PAM 350-38.
- Ammunition, used for CALFEXs, STXs, and other training events or demonstrations must not be drawn against DA PAM 350-38 allocations but must be resourced separately. Failure to do so will result in insufficient ammunition to qualify crews annually as required by FM 3-04.140.
- Simulators and simulations are used to enhance and maintain gunnery proficiency at crew level skills.
- The unit METL and MTP must dictate the tactical scenarios, weapons mix, and task organizations used when conducting advanced GT.
- CALFEXs are not advanced GT.

INTEGRATION OF ADDITIONAL TRAINING REQUIREMENTS

9-19. All UAS training requirements should be listed in the ATP and documented in the unit short-term and long-term training plans. There are also areas of special interest that have unique requirements and directly affect the unit's ability to perform its METL missions. Whenever possible, commanders must integrate these additional training requirements into collective training. While some of these requirements focus on individual skills and knowledge, others (such as environmental training) have a large collective component—dual UA conducting a relief on station in a sand/dust environment versus single UA operating in the same conditions.

9-20. Additional training requirements that should be specifically integrated into collective training include but are not limited to the following:

- Mission commander training.
- CBRNE training.
- Environmental training.
- Multiple aircraft operations training.
- UA recovery training.
- Loss of global positioning system training.

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Chapter 10
Aircrew Training Program Standing Operating Procedures

The sample ATP SOP is intended as a guide to what should be addressed in a unit's ATP SOP. This sample is not intended to be prescriptive or all inclusive.

10-1. At a minimum the SOP must address the following areas:

- The conduct of training.
- Crewmember and crew evaluation.
- AC and MC training, assessment, and evaluation.
- Mission briefing officer/NCO training and certification program.
- Assessment of the ATP effectiveness.
- Revision of the ATP.
- The requirements from DA PAM 385-90, as applicable.

10-2. Text in italics is commentary. It explains the section in which the text is found. Where a brief explanation may be insufficient to explain an SOP section, a sample section is included.

10-3. Where appropriate, information references are included and should be consulted to clarify any material not in this sample.

STANDING OPERATING PROCEDURE SECTIONS

10-4. The following sections are found in an SOP.

INTRODUCTION

10-5. The introduction is normally a short section explaining the following items:

- General: The general section introduces the training SOP.
- Suggested improvements: States the unit's procedures for suggesting changes to the SOP.

TABLE OF CONTENTS

10-6. Table 10-1 shows a table of contents that an ATP SOP should contain, if applicable.

Table 10-1. ATP SOP table of contents

Commanders Delegation of Authority
Revision of SOP
Assessment of SOP
AIRF
Standardization Committee
Commanders' Evaluation
PFE
Local Orientation Requirements
Training Programs
Conduct of Training
Crew Qualification, Selection, Training, Designation, and Evaluation Requirements
Mission Brief/Approval Training and Certification Program

Table 10-1. ATP SOP table of contents

No-Notice Evaluation Program
AMC Training and Certification Program
Night/NVS/NVD Training and Maintenance Program
Aviation Mission Survivability Training Program
Instrument Flight and IIMC training
Simulator Flight Training System Training Requirements
Collective Training Requirements
Additional Training Requirements
Academic Training Program and Makeup Requirements
Annual Aviation Life Support Equipment Training
Aeromedical Training Requirements
Computer-based Aircraft Survivability Equipment Training , CID Training and Simulator Program, ROC-V Requirements, and Personnel Recovery
Special Interest and Unique Training
Deck Landing Operations
Environmental Training Program
CBRNE Training
Aerial Gunnery Training Program
Operating Procedures
Operations in a Tactical Environment
Fighter Management/Crew Rest Procedures
Terrain Flight Hazard Avoidance
Multi-ship Operations
Briefing
Command-and-Control Procedures with Ground Commander
Extreme Environmental Operations (blowing snow/sand, desert, arctic/cold weather, mountain, jungle, and overwater)
Safety
Aviation Mission Risk-Management Process
Foreign Object Damage Program
Protection of Personnel and Equipment from Severe Weather and Environmental Hazards
Responsibilities of Aircrews when involved in an Accident
Hazardous Material Handling
Hazardous Communications Procedures
Operational Hazard Reporting Procedures
Maintenance Procedures
Aircraft Maintenance Procedures
Hangar and Mooring Procedures
Maintenance Shop Operations
Contractor Flight Operations

COMMANDER'S DELEGATION OF AUTHORITY

10-7. An ATP may be implemented at a level higher than the level at which it is administered (for example, an ATP implemented at brigade level but managed at the battalion and company level). To clarify

responsibility and clearly delineate authority, the SOP should have a section that defines the roles of subordinate commanders in managing the ATP (table 10-2).

Table 10-2. Sample SOP–role of subordinate commanders

a. References:
- AR 95-23.
- AR 95-2.
- Local command supplements to AR 95 series.
- DA PAM 738-751.
- TC 3-04.61.
- Appropriate local regulations and policies.

b. Purpose. If the commander chooses to delegate or otherwise define authority in the unit ATP, it should be described in the SOP.

c. Responsibilities. This section defines delegation authority.

d. General. Due to organizational differences, and those situations that might arise through deployments and temporary attachments/assignments, it may be necessary to define 'commander' for purposes of ATP implementation.

e. AR 95-23. Specific authority is defined and described. This section states the respective authorization as established by the commander who has overall responsibility for the ATP.

AIRCREW TRAINING PROGRAM

10-8. This section is the heart of the SOP. It outlines the commander's intent for training and sustaining proficiency for all assigned and attached crewmembers (table 10-3).

Table 10-3. Sample SOP–commander's intent

a. References:
- AR 95-23.
- Local command supplements to AR 95-23 as appropriate.
- TC 3-04.61.
- Appropriate local regulations and policies.

b. Purpose. The purpose states the commander's intentions for the ATP. It should also establish who is covered by the unit's policy.

c. Responsibilities. Identifies key personnel and briefly states their responsibilities in the ATP.

d. The ATP: Outlines specific procedures for managing the unit's ATP. At a minimum, it should address—
- FAC designation (and specifically identify MTOE positions that are FAC 1, 2, and 3).
- The process for incorporating a newly assigned crewmember into the ATP.
- The RL progression process and any local documentation requirements. This section should also state those requirements that are unit mandated in excess of TC 3-04.61 requirements.
- Continuation training requirements for crewmembers that have completed RL progression. Evaluations, local requirements, and documenting training in excess of TC 3-04.61 requirements should be stated.
- Required evaluations and any command guidance on more demanding modes of flight; for example, actual flight versus simulation.
- Use of UAS simulators for evaluations.
- Procedures for processing crewmembers who have failed an evaluation.
- Commander's required tasks for currency proficiency flight evaluations. Include all modes of flight applicable to the unit; for example, day and night.
- Procedures for crewmembers that have not completed requirements established by TC 3-04.61

Table 10-3. Sample SOP–commander's intent

or the ATP. e. STXs. The chapter addresses the commander's guidance on using STXs to enhance training. Tracking the performance of STXs at the individual level is not required; however, it is recommended. The unit policy on tracking STX performance should be established in this section. f. ACT-E. This section contains the commander's guidance on initial, refresher, and continuation of ACT-E training. It also contains any evaluation requirements established by the commander in excess of those established by TC 3-04.61. g. IATF. While the requirements of TC 3-04.61 are mandatory for maintenance of IATFs, units may direct additional procedures or policies for maintaining these important training records; for example, establish a requirement for company SO/IOs to review each IATF. h. Unit forms: If a commander determines that specific unit-unique forms or formats are required to efficiently maintain the unit's ATP, this chapter must contain examples of those blank forms or formats. i. Additional tasks: The unit's ATP chapter must specify those tasks the commander has determined are necessary to accomplish the unit's METL missions which are not published in the applicable ATM appendix. These tasks are developed by the unit as necessary. See chapter 7 of TC 3-04.61 for guidance in developing 3000-series tasks. Once developed, these tasks must be included in the unit ATP.

CREW QUALIFICATION AND SELECTION

10-9. Crew qualification and selection are the bedrock of an ATP. Procedures and responsibilities for key unit personnel should be identified and explained (table 10-4).

Table 10-4. Sample SOP–crew qualification and selection program

a. Reference: AR 95-23. b. Purpose. To establish the commander's flight crew qualification and selection program. c. Responsibilities. Briefly describes the responsibilities of key unit personnel in the crew qualification and selection process. d. Qualification requirements. If unit requirements are more stringent than TC 3-04.61 or AR 95-23, or, if the unit has unique requirements for duty positions, they should be stated. At a minimum, this section should address the following crewmember duty positions: • Aircraft operator (AO). • Aircraft commander (AC). • Unit trainer (UT). • Standardization instructor operator (SO)/Instructor operator (IO). • Function check operator (FCO). • Crew chief (CE). • Ground crewmember (GCM). e. Evaluation requirements. This section establishes the commander's requirements for conducting standardization evaluations used to establish a duty position. Any requirement that exceeds TC 3-04.61 or AR 95-23 should be stated.

MISSION BRIEFER/APPROVAL TRAINING CERTIFICATION PROGRAM

10-10. Commanders (O–5 and above) will develop and publish policies and procedures for the mission approval process for those units under their command. Commanders will establish a training and certification program to ensure standardization and understanding of the mission approval and risk-management process for personnel. Table 10-5 provides a sample of the SOP–mission brief/approval training certification program.

Table 10-5. Sample SOP–mission brief/approval training certification program

a. Reference: AR 95-23.

b. Purpose. To establish the commander's mission briefer and approval authority.

c. Responsibilities. Briefly describes the responsibilities of key unit personnel in the mission briefing and approval authority qualification and selection process.

d. Qualification requirements. Commander or their designated representative that interacts with the mission crew, MC or AC to identify, assess, and mitigate risk for the specific mission. Commanders will select briefing officers based on their experience, maturity, judgment, and ability to effectively mitigate risk to the aircrew and designate them by name and in writing. Mission briefers are authorized to brief regardless of risk level. Briefing officer must be a qualified in the mission profile as determined and designated by the commander. Mission briefing officers will, at a minimum, review and assess the following key areas in the mission planning process:

- The flight is in support of an operational unit mission and has been approved by step one.
- The crew understands the mission and possesses situational awareness of all tactical, technical, and administrative mission details.
- Assigned flight crews have been allocated adequate pre-mission planning time and the mission is adequately planned to include performance planning, NOTAMs, and coordination with supported units.
- Assigned flight crews are qualified and current for the mission IAW AR 95-23. The commander’s flight crew qualification and selection program, aircrew reading file currency, and crew experience are appropriate for the mission.
- Forecast weather conditions for the mission, including departure, en route and arrival weather, meet the requirements of AR 95-23 and local directives.
- Flight crews meet unit crew endurance requirements.
- Procedures in the commander’s risk management program are completed and mitigated to the lowest level possible.
- Required special mission equipment is operational.

e. Final mission-approval authority is designated to members of the chain of command that are responsible for accepting risk and approving all aviation operations (ground and air) within their unit. Final mission-approval authorities may only approve those missions whose assessed risk level is commensurate with their command level. At a minimum, company commanders and below are the final mission approval authority for low-risk missions, battalion commanders and above for moderate risk missions, brigade commanders and above for high-risk missions, and the first general officer in the chain of command for extremely high-risk missions. Approval authorities are based upon levels of command authority and not rank. Based on the resulting mitigated risk, the appropriate final approval authority reviews the mission validity, planning, risk mitigation, and authorizes the flight/operation IAW the commander’s policy. The final approval authority indicates authorization for flight by initialing the DA Form 5484 with the briefing officer and AC.

AIRCREW INFORMATION READING FILE

10-11. Information constantly changes during operations. To ensure aircrews have access to the most current information in a timely manner, each unit will establish an AIRF. In this section of the SOP, the unit addresses how the AIRF is maintained. This section will also establish the frequency at which crewmembers must read the AIRF (table 10-6, page 10-6).

Table 10-6. Sample SOP–aircrew information reading file

a. References:
- AR 95-23.
- AR 385-90.
- TC 3-04.61.

b. Purpose. Briefly states the purpose of the aircrew information reading file.

c. Responsibilities. Briefly states the responsibilities of key unit training personnel that maintain the unit reading file and monitor its use by unit crewmembers.

d. General. Outlines requirements and contents of the AIRF. Establishes the frequency with which crewmembers must review the AIRF and states the minimum publications or documents that are maintained in the AIRF.

e. Crewmember compliance monitoring. Establishes and describes the methods or techniques the unit uses to ensure that crewmembers read the monthly or quarterly AIRF. This portion of the SOP should also state what actions occur should a crewmember fail to read the AIRF as required by the SOP.

f. Validity of material in AIRF: Establishes the time frames during which information in the AIRF is considered current. Should also establish how temporary information is incorporated into the unit SOP, policy memoranda, or discarded when no longer applicable.

OPERATOR LOCAL AREA ORIENTATION OPERATOR

10-12. LAO is an important part of the ATP. It is required to be accomplished prior to a crewmember being designated RL 1. This ATP section should establish those specific procedures necessary to comply with AR 95-23 and the TC 3-04.61. Documentation aides-for example, CL, or other local forms or records used to document LOAs must be addressed in this portion of the SOP (table 10-7).

Table 10-7. Sample SOP–operator local orientation training

a. References:
- AR 95-23.
- TC 3-04.61.

b. Purpose. States the purpose for the LAO as required by TC 3-04.61 before progression to RL 1.

c. General. Establishes any unit requirements for conducting and documenting the LAO that are more restrictive than published guidance-for example, use of unit CLs, location of unit CL in IATF, how long the information is maintained in the IATF, which orientation items are to be performed at day, night, or both.

AIRCRAFT COMMANDER SELECTION, EVALUATION, AND DESIGNATION

10-13. The unit's process for electing, evaluating, and designating crewmembers to perform AC duties must be addressed in the SOP (table 10-8).

Table 10-8. Sample SOP–aircraft commander selection and designation

a. References:
- AR 95-23.
- TC 3-04.61.

b. Purpose. Clearly and briefly state the commander's intent for the unit's AC policy.

c. Responsibilities. Establishes responsibilities for key personnel in the AC selection and qualification process.

d. General. An AC is an operator that has demonstrated the judgment and ability to perform all of the mission requirements for the assigned aircraft; uses proper procedures and operates the aircraft safely and maturely. The AC is proficient and knowledgeable in all aspects of the unit's mission and is capable

Table 10-8. Sample SOP–aircraft commander selection and designation

of executing all appropriate mission tasks. Experience, knowledge, maturity, and the ability to effectively mitigate risk are the requirements of an AC. e. Prerequisites should address— Aircraft qualifications and currency. The demonstrated of sound judgment and maturity in daily work/flight activities. Technically and tactically proficient in the unit's mission. f. Selection. Each unit commander will establish a selection process. This selection process should be based upon the recommendations of, but not be limited to, the following personnel: commander, platoon leader, SO or IO, safety officer, and AC making recommendation based on firsthand flight experience of the nominee's capabilities and judgment while performing flight duties. g. Training and evaluation requirements. Commanders may tailor the AC training requirements for operators with significant experience in the type aircraft and unit mission. h. Administrative considerations. How the AC process-candidate selection through designation in writing by the commander-is conducted should be logically and concisely stated. Include guidance on who may administer the evaluation. If locally produced forms are used, instructions for completing all entries should be addressed.

NO-NOTICE EVALUATION PROGRAM

10-14. Comprehensive no-notice program ensures high standards of proficiency are maintained in the unit. The commander must state the no-notice policy for the unit (table 10-9).

Table 10-9. SOP example–no-notice evaluation program

a. References: • AR 95-23. • TC 3-04.61. • Appropriate aircraft ATM appendix. b. Purpose. A brief statement of the commander's intent for the unit's no-notice program. c. Responsibilities. This section identifies the key unit personnel involved in the no-notice program and briefly states their respective responsibilities. d. No-notice program procedures. This section of the annex establishes the procedures for how no-notice evaluations are conducted, their frequency, and how the unit documents them.

GUNNERY TRAINING

10-15. A gunnery annex to the unit SOP should be established by all TOE UAS units. The commander establishes the requirements and standards for the unit's gunnery training and qualification program. A gunnery training program based on academic training conducted throughout the training year and hands-on qualification will result in proficient crewmembers (table 10-10).

Table 10-10. SOP example–gunnery training

a. References: • AR 350-1, (as appropriate). • DA PAM 350-38. • FM 3-04.140. • Aircraft operator's manual. • AR 385-63. • Medical 524. b. Purpose. A clear and concise statement of the commander's intent for the unit gunnery training program.

Table 10-10. SOP example–gunnery training

c. Responsibilities. Identifies key unit gunnery training personnel and their specific responsibilities in the gunnery training program. This section will vary between the type of units with master gunners/standardization instructor operators having prominent duties in UAS unit SOPs.

d. General. The general section should clearly state unit requirements and procedures for gunnery training to include annual and pre-gunnery requirements.

e. Training and execution. This section should outline the specific processes and procedures the unit uses to conduct gunnery training. Using standard Army regulations and publications as references is strongly recommended. Where unit procedures or requirements are more stringent than published guidance, the unit procedure or requirement must be stated.

f. Training and qualification requirements. This section explains training and qualification requirements. Unless a unit has received a waiver to requirements, the references in the following example will apply: DA PAM 350-38 and FM 3-04.140 outline training and qualification requirements. Training readiness condition (TRC) is a training RL with prescribed standards and resources. HQDA determines TRC assignments required by units to attain and sustain gunnery standards.

g. Ground and out-front boresight target (as required). This section should address the location of authorized out-front boresight targets and their use before firing live ordnance.

h. Range requirements. Range and ammunition supply point requirements are a function of both Army and local regulations. This section should identify applicable regulations and identify key personnel required to be trained or certified for range operations.

i. Aircraft emergencies. For all range operations, a clear and concise emergency plan is required. This section should state the unit's plan and identify emergency landing areas.

j. Required documentation/recordkeeping. Identify those unit requirements to document training that is more stringent then required by regulation or FM. The responsible party for maintaining attendance rosters, evaluations, and reports not otherwise covered by TC 3-04.61 or FM 3-04.140 should be established in this section.

k. Tabs/enclosures. Additional, detailed requirements, CL, or qualifications should be added as enclosures or tabs to this chapter.

ENVIRONMENTAL TRAINING

10-16. This section establishes the commander's policy on environmental training. It also establishes requirements for individual and crew training (table 10-11).

Table 10-11. SOP example–environmental training

a. References:

- AR 350-1 and local command supplements to AR 350-1.
- AR 385-10.
- TC 3-04.61.
- Appropriate aircraft operator's manual.
- Local policies and regulations.

b. Purpose. A brief statement of the commander's intent for the unit's environmental flight training program to standardize planning, training, and evaluation requirements for operations in areas where terrain and/or environmentally diverse conditions exist that are other than the normal conditions encountered in the home station local flying area.

c. Responsibilities. This section identifies the key personnel and briefly states their responsibilities for environmental training.

d. General. This section establishes overall policies and procedures used to train environmental flight. When guidance is more restrictive than TC 3-04.61 or other regulations, the guidance should be stated.

e. Environment-Specific Requirements. When specific procedures and policies are required for unique environments, the procedures or policies must be stated.

MISSION COORDINATOR TRAINING PROGRAM

10-17. This section will establish minimum training requirements for the commander's designation as an MC for all single and multi-ship flight operations (table 10-12).

Table 10-12. SOP example–mission coordinator's training program

a. References:

- AR 95-23.
- TC 3-04.61.
- FM 3-04.111, FM 3-04.126, and FM 3-04.113.
- Unit tactical standing operating procedures (TACSOP).

b. MC. The commander will assign an MC for all multi-aircraft missions upon receipt of a warning order. Based on the complexity of the mission, the battalion commander may elevate the selection of this team to the appropriate level to ensure mission success. The SOP should address the flow of air mission planning to include:

- MC's key tasks and mission contingencies.
- MC's rehearsal, refine the plan, and any contingencies requirements.
- MC's aircrew briefing, rock drill, map rehearsal, and back brief to ensure understanding of the mission by all elements.
- c. Prerequisites. Commanders should select MC candidates based on the following qualifications:
- Selected by the unit commander to serve as an MC based on proficiency, experience, and leadership.
- Technically and tactically proficient in the unit mission.
- Formal training on the unit risk assessment and approval process.

d. Training and evaluation procedures. Commanders may tailor MC training requirements for operators with significant experience in the type of aircraft and unit mission:

- MC candidates will receive training and evaluation on all collective training required in the unit SOP. This training will be executed by a current and qualified MC.
- Understanding mission flow and reacting to contingency operations is the primary focus of MC training. Units may choose to conduct this training in conjunction with other unit training events or while executing real-world missions where the candidate serves as an observer with an experienced MC.
- The size and scope of the mission may require the MCs to execute their duties from a flying position. If the MC is required to perform as part of the crew they will have communication with their other aircrew(s). This can be achieved through a variety of available communication methods. These items will be addressed on the risk assessment worksheet (RAW).

e. MC training programs will include participation in mission briefings and rock drills for all MC candidates. These briefings will cover contingency operations to assist in developing skills that broaden the experience of the candidate. Examples of these contingencies include:

- Ground tactical plan (GTP). What is the minimum force to accomplish the mission? Does the plan comply with rules of engagement (ROE), regulations, and SOP procedures? Does the GTP expose any of the aircrews to unnecessary risks or hazards?
- Downed aircraft procedures. What is the plan for a downed aircraft? Does this become the main effort? How does the location of the downed aircraft affect the recovery procedures? Are ground security force assets available?
- Fuel and ammunition. What is the fuel required for the mission for all airframes? What is the backup plan for refuel? Will the UAS assets provide continuous coverage on the objective? What munitions are required for the mission?
- Weather. What is the minimum weather condition required to accomplish the mission? How will weather and illumination impact the mission? What is the maximum illumination? Does the mission time line maximize the effects of illumination, moon angle, and lunar data?
- Crew management. Can the mission be accomplished within duty day and warfighter management requirements? Can the time flow be altered or compressed or eliminate unnecessary events or delays?
- Communications. Has the mission been planned and rehearsed to maximize communications

Table 10-12. SOP example–mission coordinator's training program

discipline? Can the mission be accomplished if communications systems fail at a critical moment in the mission? Is there communications redundancy? Can the mission go with a complete loss of communications? What over the horizon communication assets are available and what is the communications status of each aircraft?

- Fratricide. How will friendly troops be marked/identified?
- Fires. What are the fire control measures? How are friendly troops on the ground identified? Who has priority of fires? What assets are available for fires?
- Maintenance. What is the aircraft bump plan? Does the maintenance posture meet mission requirements to successfully execute the GTP? What is the downed aircraft recovery team (DART) plan? What is the maintenance recovery plan to meet follow-on mission requirements?
- Miscellaneous. How does aircraft performance limit the ability to accomplish the mission? Will environmental factors limit aircraft capability to accomplish the assigned mission? Have the serials been designed to maximize use of weapons systems, special missions systems, and so forth? What special mission equipment is required and is it available and fully mission capable?

f. MC designation. Operators who complete a formal MC training program will receive an entry in the DA Form 7122-R stating completion of the training. Commanders may designate personnel to perform MC duties without formal training who meet the experience and maturity qualifications outlined above.

MULTI-AIRCRAFT OPERATIONS TRAINING

10-18. In this section, the commander establishes unit policy on multi-aircraft training (for example relief on station or military assumes responsibility for separation of aircraft [MARSA]). This section also establishes requirements for individual and crew training (table 10-13).

Table 10-13. SOP example–multi-aircraft operations training

a. References:

- AR 350-1.
- AR 385-10.
- TC 3-04.61.
- FM 3-04.203.
- The unit TACSOP.

b. Purpose. A brief statement of the commander's intent for the multi-aircraft flight training policy.

c. Responsibilities: Identifies key personnel and states their responsibilities for relief on station and MARSA flight training.

d. General. This section states the unit's policies and procedures for multi-aircraft flights that are more restrictive than TC 3-04.61 or regulations. When more restrictive measures are used, they must be stated here.

e. Multi-aircraft CL. Commander's may direct that local CLs or forms be used during multi-aircraft flight briefings and operations. These items must be published in the chapter if so used.

f. Lost or Disoriented. The unit should establish a lost/disoriented policy that complies with local regulations.

IIMC. Establishes any requirements unique to low visibility environments such as standard IIMC breakup.

g. Emergencies: Establishes procedures to deal with emergencies during multi-aircraft flights.

COMBAT IDENTIFICATION TRAINING INTEGRATION

10-19. Commanders must establish a CID (fratricide) training program to avoid friendly-fire casualties on the battlefield (table 10-14, page 10-11).

Table 10-14. SOP example–combat identification training

a. References:
- TC 3-17.
- TC 3-04.61.
- Fratricide: Reducing Self-inflicted Losses. No 92-4, April 1992. Center for Army Lessons Learned (CALL).
- FM 3-04.140,.

b. Purpose. States the commander's intent for unit CID training program that concentrates on positive Target Identification, situational awareness, and ROE.

c. Responsibilities. A brief statement of the responsibilities of the commander for administering this fratricide program.

d. General. This section establishes the overall academic and hands-on training requirements and establishes those subjects mandatory for crewmembers covered by the SOP. Any requirements that are more restrictive than TC 3-04.61, ATM appendix, or regulation must be stated.

e. CID Process. Address training of the CID process of detect, identify, decide, select, assess.

ACADEMIC TRAINING

10-20. To ensure proficient crewmembers, commanders will establish a cyclic and comprehensive academic program to be administered throughout the training year (table 10-15).

Table 10-15. SOP example–academic training

a. References:
- TC 3-04.61.
- AR 350-1.
- AR 385-10.
- Local policies and regulations.
- Additional references for academic subjects required by AR 95-23 and aircraft appendices.

b. Purpose. A brief statement of the commander's intent for unit academic training that is conducted during the training year.

c. Responsibilities. Identifies the key personnel and their responsibilities for annual academic training.

d. Annual Academics Training Program. This section establishes the procedures to be used to accomplish a schedule of continuing academic training for unit members. It should outline those procedures and policies that unit members must perform to accomplish the training. This section should also establish the procedure for documenting attendance and performing make-up training.

CHEMICAL, BIOLOGICAL, RADIOLOGICAL, NUCLEAR, AND HIGH-YIELD EXPLOSIVE TRAINING AND EVALUATION

10-21. Crewmembers must be proficient in operating in CBRNE battlefield environments. In this section, the commander establishes the unit training program that trains crewmembers to standard and maintains proficiency in CBRNE operations (table 10-16).

Table 10-16. SOP example–CBRNE training and evaluation

a. References:
- TC 3-04.61.
- Aircraft operator's manual (aircraft equipped with CBRNE-related equipment).
- Unit TACSOP.

b. Purpose. A statement of the commander's intent for unit CBRNE flight training and evaluation program.

c. Academic Training. This section establishes the lessons and frequency of academic training for CBRNE flight training. It should also address documentation of crewmember training on CBRNE subjects.

d. Flight Training. This section establishes the flight training requirements procedures used during CBRNE training. Where the unit's requirements or procedures are more restrictive than TC 3-04.61 or the aircraft appendices, the requirements and procedures must be stated. This section should address initial and continuation training. It should also address evaluations.

INSTRUMENT FLIGHT TRAINING

10-22. The ability to conduct operations in instrument flight conditions requires constant training to maintain proficiency. In some units-for example, UAS-instrument flight is not normally considered a top priority. To ensure that crewmembers maintain proficiency in instrument operations, commanders may choose to emphasize instrument flight training in the ATP (table 10-17).

Table 10-17. SOP example–instrument flight training

a. References:
- AR 95-23.
- FM 3-04.240.
- Airman's information manual
- FARs
- Appropriate local regulations and publications.

b. Purpose. A brief statement of the commander's intent for the unit's instrument flight training chapter.

c. Responsibilities. Identifies the responsibilities of unit members for instrument flight training.

d. Training. Establishes the unit policy on instrument flight training. Where there is more restrictive than regulations, TC 3-04.61, or aircraft appendices, the policy and requirements must be stated. This section should address individual, crew, and continuation training.

Chapter 11

Aircrew Training Program Process Flow Charts

11-1. The unit ATP is not a simple or intuitive process. There are numerous requirements and often qualifying conditions on which additional requirements are based. To assist the unit ATP implementers, this appendix contains process flow charts to help UAS Soldiers and their commanders understand the flow of decisions and actions for specific instances. These flow charts are not directive in nature. The following flow charts are intended as a guide in using TC 3-04.61 to conduct certain processes that arise while implementing a unit ATP (figure 11-1 through figure 11-5, pages 11-2 through 11-6).

11-2. These flow charts are not inclusive of all situations that might arise while managing an ATP. ATP implementers must read the applicable sections of the TC.

Note. Waivers are not addressed in the flow charts. Waiver requests for TC 3-04.61 requirements must be evaluated on the facts unique to each circumstance.

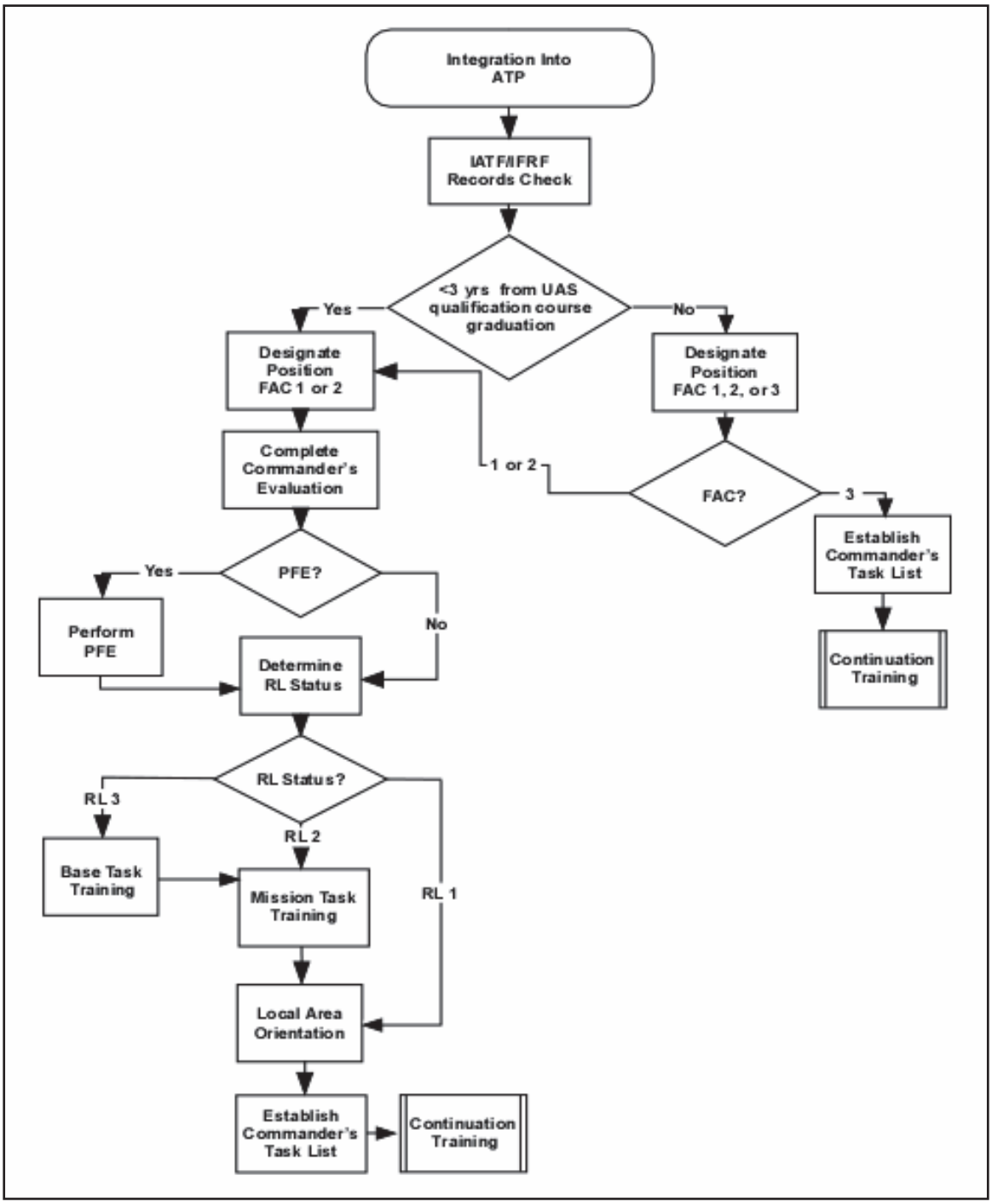

Figure 11-1. Integration into unit

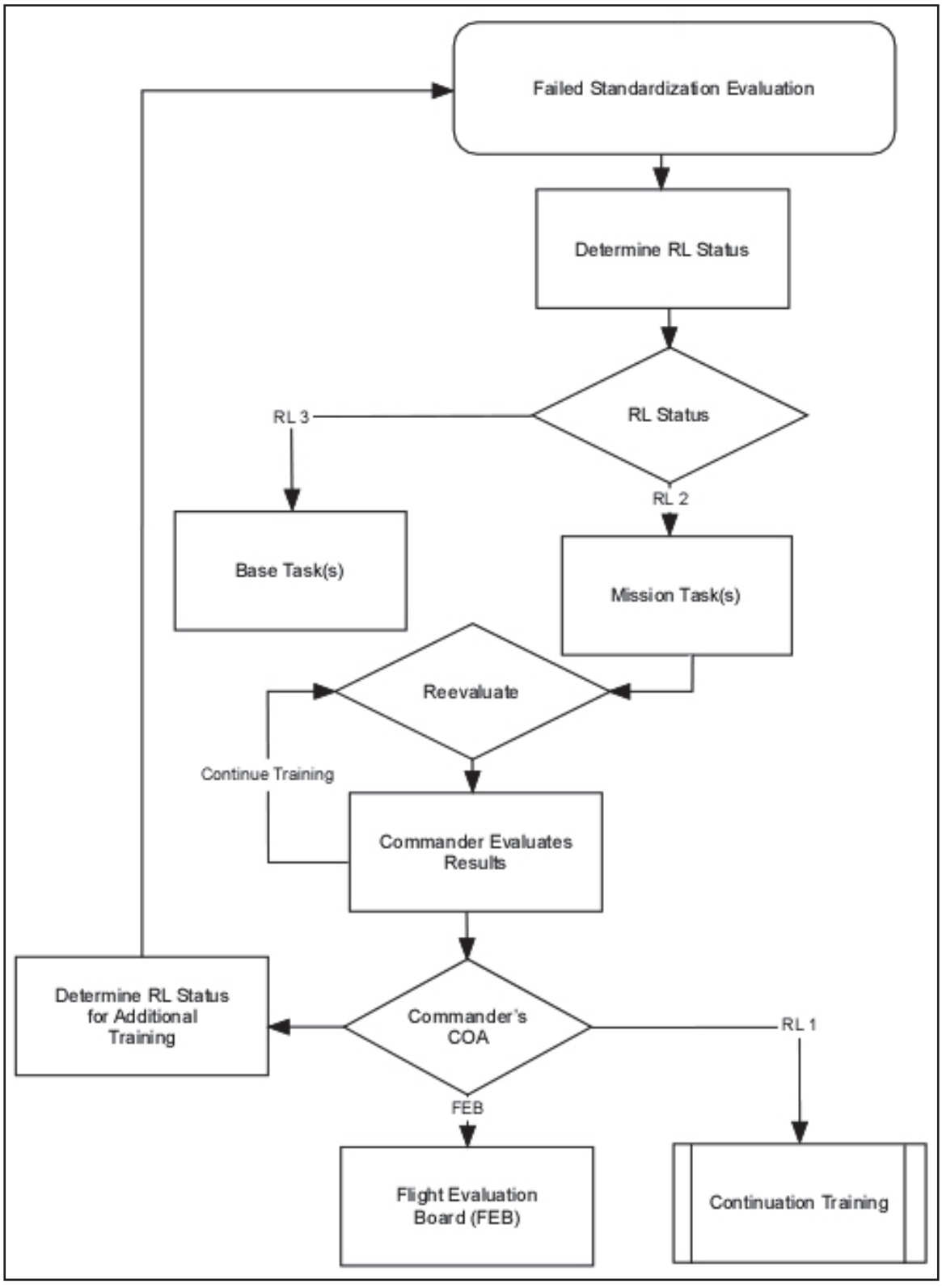

Figure 11-2. Failed standardization evaluation

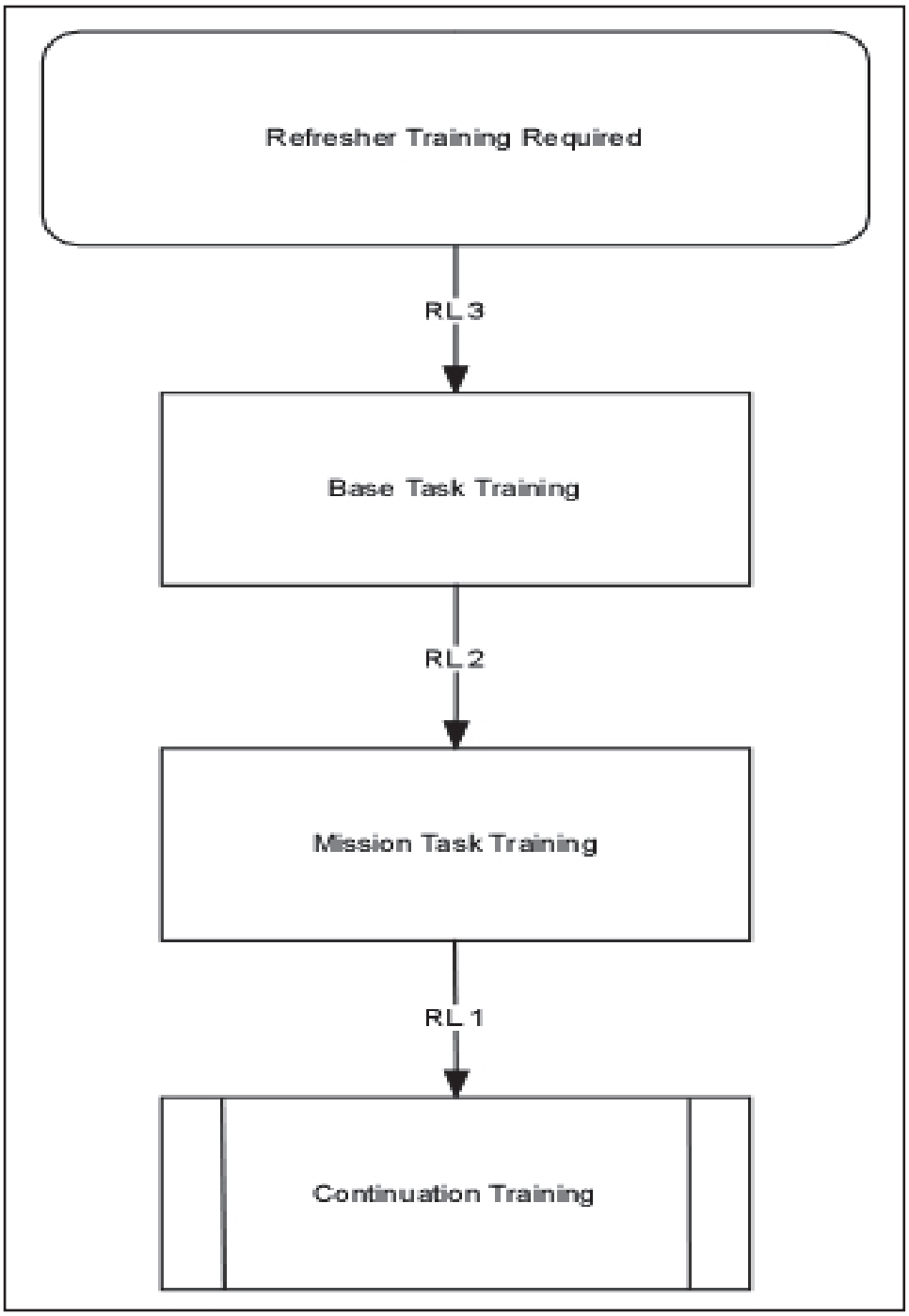

Figure 11.3 Refresher training

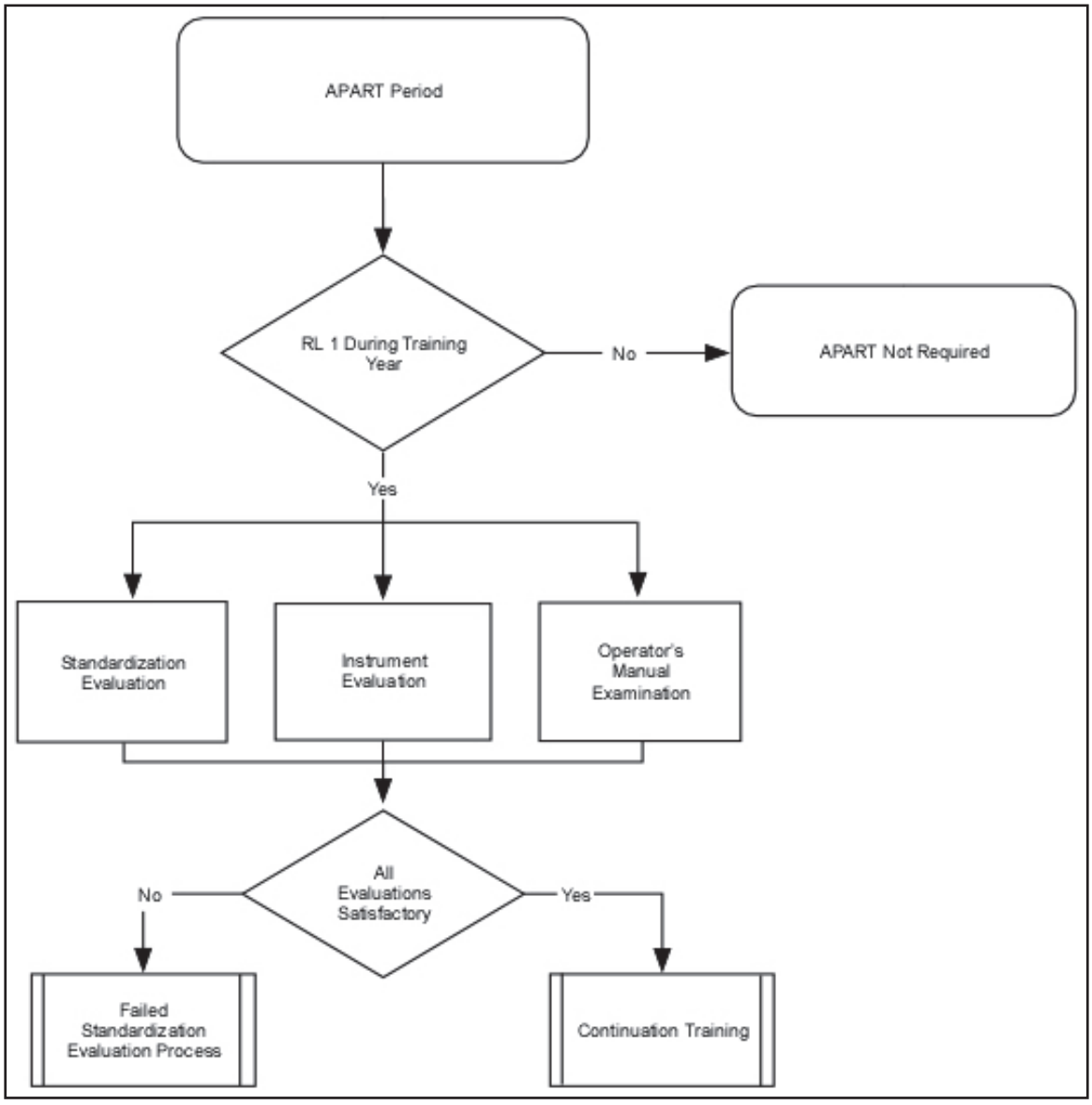

Figure 11-4. Annual proficiency and readiness test period

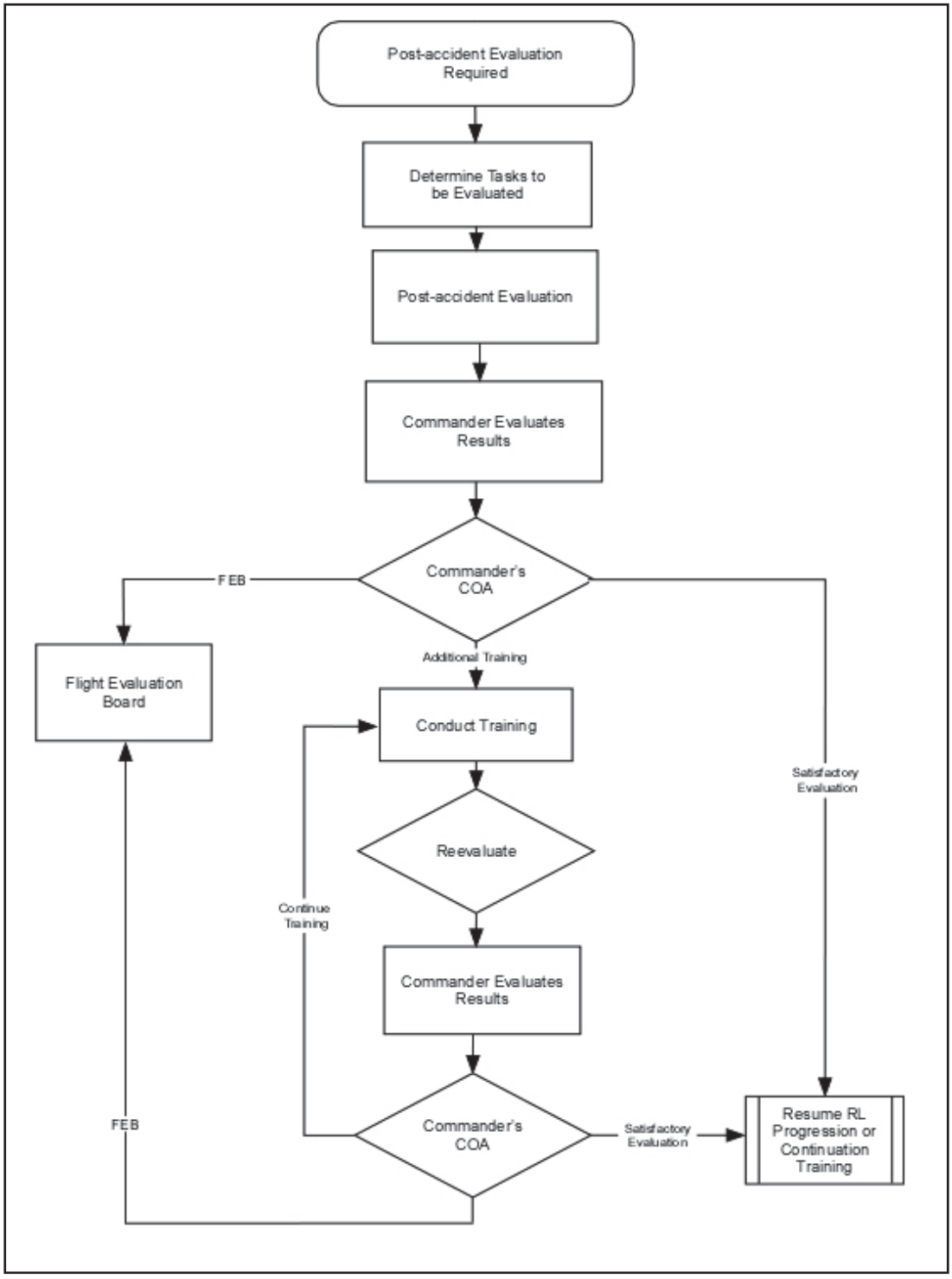

Figure 11-5. Post-accident evaluation

Appendix A

MQ-5 Hunter Aircrew Training Program Requirements

FLIGHT HOUR MINIMUMS

A-1. Semiannual aircraft flying-hour requirements. UTs, SOs, and IOs may credit those hours flown while performing assigned duties at any crew position toward their semiannual flying-hour requirement.

- FAC 1—12 hours, of which 4 hours must be flown in each crew station.
- FAC 2—6 hours, of which 2 hours must be flown in each crew station.
- FAC 3—No crew duties authorized with Army UAS.

A-2. Semiannual simulation device flying-hour requirements. UTs, SOs, and IOs may credit those hours flown while performing assigned instructor duties at any crew position toward the semiannual simulation device flying-hour requirements. FAC 1 UACs may apply a maximum of 20 aircraft hours flown in a semiannual period toward that period's semiannual UAS simulator requirements. FAC 2 UACs may apply a maximum of 8 aircraft hours flown in a semiannual period toward that period's semiannual simulation requirements. A minimum of 4 hours (2 in each crew station) must be completed in the UAS simulator for FAC 1 and FAC 2 operators (this can primarily be used to train emergencies).

- FAC 1—24 hours, of which 8 hours must be flown in each crew station.
- FAC 2—12 hours, of which 4 hours must be flown in each crew station.
- FAC 3—6 hours, of which 2 hours must be flown in each crew station.

A-3. Semiannual aircraft flying-hour requirements EO: FAC 1—12 hours, of which 1.5 hours must be flown at night.

CURRENCY REQUIREMENTS

A-4. To be considered current, a UAC must—

- Perform every 60 consecutive days, a launch and recovery while operating the UAS or to the greatest extent possible on an approved UAS simulator.
- Perform every 180 consecutive days, a launch and recovery while operating the UAS.

A-5. To be considered current, an EO must conduct one takeoff and landing and 30 minutes of local flight time every 30 consecutive days "**D**" or "**N**".

A-6. To be considered "**N**" current, an EO must conduct one takeoff and landing and 30 minutes of local flight time under the "**N**" condition, every 30 consecutive days. A UAC that is "**N**" current is also considered "**D**" current.

A-7. The UAC whose currency has lapsed must complete a proficiency flight evaluation IAW paragraph 3-12 of this publication. Simulators may not be used to reestablish currency.

Note. IOs/SOs are not authorized to count flights while not physically on the controls to meet currency requirements.

MQ-5 TASK LIST

TASK NUMBER

A-8. Each ATM task is identified by a 10-digit training development capabilities (TDC) number. The first three digits of each task in this ATM are 011 (U.S. Army Aviation School); the second three digits are 621 (MQ-5B Hunter UAS). For convenience, only the last four digits are listed in this TC. The last four digits of—

- Base tasks are assigned 1000-series numbers.
- Mission tasks are assigned 2000-series numbers.
- Additional tasks are assigned 3000-series numbers.

Note. Additional tasks are designated by the commander as mission essential are not included in this ATM. The commander will develop conditions, standards, and descriptions for those additional tasks.

TASK TITLE

A-9. The task title identifies a clearly defined and measurable activity. Titles may be the same for different UA, but the tasks are written for the specific UA.

CONDITIONS

A-10. The conditions statement specifies the conditions under which the task will be performed. Conditions include common conditions listed below and may include task specific conditions. They describe important aspects of the performance environment. All conditions must be met before task iterations can be credited. References to MQ-5B within this ATM apply only to the MQ-5B series.

SO/IO

A-11. The following tasks require an SO or IO for training/evaluation:

- Task 1070, React to Unmanned Aircraft Systems Emergencies.
- Task 1075, Perform Simulated Emergency Procedures for Single-Engine Failure During Landing.
- Task 1163, Perform Simulated Emergency Procedures for Dual-Engine Failure Landing.
- Task 1325, Perform Simulated Emergency Procedures for Single-Engine Failure during Takeoff.

ANNUAL TASK AND ITERATION REQUIREMENTS

A-12. The required annual task and iterations are specified in paragraph 2-73. Table A-1 provides a list of unmanned aircraft crewmember base tasks. Table A-2, page A-3, provides a list of unmanned aircraft crewmember mission tasks. Table A-3, page A-4, provides a list of unmanned aircraft crewmember functional check tasks. Table A-4, page A-4, provides a list of UAS crew chief (CE) tasks.

Table A-1. Unmanned aircraft crewmember base task list

Task	*Title*	*EO (D)*	*EO/IR (N)*	*CBRNE*	*EVAL*
1000	Participate in a Crew Mission Briefing	X			S, C
1013	Operate Mission Planning System				S
1022	Perform Preflight Procedures	X		X	S, C
1024	Perform Engine Start-Systems Check	X		X	S, C
1032	Perform Radio Communication Procedures	X			S, C
1034	Perform Unmanned Aircraft Taxi	X	X	X	S, C
1040	Perform Normal Takeoff and Climb	X	X	X	S, C

Table A-1. Unmanned aircraft crewmember base task list

Task	*Title*	*EO (D)*	*EO/IR (N)*	*CBRNE*	*EVAL*
1041	Perform Unmanned Aircraft System Flight in Position Sticks	X	X		S
1044	Navigate by Pilotage/Dead Reckoning				S
1045	Perform Flight in Knob Control			X	S, C
1048	Perform Fuel Management Procedures				S
1050	Perform Flight Utilizing Automatic Flight Mode				S
1070	React to Unmanned Aircraft System Emergency	X			S, C
1075	Perform Simulated Emergency Procedures for Single-Engine Failure During Landing	X			
1081	Perform Automatic Takeoff and Landing System Abort	X	X		S, C
1099	Operate Identification Friend or Foe System				S, C
1110	Track a Static Target (Electro-Optical and Infrared)	X	X	X	S
1115	Track a Moving Target (Electro-Optical and Infrared)	X	X	X	S
1120	Perform Aerial Reconnaissance				S
1125	Call for and Adjust Indirect Fire				S
1144	Perform Touch-and-Go Landing	X	X		S, C
1145	Perform Normal Landing	X	X		S, C
1163	Perform Simulated Emergency Procedures for Dual-Engine Failure Landing	X			
1175	Perform Transfer Procedures	X			S, C
1177	Perform Go-Around	X	X		
1184	React to Inadvertent Instrument Meteorological Condition	X			S
1302	Perform Procedures for Two-Way Radio Failure	X			S
1325	Perform Simulated Emergency Procedures for Single-Engine Failure During Takeoff	X			S
1402	Perform Unmanned Aircraft System Mission Planning Procedures				S
1800	Perform After-Landing Checks	X		X	S, C

C—Minimum tasks for currency PFE
D-Day
N-Night
EO—External Operator
EVAL—Mandatory APART
S— Minimum tasks for standardization flight evaluation

Table A-2. Unmanned aircraft crewmember mission task list

Task	*Title*
2025	Conduct Digital Communications
2054	Perform Target Hand Over Procedures
2092	Transmit a Tactical Report
2472	Perform Airborne Data Relay Mission
2474	Designate for a Laser Guided Missile

Table A-3. Unmanned aircraft crewmember functional check task list

Task	*Title*
2601	Perform Functional Preflight Inspection
2602	Perform Functional Check Flight
2606	Perform Functional Post-Flight Inspection

Table A-4. Unmanned aircraft system crew chief task list

Task	*Title*	*CBRNE*	*EVAL*
1000	Participate in a Crew Mission Briefing		S,C
1022	Perform Preflight Inspection	X	S,C
1024	Perform Engine Start Systems Checks	X	S,C
1040	Perform Normal Takeoff and Climb	X	S,C
1070	React to Unmanned Aircraft System Emergency		S,C
1099	Operate Identification Friend or Foe System		S
1800	Perform After-Landing Checks	X	S,C
2606	Perform Post-Flight Inspection		S,C

TASK 1000

Participate in a Crew Mission Briefing

CONDITIONS: Prior to ground or flight operations with a Hunter unmanned aircraft system and given DA Form 5484 (Mission Schedule/Brief) and a unit-approved crew briefing checklist (CL).

STANDARDS:

1. MC:
   a. Brief the mandatory and mission-related items detailed on DA Form 5484.
   b. Assign crewmember mission duties and responsibilities IAW the crew briefing CL.
   c. Have the crewmembers acknowledge that they fully understand the assignment of duties and responsibilities.

   Note. MC has overall responsibility for the brief; however, the conduct of the brief may be delegated to the AC as required.

2. Operators and crew chief (CE):
   a. Will be briefed by the AC on mandatory and mission-related items detailed on DA Form 5484.
   b. Will verbally acknowledge full understanding of the assignment of duties and responsibilities.
3. AC:
   a. Will participate in the mission approval process along with the MC.
   b. Will be briefed by the MC on mandatory and mission-related items detailed on DA Form 5484. If delegated to conduct brief by the MC, the AC will brief mandatory items.
   c. Will verbally acknowledge full understanding of the assignment of duties and responsibilities.

DESCRIPTION:

1. Crew actions:
   a. A designated briefing officer/NCO will evaluate and brief key areas of the mission to the AC IAW AR 95-23. The AC will acknowledge a complete understanding of the mission brief and initial DA Form 5484.
   b. The MC has overall responsibility for the crew mission briefing. The MC may direct the other crewmembers to perform all or part of the crew briefing.
   c. The AC will ensure all aircraft system information is correct. The AC will also ensure that the crew is current and qualified to perform the mission.
   d. The crewmembers being briefed will address any questions to the briefer and will acknowledge that they understand the assigned actions, duties, and responsibilities. Lessons learned from previous debriefings should be addressed as applicable during the crew briefing.
2. Procedures. Brief the mission using a unit-approved crew mission briefing CL. Table A-5, page A-6, shows a suggested format for a Hunter UAS mission briefing CL. Identify mission and flight requirements that will demand effective communication and proper sequencing and timing of actions by the crewmembers.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training will be conducted academically.
2. Evaluation will be conducted academically.

REFERENCES: Appropriate common references, AR 95-23, FM 3-04.120, ADP 5-0, FM 5-19, DOD General Planning, and unit SOP.

Table A-5. Sample Hunter unmanned aircraft system mission briefing

<table>
<tr><td colspan="2">Select: ☐OPORD ☐WARNO ☐FRAGO No. ( ) DATE/TIME: 01012013/0100
OPERATION NAME: Silent Stalker OPERATION ORDER #. 01</td></tr>
<tr><td colspan="2">TASK ORGANIZATION: Conduct crew manifest.</td></tr>
<tr><td colspan="2">SITUATION: Training Flight</td></tr>
<tr><td colspan="2">ENEMY FORCES/FRIENDLY FORCES: As per daily situation report.</td></tr>
<tr><td colspan="2">WEATHER: Local weather brief (temperature, wind, illumination, precipitation).</td></tr>
<tr><td colspan="2">MISSION: Recon LZ Parts Store</td></tr>
<tr><td colspan="2">EXECUTION: Restate overall reconnaissance objective (include success criteria).</td></tr>
<tr><td colspan="2">SCHEME OF SUPPORT: As per advisory mission tasking and collection support brief</td></tr>
<tr><td colspan="2">INGRESS/EGRESS: As per flight planning card and operational graphics</td></tr>
<tr><td colspan="2">SPECIFIC INSTRUCTIONS TO SUBORDINATE UNITS</td></tr>
<tr><td rowspan="4">Launch Aircrew/Ground Crew: SGT Joe, SPC Doe, SGT John, SPC Dolittle

Preflight
Aircraft #:
0123</td><td>TIMELINE</td></tr>
<tr><td>Weather Decision: 2345</td></tr>
<tr><td>Commo Check: 0030</td></tr>
<tr><td>Shelter Power Up: 0000</td></tr>
<tr><td rowspan="4">Mission Aircrew: AMC CW@ Wingman, SGT Flyer</td><td>Presets: 123</td></tr>
<tr><td>Preflight: 2200</td></tr>
<tr><td>Armaments Installed: N/A</td></tr>
<tr><td>Engine Start: 0050</td></tr>
<tr><td rowspan="4">Recovery Aircrew/Ground Crew : SGT Joe, SPC Doe
Post-flight Aircraft#: 0123
Preflight Aircraft #: 0123</td><td>Takeoff: 0055</td></tr>
<tr><td>Control Transfer: 0057</td></tr>
<tr><td>On Station: 0100</td></tr>
<tr><td>1st TOT: 0101</td></tr>
<tr><td rowspan="3"></td><td>Relief on Station: None</td></tr>
<tr><td>End of Mission: 0200</td></tr>
<tr><td>Debrief Time/Location: 0230</td></tr>
<tr><td colspan="2">DATA REPORTING/RECORDING: Who, where, what payload.</td></tr>
<tr><td colspan="2">TYPE OF LAUNCH: Normal, Remote, Hand-Off, Mobile, etc.</td></tr>
<tr><td colspan="2">COORDINATING INSTRUCTIONS</td></tr>
<tr><td colspan="2">AIRSPACE CONTROL MEASURES/SPINS/TAP: Verify AO per ACO.</td></tr>
<tr><td colspan="2">RELEASE AUTHORITY FOR LETHAL PAYLOAD: N/A</td></tr>
</table>

SAMPLE

Table A-5. Sample Hunter unmanned aircraft system mission briefing

ABORT CRITERIA/WARNINGS: IAS: Altitude: 200 Fuel: 250 Weather: <2000/3 Aircraft: Msn: Jettison Point: N/A RETURN HOME POINT: N/A	
RELIEF ON STATION: N/A	
RETURN-HOME/LOSS OF LINK PLAN: RETURN HOME ALTITUDE: 100 RETURN HOME AIRSPEED: 50 RETURN HOME HOLDING ALTITUDE: 150	
IIMC RECOVERY: As briefed	
SERVICE AND SUPPORT	
DART Team Leader: SFC Perfect	DART: Primary Recovery SSG C4
DART: Alternate Recovery SSG C4	DART Location/FREQ: 0123.45
Refuel Location: Home Base	Bingo Fuel: 05
MEDEVAC Frequency: 911.10	
COMMAND AND SIGNAL	
Succession of Command: CPT Target, CW2 Wingman, SGT Joe	
Signal:	SAMPLE
Primary Internal Frequency: 0123.4	Alternate Internal Frequency: 4.321
Control Tower Frequency: 567.8	High Frequency: 987.6
Command Frequency: 100.1	UHF: 60.105
Uplink Frequency: 120.5	Downlink Frequency: 220.5
RVT Frequency: 343.6	GCS/RVT Location: Home Base
IFF Codes: See daily	Laser Codes: N/A
Elev/MagDec/Incl: 11000/7/3.5	
Supported Unit Frequency: 567.25	Net ID/Hop/Key: 789.0
CREW ACTIONS, DUTIES, AND RESPONSIBILITIES: (ELEMENTS OF CREW COORDINATION)	
Communicate positively.	Acknowledge actions.
Direct assistance.	Be explicit.
Announce actions.	Provide UA control and obstacle advisories
Offer assistance.	Coordinate action sequence and timing.
Risk Assessment and Mitigation: Overall low, do not fly over populated areas.	
Additional Instructions: Safety first.	

TASK 1013

Operate an Unmanned Aircraft System Mission Planning System

CONDITIONS: Given a Hunter unmanned aircraft system, mission objectives, mission waypoints and parameters, threats, targets, air traffic control (ATC) restrictions, air corridors, weather information, an operator's manual or checklist (CL), and other materials as required.

STANDARDS:

1. Build and load a mission plan to accomplish mission objectives while maintaining operational parameters.
2. Enter and verify the mission waypoints and parameters.
3. Build and display threat, target, ATC restrictions, and air corridors.
4. Build and load a payload plan.
5. Build and load a return home plan.
6. Correctly perform crew coordination procedures.

DESCRIPTION:

1. Crew actions. The AC is responsible for ensuring that pertinent data has been correctly entered and subsequently saved onto the hard drive. Depending on the situation, the crew may perform programming cooperatively or independently. The AC will perform, or will task the AO to perform software configuration, data processing, and loading.
2. Procedures. Analyze the mission and mission data. Plan the flight by conducting a map reconnaissance, terrain and line-of-site analysis using the available map system tools. Use the Vehicle Control Station (VCS) software to create and load all waypoints and required data IAW the operator's TM and CL.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or MQ-5 simulator.
2. Evaluation will be conducted while operating the aircraft or MQ-5 simulator.

REFERENCES: Appropriate common references.

TASK 1022

Perform Preflight Procedures

CONDITIONS: Given a Hunter unmanned aircraft system, operator's manual or checklist (CL), and logbook.

STANDARDS:

1. Operators.

   a. Without error, perform the presets and preflight checks, unmanned aircraft (UA) preflight inspections IAW the operator's manual/CL.

   b. Verify the correct entries of the appropriate information on DA Form 2408-12 (Army Aviator's Flight Record) and DA Form 2408-13 (Aircraft Status Information Record), DA Form 2408-13-1 (Aircraft Inspection and Maintenance Record), and DA Form 2408-18 (Equipment Inspection List) for mission equipment.

   c. Verify the data on the Defense Department (DD) Form 365-4 (Weight and Balance Clearance Form F–Transport/Tactical).

   d. Correctly perform crew coordination actions.

2. Crew chief (CE):

   a. Without error, perform the preventative maintenance daily (PMD) and preflight checks, IAW the operator's manual/CL.

   b. Verify the correct entries of the appropriate information on DA Form 2408-12 and DA Form 2408-13, DA Form 2408-13-1, and DA Form 2408-18 for mission equipment.

   c. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions.

   a. The AC will ensure that presets, preflight checks and inspections are completed IAW the operator's manual/CL.

   b. The AC will ensure the appropriate information is entered on DA Form 2408-12, DA Form 2408-13, DA Form 2408-13-1, DA Form 2408-18, and DD Form 365-4.

   c. The operator and crew chief (CE) will complete presets, pre-operational checks, preflight checks, and UA preflight inspection IAW the operator's manual/CL.

   d. All crewmembers will use standard challenge and response communications.

2. Procedures. The operator and CE will review the UA logbook and be aware of any recent maintenance or services that should be considered prior to preflight. Follow all checklist procedures to complete preflight checks. Annotate the results of the preflight in the UA logbook.

ENVIRONMENTAL CONSIDERATIONS:

1. Cold weather operations: For operations under these conditions reference the operator's manual, AR 95-23 and FM 3-04.203.
2. Desert and hot weather operations: For operations under these conditions reference the operator's manual, and FM 3-04.203.
3. Turbulence and thunderstorm operations: For operations under these conditions reference the operator's manual, airworthiness release, AR 95-23, and FM 3-04.203.

NIGHT CONSIDERATIONS: If time permits, accomplish the preflight inspections during daylight hours. During the hours of darkness, use a flashlight with an unfettered lens to supplement available lighting. Oil leaks and other defects are difficult to see using a flashlight with a colored lens.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or MQ-5 simulator.

2. Training for CE must be conducted while operating the aircraft.
3. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references.

TASK 1024

Perform Engine Start/Systems Check

CONDITIONS: Given a Hunter unmanned aircraft system and operator's manual or checklist (CL).

STANDARDS:

1. Operators/EO:
    a. Without error, perform procedures and checks IAW the operator's manual/CL.
    b. Ensure that engine and systems are operating within prescribed tolerances.
    c. Correctly perform crew coordination actions.
2. Crew chief (CE):
    a. Without error, perform procedures and checks IAW the operator's manual/CL.
    b. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. Crewmembers will complete the required checks and procedures pertaining to their crew duties IAW the operator's manual/CL and the crew briefing. All crewmembers will use the standard challenge and response communications.
2. Procedures. CEs will position the unmanned aircraft (UA) properly for run-up. The EO and operator on flight controls (A) will complete the engine start and systems check and ensure that the engine, related systems, and equipment are operating properly. The CL will be used to verify that all checks are completed. The operator shall read the checklist and ensure that all of the CL items are completed.

ENVIRONMENTAL CONSIDERATIONS:

1. Cold weather operations: For operations under these conditions reference the operator's manual, AR 95-23 and FM 3-04.203.
2. Desert and hot weather operations: For operations under these conditions reference the operator's manual, and FM 3-04.203
3. Turbulence and thunderstorm operations: For operations under these conditions reference the operator's manual, airworthiness release, AR 95-23, and FM 3-04.203.

NIGHT CONSIDERATIONS:

WARNING

Exercise extreme caution during limited visibility and night operations.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training for the A may be conducted while operating the aircraft or MQ-5 simulator.
2. Training for EO must be conducted while operating the aircraft.
3. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references.

TASK 1032

Perform Radio Communication Procedures

CONDITIONS: Given a Hunter unmanned aircraft system, an operator's manual or checklist, and an operational radio.

STANDARDS:

1. Adjust system radios to establish communications between internal crewmembers, controlling agencies and supported/higher echelon units.
2. When communicating with air traffic control (ATC) facilities, internal crewmembers, controlling agencies and supported/higher echelon units, use the correct radio communication procedures and phraseology IAW the DOD FLIP.
3. Acknowledge each radio communication with correct aircraft call sign.
4. Acknowledge and comply with ATC and supported/higher echelon unit instructions.
5. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. Radio communication is primarily the operator on flight controls (A) responsibility. However, if crewmembers monitor two frequencies simultaneously, they will keep each other informed of any actions or communications conducted on their respective frequency.
2. Procedures:
    a. The crew will use radio communications procedures and phraseology as appropriate for the area of operations. Standard phrases and terms will be used during all transmissions.
    b. The crew will tune the system radios as required and maintain a continuous listening watch on the assigned frequencies. When required, crew members will establish communications with the appropriate ATC facility and supported/higher echelon units. Crew members will monitor frequencies before transmitting and use the correct radio call sign when acknowledging each communication. Crew members will transmit pilot reports, position reports, and flight plan changes (as required).
    c. When advised to change frequencies, crew members will acknowledge the transmission before making the change. Crew members will select the new frequency as soon as possible unless instructed to do so at a specific time, fix, or altitude.

Note. When performing this task, the A will coordinate IAW the mission briefing.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or MQ-5 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references.

TASK 1034

Perform Unmanned Aircraft Taxi

CONDITIONS: Given a Hunter unmanned aircraft (UA) system and operator's manual or checklist (CL).

STANDARDS:

1. Correctly perform procedures and checks IAW the operator's manual/CL.
2. Comply with taxi clearances.
3. Follow taxi lines with minimum deviation (no more than half of the wingspan).
4. Properly use power to maintain a safe taxi speed.
5. Correctly use controls as required by wind conditions.
6. Maintain proper power settings when the UA is stopped.
7. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. Crewmembers will complete the required checks or procedures pertaining to their crew duties IAW the appropriate operator's manual/CL and the preflight briefing.
2. Procedures. EO takeoff: the EO will perform the following actions:

   a. When required to initiate taxi, EO increases power slightly until the UA starts to move. Maintain a safe taxi speed compatible with airfield and environmental conditions. Apply controls as required by wind conditions. Complete the required taxi checks, and verify the checks with the appropriate operator's manual/CL. While taxiing the UA, follow taxi areas. When the UA is stopped, maintain power as required to ensure sufficient electrical output.

   b. Automatic take-off/landing system (ATLS) takeoff: The operator on flight controls (A) will monitor the UA to ensure all systems are operating normally and ensure the UA is ready for takeoff. Make appropriate radio calls to air traffic control.

NIGHT CONSIDERATIONS: Because of limited visibility at night, taxi speeds should be reduced to allow a greater margin of safety. Extra care should be used whenever taxiing in areas where obstacles are difficult to see.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training will be conducted while operating the aircraft.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references.

TASK 1040

Perform Normal Takeoff and Climb

CONDITIONS: Given a Hunter unmanned aircraft system, with preflight, engine start procedures, taxi, and final walk around complete, air traffic control (ATC) clearance (if required), launch crew, and an operator's manual or checklist (CL).

STANDARDS:

1. Complete before-takeoff, takeoff, and after-takeoff checks.
2. During the takeoff roll, maintain a predetermined track (normally runway centerline) within half of the wingspan of the runway centerline.
3. Initiate rotation at rotation speed (V_r).
4. Perform initial climb after takeoff at the appropriate airspeed.
5. If any parameters are exceeded perform a manual takeoff abort.
6. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions:

   a. While initiating power application, the operator on flight controls (A) will monitor engine instruments carefully and be prepared for an abort procedure if aircraft performance is not within system limits or parameters. The A should maintain a cross-check of the flight instruments. For an EO takeoff, the EO will rotate at the correct airspeed and establish the proper takeoff pitch attitude. All crewmembers will acknowledge all emergency calls.

   b. The A will verify the flight instruments' settings, monitoring the engine instruments, and reading the CL as required. Either AO will make the required radio transmissions, maintain the flight log, and perform all designated actions requested.

2. Procedures. The crewmembers will perform the following actions:

   a. EO takeoff.

      (1) Complete the before-takeoff check. Align the unmanned aircraft (UA) with the runway heading. Verify the before takeoff checks with the CL. The EO will apply maximum power. During the takeoff, the A will monitor the UA to ensure that all systems are operating normally. The A must pay particular attention to the engine revolutions per minute (RPM) and announce to the EO "Good Engines" or abort accordingly. The EO will maintain directional control with the nose-wheel steering and rudder so that the track is within half of the wingspan of the runway centerline. As the UA approaches rotation speed, increase aft pressure on the elevator to establish an attitude that will make the UA leave the ground to attain a positive rate of climb.

      (2) The EO will adjust the pitch to attain climb airspeed. At 60 knots indicated airspeed (KIAS), select flight (FLT) mode. Retract flaps at 63 KIAS, and adjust pitch as required. Use maximum power during the climb.

      (3) As cruise-climb airspeed is attained, complete the after-takeoff check and verify the checks with the CL.

      (4) Throughout the maneuver, the A will assist the EO by monitoring the engine instruments and advising the EO of any abnormal condition. The A will ensure that the UA and engine limitations are not exceeded. The A should complete all designated checks and read the CL.

   b. Crosswind takeoff. As the nose-wheel comes off the ground, the EO will use the rudder as necessary to prevent turning (crabbing) into the wind. As the main gear comes off of the ground, use ailerons as necessary to maintain runway centerline. To prevent damage to the landing gear if the UA settles back onto the runway, remain in slipping flight until the UA is well clear of the ground. Then crab into the wind to continue a straight flight path.

c. ATLS takeoff. The A will monitor the UA to ensure that all systems are operating within system limits. The A must pay particular attention to the engine revolutions per minute (RPM) and be ready to perform a take-off abort, if the engines **do not** reach the required RPMs. If an abort is performed, either by the A or by the ATLS system itself, the UA will maintain centerline and deploy the arresting hook automatically. Upon an abort, the A will not make any commands to the UA until it is safely in the arresting cable.

d. Perform after take-off procedures IAW the appropriate operator's manual/CL.

Note. Single-engine maneuvering altitude is the altitude at which a UA can safely clear all obstacles around the airfield while maneuvering for a landing.

CAUTION

Be aware of visual illusions at night.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training will be conducted while operating the aircraft.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references.

TASK 1041

Perform Unmanned Aircraft System Flight in Position Sticks

CONDITIONS: Given a Hunter unmanned aircraft system and an operator's manual or checklist.

STANDARDS:

1. Maintain heading ±10 degrees.
2. Maintain airspeed ±5 knots indicated airspeed (KIAS).
3. Maintain power within the prescribed limits.
4. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions.

   a. The operator on flight controls (A) main focus will be on the flight instruments.

   b. The EO will control the UA in sticks IAW published limitations and maintain visual separation in the local pattern.

2. Procedures. The crewmembers will perform the following actions:

   a. Climbs. The EO will establish the climb by selecting the maximum power and adjusting the pitch attitude to obtain climb airspeed. Trim the unmanned aircraft (UA) as required throughout the maneuver. The A will monitor instruments to ensure that operating limitations are not exceeded.

   b. Descents. Establish the descent by reducing the power and adjusting the pitch to maintain the desired airspeed and the desired rate of descent. During the descent, control airspeed by adjusting the pitch attitude. The rate of descent will depend on the amount of power reduced. Trim the UA as required throughout the maneuver.

   c. Constant altitude flight. Establish a constant altitude cruise ±100 feet by adjusting the power and pitch attitude to maintain airspeed ±5 KIAS. Execute right and left turns 55 degrees or less angle of bank. Trim UA as required throughout the maneuver. Use the pilot's window to verify and cross-check with instruments if necessary.

NIGHT CONSIDERATIONS: The EO may require instrument information more frequently from the A.

> **CAUTION**
>
> Be aware of visual illusions at night.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training will be conducted while operating the aircraft.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references.

TASK 1044

Navigate by Pilotage and Dead Reckoning

CONDITIONS: Given a Hunter unmanned aircraft (UA) system, appropriate maps, last known unmanned aircraft (UA) range and azimuth, and an operator's manual or checklist.

STANDARDS:

1. Maintain orientation within ±2,000 meters.
2. Navigate safely to recovery point.
3. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The operator on flight controls (A) main focus will be on the heading of the UA, airspeed and azimuth of the GDT. The A or the operator on payload controls (P) will calculate the proper heading, distance and time to navigate to the recovery point.
2. Procedures. The crewmembers will perform the following actions:

   a. The A/P will record the last known UA position, heading, airspeed, and calculate the proper heading and time required to navigate to the recovery point. The A will consider winds at altitude and set a proper heading accordingly. The P should assist with all planning and computations, if they are available. Compute the time, distance, and heading to reach the recovery point.

   b. Use the GDT azimuth and dead reckoning icon to aid in navigation and maintain UA position. Adjust estimated times of arrival using the latest in-flight computed data. The multi-mission optronic stabilized platform (MOSP) should be used to aid in navigation if possible.

NIGHT CONSIDERATIONS: Periods of darkness or reduced visibility may require more detailed flight planning.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or MQ-5 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references.

TASK 1045

Perform Flight in Knob Control

CONDITIONS: GIVEN A HUNTER UNMANNED AIRCRAFT SYSTEM AND OPERATOR'S MANUAL OR CHECKLIST.

STANDARDS:

1. Change heading commands to meet mission waypoints.
2. Adjust for winds.
3. Adjust airspeed commands to meet time on target (TOT) requirements while staying within the operating parameters.
4. Adjust altitude commands to meet waypoint requirements or air traffic control (ATC) directions.
5. Ensure aircraft maintains airspeed and altitude within assigned parameters of the aircraft operating limits.
6. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The operator on flight controls (A) focus will be on the flight instruments ensuring that the unmanned aircraft (UA) is responding appropriately. The A will also coordinate with the operator on payload controls (P), who cross-checks TOT calculations for airspeed.
2. Procedures.

   a. Determine heading. From the current UA location, use the map display, or appropriate paper map and determine the correct magnetic heading to the next waypoint or target with corrections for wind.

   b. Determine airspeed. From the current UA position, determine the distance to the next waypoint or target. Calculate the proper airspeed to reach the waypoint/target within the specified time and operational parameters with corrections for wind. Initiate a new airspeed command on the airspeed slider on the air vehicle (AV) control panel. Monitor pitch indication and airspeed for the proper response.

   c. Determine altitude. Set the altitude command, with the altitude slider on the AV control panel, for the correct altitude for the next waypoint/target. Monitor throttles/revolutions per minute and engine instruments as well as altitude and rate of climb indicators for proper response.

   d. Course corrections. If the next target is too close to fit within TOT specifications, adjust heading and airspeed to delay arrival on the waypoint/target.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or MQ-5 simulator.
2. Evaluation will be conducted while operating the aircraft or MQ-5 simulator.

REFERENCES: Appropriate common references.

TASK 1048

Perform Fuel Management Procedures

CONDITIONS: Given a Hunter unmanned aircraft system, an operator's manual or checklist, and an appropriate map with mission route denoted.

STANDARDS:

1. Verify that the required amount of fuel is on board at the time of takeoff.
2. Correctly perform an in-flight fuel consumption check after achieving mission altitude and airspeed.
3. Initiate alternate course of action if actual fuel consumption varies from the planning value and the flight cannot be completed with the required reserve.
4. Monitor fuel quantity and consumption rate during the flight.
5. Correctly perform crew coordination procedures.

DESCRIPTION:

1. Crew actions:

   a. The operator on flight controls (A) will check and record fuel data as appropriate. The A will compute or determine fuel remaining and fuel required to complete mission and reach recovery site with the appropriate fuel reserve. The A will announce when a fuel check is initiated and the results of the check when completed.

   b. The aircraft commander (AC) will acknowledge the results of all fuel checks.

2. Procedures.

   a. Before-takeoff fuel check. The AC will ascertain total fuel on board, and compare with fuel requirements determined during pre-mission planning. If fuel is inadequate, have the aircraft refueled or abort/revise the mission.

   b. Fuel burn rate check. After aircraft has achieved mission altitude and airspeed, the A will note the total fuel quantity. The A will calculate the fuel consumed. As part of in-flight checks, the A will determine flight time remaining based on fuel remaining versus mission time remaining, transit to recovery site, and fuel reserve requirement. The A will determine whether the remaining fuel is sufficient to complete the flight with the required reserve. If the fuel quantity is inadequate, the A will advise the AC and recommend an alternate course of action or determine the alternate course of action if the A is the AC.

   c. Fuel quantity and consumption. The A will periodically monitor the fuel quantity and consumption rate. Fuel consumption can vary due to changes in altitude, airspeed, and environmental conditions. A fuel consumption check should be performed periodically or whenever a change in these variables occurs. If fuel consumption check indicates a deviation from computed values, the A will repeat the fuel consumption check to determine whether fuel is adequate to complete the flight.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft, MQ-5 simulator, or academically.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references.

TASK 1050

Perform Flight Utilizing Automatic Flight Mode

CONDITIONS: Given a Hunter unmanned aircraft system and an operator's manual or checklist (CL).

STANDARDS:

1. Perform flight utilizing flight plan, point's navigation (NAV) and camera guide flight modes.
2. Verify waypoints, airspeed and altitude are appropriate for the mission and **do not** exceed system limitations.
3. Select the correct flight mode and verify the aircraft enters the selected flight mode.
4. Verify airspeed, heading, and altitude are set to programmed settings.
5. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The operator on flight controls (A) will announce selected flight mode. The A will verify that the aircraft reports the commanded flight mode on the AV control panel.
2. Procedures.

   a. Flight plan flight mode: The A selects and loads a flight plan to the aircraft as required. Verify waypoints, airspeed and altitude are appropriate for the mission and **do not** exceed system limitations. The A will select "**FLIGHT PLAN FLIGHT MODE**" on the AV control panel. The A will override the airspeed and altitude and control each in knobs as required, until the aircraft enters fully automated flight. Verify the aircraft achieves designated waypoints and executes flight plan parameters within programmed limitations.

   b. Points NAV flight mode: The A will select "POINTS NAV" on the AV control panel. Airspeed and altitude remains under knobs control and sliders shall be adjusted, as required, and verified. Command "POINTS NAV" destination by selecting location on the VCS map display, or by data entry in the "POINTS NAV" dialog box in the AV control panel. Verify that the aircraft achieves designated point and executes orbit parameters within programmed limitations.

   c. Camera guide flight mode: The A will coordinate with the operator on payload controls (P) before entering camera guide. The A will load the camera guide parameters to the UA and select camera guide on the AV control panel. Airspeed and altitude remains under knobs control and sliders shall be adjusted, as required, and verified. Verify the aircraft enters the correct orbit around the camera stare point. Ensure to enter another flight mode before going to pilots window.

ENVIRONMENTAL CONSIDERATIONS:

1. Cold weather operations: For operations under these conditions reference the operator's manual, AR 95-23 and FM 3-04.203.
2. Desert and hot weather operations: For operations under these conditions reference the operator's manual, and FM 3-04.203.
3. Turbulence and thunderstorm operations: For operations under these conditions reference the operator's manual, airworthiness release, AR 95-23, and FM 3-04.203.
4. Mountain operations: For operations under these conditions reference the operator's manual and FM 3-04.203.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or MQ-5 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references.

TASK 1070

React to Unmanned Aircraft System Emergencies

CONDITIONS: Given a Hunter UAS or classroom, an operator's manual or checklist (CL), and an Instructor Operator (IO)/Standardization Instructor Operator (SO).

STANDARDS:

1. Perform, simulate the performance, or describe the appropriate emergency procedure IAW the operator's manual, or CL.
2. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The crewmembers will perform all emergency procedures described in the operator's manual or CL. They will also state the actions required in performing those emergency procedures that cannot be practiced or simulated. The discussion will include procedures outlined in the operator's manual, the flight information handbook (FIH), and the applicable crew coordination actions.
2. Procedures. In the event of a compound emergency, the emergency most critical to the safe operation of the aircraft shall take priority.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft, MQ-5 simulator, or academically.
2. Evaluation will be conducted while operating the aircraft or MQ-5 simulator.

REFERENCES: Appropriate common references.

TASK 1075

Perform Simulated Emergency Procedures for Single-Engine Failure During Landing

CONDITIONS: Given a Hunter unmanned aircraft (UA) system (UAS) or classroom.

STANDARDS:

1. Maintain airspeed 60 knots indicated airspeed (KIAS) ±3 KIAS.
2. Verify the aircraft can make the runway.
3. Deploy flaps when runway is made.

DESCRIPTION:

1. Crew actions. The operator on flight controls (A) will complete the required checks or procedures. The A will also read the checklist (CL) and perform all designated A actions (for example, monitoring flight and engine instruments) and those actions requested by the EO.
2. Procedures. Crewmembers will perform the following actions:

   a. The EO. Continue the approach to land and maintain UA control at the approach speed. The distance to the runway from the point where the engine fails will determine the extent of the corrective procedures. Immediately apply sufficient power to maintain glide slope and airspeed.

   b. The A. Assist by monitoring engine instruments while performing normal duties, advising of any abnormal indications, and performing actions requested by the EO.

   c. If engine failure occurs without sufficient runway to land and UA will not climb (therefore, a go-around procedure is not possible), the UAC must consider an off-runway landing.

Note. Final approach is a position from final turn where a landing is assured and when time does not permit a complete engine failure procedure. Maintaining control of the UAS is the primary consideration when engine failure occurs in this area. Once the UA wheels have touched the ground, landing is committed.

CAUTION

Be aware of visual illusions at night.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft, MQ-5 simulator, or academically.
2. Evaluation will be conducted while operating the aircraft, MQ-5 simulator.

REFERENCES: Appropriate common references.

TASK 1081

Perform Automatic Takeoff and Landing System Abort

CONDITIONS: Given a Hunter unmanned aircraft system, operator's manual or checklist (CL), and clearance by air traffic control (ATC), (if required).

STANDARDS:

1. Complete the before takeoff or before-landing checklist.
2. Determine criteria for "Abort" IAW operators manual/CL.
3. Perform aircraft takeoff/landing CL.
4. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. Given that the aircraft has aborted the automatic takeoff and landing system (ATLS) takeoff/landing or the operator on flight controls (A) has selected "ABORT" on the joystick console or the abort button on the vehicle specific module menu, the A will announce, "ATLS abort," and notify air traffic control (ATC). The operator on payload controls (P) will assist the A as required.
2. Procedures:
   a. Takeoff abort:
      (1) The A will verify that the aircraft is coming to a stop.
      (2) If stopping distance is critical the A will kill engine.

> **CAUTION**
>
> The aircraft operator can choose to override abort conditions by selecting the abort override button. However, the probability of an incident is greatly increased. It is recommended that override only be selected when critically necessary.

   b. Landing abort:
      (1) The A will verify the aircraft is climbing and heading to the missed approach point.
      (2) The A will either take control of the aircraft in knobs mode once the aircraft has reached waypoint (if required by ATC), or allow the system to conduct another ATLS landing (depending on nature of the abort).

> **CAUTION**
>
> Overriding a landing abort will cause the aircraft to continue an approach outside of ATLS design specifications and may result in damage to the system. Override should only be used in unusual situations where recovering the aircraft immediately is necessary to prevent loss of aircraft.

ENVIRONMENTAL CONSIDERATIONS: Evaluate the environmental conditions and conduct a thorough crew briefing prior to operations. Crew coordination is crucial.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted academically, at the UAS, or UAS simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references.

TASK 1099

Operate Identification Friend or Foe System

CONDITIONS: Given a Hunter unmanned aircraft system (UAS) and an operator's manual or checklist (CL).

STANDARDS:

1. Correctly prepare the system for operation.
2. Correctly perform the self-test check.
3. Correctly operate the equipment without assistance.
4. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The unmanned aircraft crewmember's (UACs) will accomplish all IFF CL procedures. The crew will perform or simulate the operational and employment procedures and precautions for the IFF system.
2. Procedures. The crew chief (CE) and the operator on flight controls (A) will perform preflight inspection; turn on, load Mode IV (if required), self-test, and conduct operational checks; apply mission employment doctrine and operating procedures; indication or signal interpretation of Mode IV reply; and shutdown procedures.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or MQ-5 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references.

TASK 1110

Track a Static Target

CONDITIONS: Given a Hunter unmanned aircraft system (UAS), an operator's manual or checklist (CL), and appropriate maps.

STANDARDS:

1. Position the aircraft payload to maintain the optimum depression angle based on the appropriate operator's manual.
2. The operator on flight controls (A) will maintain the unmanned aircraft (UA) in position to allow the tracking of the static target.
3. The operator on payload controls (P) will maintain crosshairs centered on the target and maintain the optimum depression angle.
4. Correctly perform crew coordination actions.
5. If required to illuminate/designate target for acquisition when using the UAS payload with a laser pointer/designator.

DESCRIPTION:

1. Crew actions:
   a. The A will maneuver the aircraft to maintain optimum depression angle.
   b. The P will coordinate with the A to prevent obscurations from disrupting the view of the target.
2. Procedures.
   a. The A will maneuver the aircraft to assist in tracking the static target.
   b. The P will track the static target using point-at-coordinate (P@C), Autotrack, or inertial mode.
   c. The P will observe and record any pertinent information and report it to the appropriate unit in a timely and accurately manner in the proper format.
   d. If there is a requirement to provide a laser spot or designation for target acquisition by other sources, ensure the P observes the principles of laser operations. The P will provide accurate target illumination/designation. The crew will continue to monitor the flight instruments as well as keeping the laser spot/designator free of obstacles.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or MQ-5 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references.

Task 1115

Track a Moving Target

CONDITIONS: Given a Hunter unmanned aircraft system, an operator's manual or checklist (CL), and appropriate maps.

STANDARDS:

1. Track a moving target by maintaining the target centered with the video crosshairs and by maintaining optimum depression angle based on the appropriate operator's manual.
2. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions.

   a. The operator on flight controls (A) will maneuver the aircraft to maintain optimum depression angle and payload bearing to the target.

   b. The operator on payload controls (P) will coordinate with the A to prevent obscurations from disrupting the view of the target.

2. Procedures.

   a. The A will maneuver the aircraft to assist in tracking the static target.

   b. The P will track the static target using, Autotrack, or inertial mode.

   c. The P will observe and record any pertinent information and report it to the appropriate unit in a timely and accurately manner in the proper format.

   d. If there is a requirement to provide a laser spot or designation for target acquisition by other sources, ensure the P observes the principles of laser operations. The P will provide accurate target illumination/designation. The crew will continue to monitor the flight instruments as well as keeping the laser spot/designator free of obstacles.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or MQ-5 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references.

TASK 1120

Perform Aerial Reconnaissance

CONDITIONS: Given a Hunter unmanned aircraft system (UAS) or in a classroom, an operator's manual or checklist (CL), and appropriate maps.

STANDARDS:

1. Conduct thorough mission planning.
2. Conduct a detailed map reconnaissance as required.
3. Make specific and timely reports about information obtained.
4. Conduct a systematic visual search.
5. Accurately identify targets as required.
6. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The operator on flight controls (A) main focus will be on the flight instruments to ensure the aircraft is responding appropriately to airspeed, altitude and heading inputs to achieve proper aircraft position. The operator on payload controls (P) main focus will be to coordinate with the A to maintain proper position, in order to maintain optimum depression angle based on the appropriate operator's manual as applicable.
2. Procedures:
   a. Aerial Observation:
      (1) During missions involving direct observation, the crew is primarily concerned with detection, identification, location, and reporting. Tactical and non-tactical environments use aerial observation.
         (a) Detection. Detection requires determining that an object or an activity exists.
         (b) Identification. Major factors in identifying a target are size, shape, and type of armament.
         (c) Location. The exact location of targets is the objective of the mission. Depending on the nature of the targets, the crew may be able to locate the center of mass, the boundaries of the target, or the boundaries of the entire area.

- Locate target using manual payload control. The P will begin to use the payload to locate the general area of the target by identifying terrain and/or cultural features leading into the target area as well as the camera pointing indicators. The P will begin to narrow the field of view (FOV) of the payload and identify the target through the relationship of the identified features in the target area and payload indicators.
- Locate target using point-at-coordinate menu. After coordinating the initial heading and airspeed to the target area with the A, the P will open the "point-at-coordinate" menu and key in the coordinates of the target. The P will then verify that coordinates are correct, select "Apply", which sends the data to the unmanned aircraft (UA). The P will verify the payload turns toward the target area. The A will then fly towards the P's payload position, while monitoring the flight instruments and the depression angle. The P will begin to narrow the FOV of the payload to identify the target. The P will maintain the crosshairs on the target and coordinate with the A on depression angle and bearing indicator changes that will require an adjustment to the UA position to maintain the required orbit parameters.
- Locate the target with the aid of "POINTS NAV". The P will provide the coordinates of the target and determine groundspeed required to meet the TOT requirements. The A will enter "POINTS NAV" mode. The A will then verify the UA is flying to the

target coordinates at the appropriate airspeed. As the UA flies over the target coordinates, the A will verify it enters "POINTS NAV" hold mode above the target. The P will identify the target by steering the payload to a bearing of 90 degrees left or right of the nose of the UA at a distance of approximately 1 kilometer.

(d) Reporting. Spot reports provide commanders with critical information during the conduct of missions. The requesting agency specifies the method of spot reporting. Reports of no enemy sightings are frequently just as important as actual enemy sightings.

(2) Visual search is the systematic visual coverage of a given area that observes all parts of the area. The purpose of visual search is to detect objects or activities on the ground. The crew's ability to search a given area effectively depends on several factors: in addition to the limitations of the human eye itself, the most important of these factors are altitude, airspeed, terrain and meteorological conditions, and visual cues.

(e) Altitude. Higher altitudes offer greater visibility with less detail. Use higher altitudes for survivability considerations.

(f) Airspeed. The altitude, the terrain, the threat, and meteorological conditions determine selection of the airspeed (cruise/loiter/dash).

(g) Terrain and meteorological conditions. Recognizable size and details of the area largely depend on the type of terrain such as dense jungle or barren wasteland. The prevailing terrain and meteorological conditions often mask objects and allow only a brief exposure period.

(h) Visual cues. In areas where natural cover and concealment make detection difficult, visual cues may indicate enemy activity. Some of these cues are as follows:

- Color. Foliage used to camouflage will differ from the color of natural foliage.
- Texture. Smooth surfaces, such as glass windows or canopies, will shine when reflecting light. Rough surfaces will not.
- Shapes and shadows. Synthetic objects cast distinctive shadows characterized by regular shapes and contours as opposed to random patterns that occur naturally.
- Trails. Observe trails for clues as to the type/quantity of traffic, and how recently it passed.
- Smoke and dust. Observe smoke for color and volume. Dust from moving vehicles is visible at great distances.
- Movement and light. The most easily detectable sign of enemy activity is movement and, at night, infrared (IR) light. Movement may include disturbance of foliage, snow, soil, or birds. laser-aiming devices are easily recognizable.
- Obvious sightings. The enemy is skillful in the art of camouflage. The crew must be aware that obvious sightings may be intentional because of high concentrations of antiaircraft weapons.

b. Zone Reconnaissance:

(1) Zone reconnaissance is the directed effort to obtain detailed information concerning enemy, terrain, society, and infrastructure IAW the commander's intent. It is conducted within a location delineated by boundaries. A zone reconnaissance is executed when the enemy situation is vague or when information concerning cross-country traffic-ability is desired. It is suitable when knowledge of the terrain is limited or when combat operations have altered the terrain. Zone reconnaissance may be threat-, terrain-, society, or infrastructure-oriented, or a combination of two or more of these factors.

(2) Additionally, the commander may focus the reconnaissance effort on a specific enemy force. A terrain-focused zone reconnaissance includes the identification of natural and man-made obstacles. It takes more time to execute than any other reconnaissance mission, because the area of operation and the breadth of information to be gathered are larger. Adequate time to plan and execute the mission must be provided. The aircrew must reconnoiter the zone in a systematic manner using either manual or automatic search techniques

(a) After receiving the mission assignment, the crew should conduct a detailed map reconnaissance and analyze the known enemy situation IAW the factors of METT-TC, and select altitudes and waypoints that will best accomplish the mission.

(b) The crew must check—

- Fording sites.
- Trails for recent use.
- Densely wooded areas for stay-behind or ambush units.
- Bridges for condition, location, demolition, and classification.
- Hilltops and dominant manmade features for observation posts.

(c) The crew must report the evidence or absence of enemy activity. They must also provide specific reports about route conditions and any other information requested. Reports must be timely and specific.

c. Area Reconnaissance:

(1) Area reconnaissance is the directed effort to obtain detailed information concerning enemy, terrain, society, and infrastructure of a specific area IAW the commander's intent. The objective in an area reconnaissance, however, is relatively smaller than that for a zone reconnaissance. As a result, area reconnaissance proceeds faster than zone.

(2) Reconnaissance objectives may be a small village or town; facilities such as water treatment plants, weapon storage sites, or political headquarters; or other sites of tactical importance, such as a suspected assembly area, a cache site, or an airport. The aircrew must reconnoiter the area in a systematic manner using either automatic or manual search techniques.

(a) After receiving the mission assignment, the crew should conduct a detailed map reconnaissance and analyze the known enemy situation IAW the factors of METT-TC, and select altitudes and waypoints that will best accomplish the mission.

(b) Search techniques:

- Auto search. Provides the P with the ability to methodically control an area search without having to control the payload manually. The two search types available to the operator are point and pattern (line and area). Searches are created using the mission planner.
- Point search. The P selects the initial location for the search to begin, then the payload slowly spirals the camera outward from the center in a clockwise direction. The spiral pattern is based on the following predefined factors: camera FOV, camera type, and overlap.
- Pattern (area) search. The mission planner is used during preflight or just prior to starting the search to define the search polygon. The steps of the search pattern are calculated just prior to starting the search based on the UA height above the ground and sensor FOV.
- Manual search. The P will scan the entire area using a preplanned pattern to cover the entire area. Coverage parameters in the options menu on the sensor control panel may be selected to view coverage splotches on the scrolling map to facilitate complete and accurate coverage of the area to be searched. The P will zoom in and out to observe the area to be searched.

d. Route Reconnaissance:

(1) Route reconnaissance is the directed effort to obtain information, IAW the commander's intent, along a specified route and the adjacent terrain from which movement could be influenced.

(2) The route is a prescribed course from a start point to a specified destination. Route reconnaissance is conducted to analyze route trafficability and determine whether the route is clear of obstacles and/or enemy forces. Route reconnaissance can be performed as either a stand-alone mission or an additional task during zone reconnaissance.

(a) The P will verify the start point and the direction of the road/route search. The P will optimize the payload to facilitate obtaining satisfactory video of the road/route and the immediate area. When the A maneuvers the UAS into a position with optimal resolution based on mission requirements, the P will begin the road/route scan. The P will maintain the video crosshairs centered on the road and perform the road/route scan until a target is encountered or the UA is no longer in position to maintain optimal resolution. At this time, the P will stop the scan and hold the position on the road until the A again maneuvers the UAS into a position where the resolution is optimal. The P will then resume the road/route scan.

(b) The A and P must coordinate to determine which side of the road is best for observation, where obstructions might occur, and what maneuvers to perform in the event that obstructions are encountered. The A may have to maneuver the UAS from one side to the other or fly down the center of the road to avoid obstructions to the road search and maintain optimal resolution based on mission requirements.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or MQ-5 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references.

TASK 1125

Call For/Adjust Indirect Fire

CONDITIONS: Given a Hunter unmanned aircraft system or a classroom environment and an operator's manual or checklist (CL).

STANDARDS:

1. The crew will positively identify the target and perform the "Call for Fire" and artillery adjustment following the format in ATP 3-09.32.
2. Upon positive identification of the target, the operator on flight controls (A) will maneuver the unmanned aircraft (UA) around the target(s) in order to provide an unobstructed view.
3. The A and operator on payload controls (P) will coordinate who will freeze the video and perform the call for fire and artillery adjustment function to be communicated to the artillery unit (suggest the A perform the video freeze and adjustment functions to free the P to maintain the crosshairs on the target at all time).
4. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The A's main focus will be on the flight and data link instruments to ensure the UA is responding to all inputs correctly and is maintaining continuous link with the GDT. The P's main focus will be to locate and identify the target. The focus of the A and P will then be to coordinate and follow the CL to accomplish an artillery adjustment on the target.

   a. P actions. The P will coordinate the checklist with the A to ensure that all items are accomplished in order. The P will maintain the video crosshairs on the target (especially prior to the video being frozen) for the artillery adjustment function to be performed and during the period the A's video is frozen.

   b. A actions. The A will maintain an orbit above or to the side of the target. The A will attain 60-degree depression angle or better prior to freezing the video. Upon freezing the video, the A will perform the artillery adjustment procedure and provide the data to the firing artillery unit.

2. Procedures.

   a. Planned targets. Planned targets may be scheduled or on call. They should be planned against confirmed, suspected, or likely enemy locations and on prominent terrain to serve as reference points for shifting fires onto targets of opportunity.

   b. Unplanned targets. Targets of opportunity are engaged by grid or shift from a known point.

   c. Subsequent indirect artillery adjustments are made based on a reference line, and indirect aerial fires can be adjusted similarly.

   d. Call for fire elements. The call for fire elements are—

      (1) Observer identification (appropriate call sign).

      (2) Warning order (type mission; for example, adjust fire, fire for effect, suppression, immediate suppression).

      (3) Location of target (grid coordinates, known location designation, shift with appropriate reference line).

      (4) Description of target.

      (5) Method of engagement (type adjustment, trajectory, ammunition, or distribution desired).

      (6) Method of fire and control (for example, "At my command" or "When ready").

   e. Figure A-1, page A-33, shows a suggested format from ATP 3-09.32 for a Hunter UAS Call For/Adjust Indirect Fire.

Note. Compass directions are sent to the fire direction center (FDC) in mils. If the direction is in degrees, the observer must so indicate.

Note. When using a spotting line for adjustments, the FDC will assume that the gun-target line is used unless otherwise specified by the observer.

Note. If the observer is using a spotting line and repositions the aircraft, the observer must inform the FDC if the spotting line changes by 5 degrees or more.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or MQ-5 simulator.
2. Evaluation will be conducted while operating the aircraft or MQ-5 simulator.

REFERENCES: Appropriate common references, ATP 3-09.30, ATP 3-09.32, and unit SOP.

Mission Format
Adjust Fire Mission (Grid Method)
Observer: "(FDC call sign) this is (observer call sign), adjust fire, over". Grid "(Minimum 6 digits), over". Target Description: "(Target description, size, activity)" Method of Engagement (Optional): "(Danger close, mark, high angle, ammo/fuze type)" "(At my command time on target, request splash, request TOF, request ordinate altitude information), over." FDC may challenge after they read back the above. The observer should be prepared to authenticate.
Message to Observer (*= Mandatory Call)
Units to Fire* (Firing unit, adjusting unit) Changes to Call for Fire (if any) Number of Rounds* (per tube) Target Number* Time of Flight (seconds) Ordinate Altitude Information
Given After Message to Observer
Direction "(Mills or degrees), over". [* Mils is the default—specify if using degrees.] When requesting mortar fires, direction is given as OTL when talking to the FDC. Direction is given as GTL when sending directly to the mortar crew (see FM 3–22.90, *Mortars*)
Adjustments
"Left/Right (Meters, distance from impact to OTL)". "Add/Drop (Meters, distance from impact to target), over". "Up/Down (Meters, distance from height of burst (HOB) to desired HOB)". (Only for airburst rounds—typically USMC only).
Mission Completion
"End of mission (results/effect of fires), over". (BDA and target activity) or "Refinements, record as target, end of mission, and surveillance (RREMS)". (RREMS transmission is optional)

Figure A-1. Example call for fire format

TASK 1144

Perform Touch-and-Go Landing

CONDITIONS: Given a Hunter unmanned aircraft (UA) system, suitable runway, clearance by air traffic control (ATC), if required and an operator's manual or checklist (CL).

STANDARDS:

1. Maintain required altitudes ±100 feet.
2. Maintain appropriate airspeeds ±3 knots indicated airspeed (KIAS).
3. Maintain required ground track.
4. Attain landing approach speed ±3 KIAS.
5. Execute touchdown on a predetermined zone 150 feet or greater from arresting gear cable with the desired runway track between half of the wingspan during landing and rollout.
6. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. Crewmembers will complete the required checks or procedures pertaining to their crew duties IAW the CL. The operator on flight controls (A) will read the CL and monitor flight and engine instruments. The EO will keep the area of observation cleared, and perform touch-and-go landing, and other actions requested.
2. Procedures. The crewmembers will perform the following actions:

   a. The EO will maneuver the aircraft to enter the downwind leg, at traffic pattern altitude between 400 and 700 feet above ground level (AGL) and at 60 to 65 KIAS. At mid-downwind reduce power, set flaps as required, set elevator trimmer as required, reduce the airspeed to a range between 60 and 63 KIAS, and begin descent. Maintain the desired ground track, and turn the base leg when appropriate. Adjust the pitch and reduce the power to maintain the airspeed between 60 and 63 KIAS, and intercept an appropriate angle of descent.

   b. Turn final to complete the turn at or above 100 feet AGL. When established on the final approach, gradually reduce the airspeed to the calculated speed (V_{ref}) based on UA weight. The A will verify all CL items. As the aircraft nears the runway, coordinate pitch and power as necessary to control the rate of descent and airspeed for a smooth touchdown. Depending on the conditions, reduce the power to idle and touch down on the main landing gear at the appropriate stall speed in landing configuration (V_{so}) speed for the flap setting being used based on UA weight as power is smoothly reduced. After touchdown, perform normal takeoff and climb (Task 1040). Maintain positive control during the landing roll with rudders/nose wheel steering.

> ***Note.*** It is the crewmember's responsibility to obtain ATC clearance for the touch-and-go landing and to advise the ATC if there is a change to a full stop landing.

NIGHT CONSIDERATIONS: Use normal approach and landing techniques at night.

CAUTION

Be aware of visual illusions at night.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training will be conducted while operating the aircraft.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references.

TASK 1145

Perform Normal Landing

CONDITIONS: Given a Hunter unmanned aircraft (UA) system and an operator's manual or checklist (CL).

STANDARDS:

1. Maintain required altitudes ±100 feet.
2. Maintain appropriate airspeeds ±3 knots indicated airspeed (KIAS).
3. Without error, verify ATLS runway and initial approach point is selected and loaded.
4. Maintain required ground track (within half of the wingspan) of runway centerline.
5. Complete before-landing check no later than at the designated points during the approach.
6. Attain landing approach speed 60 KIAS ±3 KIAS.
7. Execute touchdown on a predetermined zone 150 feet or greater from the arresting gear, with the desired runway track between half of the wingspan during landing and rollout.
8. If any landing parameters are exceeded perform a manual abort.
9. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. Crewmembers will complete the required checks or procedures pertaining to their crew duties IAW the CL and the preflight briefing. The operator on flight controls (A) will also read the CL and monitor flight and engine instruments. During an EO landing, the EO will keep the area of observation cleared, and perform a normal landing.
2. Procedures. The crewmember will perform the following actions:
   a. EO Landing:
      (1) Maneuver the aircraft to enter the downwind leg, at traffic pattern altitude between 400 and 700 AGL and at 60 to 65 KIAS. At mid downwind reduce power, set flaps as required, set elevator trimmer as required, reduce the airspeed to a range between 60 and 63 KIAS, and begin descent. Maintain the desired ground track, and turn the base leg when appropriate. Adjust the pitch and reduce the power to maintain the airspeed between a range of 60 and 63 KIAS, and intercept an appropriate angle of descent.
      (2) Turn final to complete the turn at or above 100 feet AGL. When established on the final approach, gradually reduce the airspeed to the calculated speed (V_{ref}) based on unmanned aircraft (UA) weight. The A will verify all CL items. As the aircraft nears the runway, coordinate pitch and power as necessary to control the rate of descent and airspeed for a smooth touchdown. Depending on the conditions, reduce the power to idle and touch down on the main landing gear at the appropriate (V_{so}) speed for the flap setting being used based on UA weight. After touchdown, gently lower the nose wheel to the runway. Maintain directional control during the landing roll with rudders/nose wheel steering. Engage arresting gear.
      (3) During crosswind conditions, use the crab-into-the-wind method to correct for drift on all legs of the traffic pattern until the short final is reached. Change the crab-into-the-wind method to a slip-into-the-wind method for round out and touchdown. During the after-landing roll, use normal rudder/nose wheel steering for directional control. Perform the after-landing procedures.
   b. ATLS landing:
      (1) The A will monitor the UA to ensure that all systems are operating normally. Verify local weather conditions and landing weight of the UA to determine the landing direction and scenario required. Select and load the appropriate approach plan and ATLS scenario to conduct the landing.

(2) The A will fly the UA into the landing cone using the flight mode of choice, (approach plan is strongly recommended). Select "Enable" on the ATLS scenario menu. When the UA reaches the landing cone the "Land" tab will become un-ghosted and should be selected immediately. Continue to monitor the instruments during the landing. Once the UA is in the arresting cable, perform after landing CL.

(3) Abort procedure: A landing abort can be commanded by the A or by the ATLS system itself. In an abort situation verify the engines go to maximum throttles. The UA will fly the missed approach plan, climb out and continue to its "Hold Point." After the UA has reached 250 feet AGL, knobs flight mode will be available. Ensure normal UA operation and reattempt the landing.

(4) The ground crew will be standing by to assist in the recovery. The A will complete all designated duties and, when called for, will read the CL. Crewmembers will inform each other upon completion of any designated check.

Note. Although designated points are given throughout the approach for completing the before-landing checks, the crewmembers may perform these procedures earlier.

Note. Traffic considerations, air traffic control (ATC) requests, or aircraft-peculiar requirements may require deviation from normal traffic pattern airspeed prior to landing.

NIGHT CONSIDERATIONS: Use normal approach and landing techniques at night.

CAUTION

Be aware of visual illusions at night.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training will be conducted while operating the aircraft.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references.

TASK 1163

Perform Simulated Emergency Procedures for Dual-Engine Failure Landing

CONDITIONS: Given a Hunter unmanned aircraft system, an operator's manual or checklist (CL), and a standardization instructor operator/instructor operator (SO/IO).

STANDARDS:

1. Perform from memory, without error, underlined emergency procedures.
2. Maintain appropriate airspeed to perform a safe landing.
3. Determine runway accessibility.
4. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. In the event of engine failure, the crewmembers will initiate procedures outlined in the CL. The operator on flight controls (A) will complete the required checks and procedures IAW the CL. The most important information for the EO will be airspeed, rate of climb, bank angle, and engine status.
2. Procedures. The crewmembers will perform the following actions:

   a. Fly a normal traffic pattern or as required. Plan for a normal approach, allowing for sufficient straightaway on final so minor alignment, speed, and altitude corrections can be made without excessive low-altitude maneuvering. Extend flaps as required for landing. Complete the dual engine fail CL. Call out items as they are performed. The A will verify completion of the items with the CL.

   b. Avoid abrupt changes in pitch. Maintain 60 KIAS until flair. Make a normal touchdown.

> **CAUTION**
>
> Be aware of visual illusions at night.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or MQ-5 simulator.
2. Evaluation will be conducted while operating the aircraft or MQ-5 simulator.

REFERENCES: Appropriate common references.

TASK 1175

Perform Transfer Procedures

CONDITIONS: Given a Hunter unmanned aircraft (UA) system, an operator's manual or checklist (CL), and an in-flight unmanned aircraft (UA).

STANDARDS:

1. Perform procedures and checks IAW the appropriate operator's manual/ CL.
2. Correctly determine any malfunctions and apply corrective action/troubleshooting procedures.
3. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions.

   a. The operator on flight controls (A) coordinates and conducts transfer with other controlling station.

   b. The A coordinates and conducts transfer with the EO.

2. Procedures. For transferring and receiving control of the UA, the A and EO complete the required checks or procedures pertaining to their crew duties IAW operator's manual/CL.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or MQ-5 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references.

TASK 1177

Perform Go-Around

CONDITIONS: Given a Hunter unmanned aircraft (UA) system and an operator's manual or checklist (CL).

STANDARDS:

1. Maintain airspeed ±3 KIAS.
2. Maintain heading ±10 degrees.
3. Monitor safe flight to predetermined go around point.
4. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The operator on flight controls (A) will monitor flight and engine instruments. The EO will keep the area of observation cleared and perform necessary actions.
2. Procedures. The crewmembers will perform the following actions:
   a. EO Landing:
      (1) When it becomes doubtful that a safe landing can be accomplished, apply maximum power and simultaneously increase pitch attitude to stop the descent with minimum loss of altitude. (If in a landing emergency, land flaps retract to take-off flaps at 53 KIAS. If in a take-off emergency, take-off flaps retract to flight flaps at 63 KIAS). Establish positive rate of climb and accelerate to 65 KIAS. If in takeoff/landing (TO/LAND), select flight at 60 KIAS.
      (2) Throughout the maneuver, the A assists the EO by monitoring engine instruments for proper indications and ensures that the aircraft limitations are not exceeded. The EO will assist in setting and maintaining the appropriate power setting and will advise the A of any abnormal conditions. The crewmembers should complete all of their designated duties and when called for, read the CL.

   b. Automatic takeoff/landing system (ATLS) landing. A landing abort can be commanded by the A or by the ATLS and a go-around will be conducted. In an abort situation verify the engines go to maximum throttles. The UA will fly the missed approach plan, climb out and continue to its "Hold Point." After the UA has reached 250-feet AGL, knobs flight mode will be available. Ensure normal UA operation and reattempt the landing.

Note. If a go-around is initiated in the traffic pattern prior to the landing check, use power as required to climb or maintain the desired altitude and airspeed. When operating at high-density altitude or heavy gross weight, trading off altitude for airspeed while accelerating to 60 KIAS may be necessary. A go-around is not possible with a single-or dual-engine failure. If the runway cannot be made, an off-runway landing should be performed.

CAUTION

Be aware of visual illusions at night.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training will be conducted while operating the aircraft.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references.

TASK 1184

Perform or Describe Inadvertent Instrument Meteorological Conditions

CONDITIONS: Given a Hunter unmanned aircraft system under simulated inadvertent instrument meteorological conditions (IIMC) or orally in a classroom environment and an operator's manual or checklist (CL).

STANDARDS:

1. The crew will conduct weather and aircraft scans periodically.
2. The operator on flight controls (A) will maneuver the unmanned aircraft (UA) out of obscurations. Climb, descend or turn as required.
3. The crew will request air traffic control (ATC) assistance; acknowledge and record the appropriate information.
4. If unable to maintain visual meteorological conditions (VMC), then comply with recovery procedures for less than visual flight rules (VFR) conditions.
5. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew action. The A, upon IIMC, will proceed as follows:
   a. Maneuver UA out of IIMC as required.
   b. Command a climb, if necessary to avoid known obstacles.
   c. Complete the inadvertent IIMC recovery procedures IAW local regulations and policies.
   d. Complete less than VFR recovery procedures IAW the system TM and CL. Consider an automatic ATLS landing.
2. Procedures. The operator on payload controls (P) will—
   a. Maintain the required communications with ATC, and record ATC information IAW the unit SOP.
   b. Crosscheck the instruments as directed by the A.
   c. Conduct weather and aircraft scans periodically with the payload to inform the A when the aircraft is clear of clouds and obstacles. Conduct aircraft scans to ensure the aircraft is not developing ice on the surfaces.

NIGHT CONSIDERATIONS: When using IR, the crew can see through thin obscurations, such as light fog or drizzle, with little degradation.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft, MQ-5 simulator, or academically.
2. Evaluation will be conducted while operating the aircraft or MQ-5 simulator.

REFERENCES: Appropriate common references.

TASK 1302

Perform Procedures for Two-Way Radio Failure

CONDITIONS: Given a Hunter unmanned aircraft system or in a classroom, and an operator's manual or checklist (CL).

STANDARDS:

1. Implement the correct procedures for two-way radio failure.
2. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. Correcting the loss of two-way radio communication is primarily the operator on payload controls (P) responsibility, while the operator on flight controls (A) attention is on flying the unmanned aircraft (UA).
2. Procedures:

   a. The P will advise the A of the communications problem and attempt to identify and correct the malfunction. If two-way radio communication cannot be established, the crew will perform the following actions:

      (1) Visual flight rules (VFR) conditions. If two-way radio failure occurs while operating under VFR or if visual meteorological conditions (VMC) are encountered after the failure, continue the flight under VFR. Land as soon as practical.

      (2) Inadvertent instrument meteorological conditions (IIMC).

         (a) If two-way radio failure occurs while operating in the National Airspace System, continue the flight IAW instructions in the flight information handbook (FIH).

         (b) If ultra-high frequency (UHF) two-way radio failure occurs while operating outside continental United States (CONUS), comply with International Civil Aviation Organization (ICAO) rules or applicable host-country regulations.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or MQ-5 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references**.**

TASK 1325

Perform Simulated Emergency Procedures for Single-Engine Failure During Takeoff

CONDITIONS: Given a Hunter unmanned aircraft system and an operator's manual or checklist (CL).

STANDARDS:

1. Perform, from memory, without error, underlined emergency procedures.
2. Maintain heading ±10 degrees of runway heading.
3. Complete and verify procedures IAW CL.

DESCRIPTION:

1. Crew actions. In the event of engine failure during takeoff roll, the crewmembers will initiate procedures outlined in the CL and announce, "ABORT, ABORT, ABORT" over the headset. The operator on flight controls (A) will complete the required checks and procedures IAW the CL. Most important information for the external operator (EO) will be airspeed. The A will recycle the lights on if the failure occurs at night and the engines are cut.
2. Procedures. The EO will perform the following actions:

   a. If instruments indicate that the engine has failed and the aircraft has not rotated, immediately deploy arresting hook and throttles to idle. Maintain runway heading and stop the unmanned aircraft (UA) with the arresting gear, if possible. If the UA is airborne when the engine failure occurs and sufficient runway remains for a landing and stop, ensure the arresting hook is deployed, throttle as required, and land.

   Note. The decision to land should be based on computed performance, the environment conditions, airspeed, and height above the runway.

   b. If engine failure occurs without sufficient runway to land and stop the aircraft safely, maintain directional control. If the airspeed is below 60 KIAS, maintain the current airspeed until sufficient altitude is obtained to trade-off altitude for airspeed to assist in accelerating to 60 KIAS. Complete the immediate action procedures IAW the CL for single-engine failure during takeoff. Flaps should remain in takeoff configuration until established downwind where they may be retracted or reconfigured for desired approach. Never retract flaps during a turn.

   c. If engine failure occurs without sufficient runway to land and the aircraft will not climb, perform off-runway landing.

   Note. When operating at high-density altitude or heavy gross weight, trading off altitude for airspeed while accelerating to 60 KIAS may be necessary. For this reason, the decision to go-around must be made as early as possible. When operating at high-density altitude or high gross weight, single-engine level flight or climb may not be possible.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or MQ-5 simulator.
2. Evaluation will be conducted while operating the aircraft or MQ-5 simulator.

REFERENCES: Appropriate common references.

TASK 1402

Perform Unmanned Aircraft System Mission Planning Procedures

CONDITIONS: Given a Hunter unmanned aircraft system or classroom, mission briefing, access to the latest weather information, Notice to Airmen (NOTAM), flight planning aides, necessary charts, forms and publications, approved software, an operator's manual or checklist (CL), and other materials as required.

STANDARDS:

1. Analyze the mission using the factors of METT-TC.
2. Perform a map/photo reconnaissance using the available map media or photos. Ensure that all known hazards are plotted on the map or into the approved software.
3. Select appropriate routes and enter all of them on a map, route sketch, or into the approved software.
4. Determine the distance ±1 kilometer, ground speed ±5 KIAS, and estimate time en route (ETE) ±1 minute for each leg of the flight.
5. Complete for the mission:
   a. Total flight time and mission time.
   b. Determine fuel required for mission, ensuring fuel reserve requirements are met IAW the operator's manual.
6. Obtain the weather briefing and confirm that weather and environmental conditions are adequate to complete the mission.
7. Perform risk management.

DESCRIPTION:

1. Crew actions:
   a. The aircraft commander (AC) will ensure that all necessary tactical flight information is obtained and will conduct a thorough crewmember briefing IAW the unit SOP and Task 1000. The AC may delegate mission planning tasks to the other crewmember but retains overall responsibility for mission planning. The AC will analyze the mission in terms of METT-TC.
   b. The operator on flight controls (A) will perform the planning tasks directed by the AC. They will report the results of their planning to the AC.
2. Procedures. Analyze the mission using the factors of METT-TC. Conduct a map or aerial photo reconnaissance. Obtain a thorough weather briefing that covers the entire mission and input as necessary into the approved software. Include sunset and sunrise times, density altitudes, winds, and visibility restrictions. If the mission is to be conducted at night, the briefing should also include moonset and moonrise times, ambient light levels, and an electro optical forecast, if available. Determine altitudes, routes, time, distance, winds aloft, and fuel requirements using approved software. Annotate the map, overlay, or approved software with sufficient information to complete the mission. Consider such items as hazards, checkpoints, observation posts, and friendly and enemy positions. Determine the sensor appropriate for the environment and time of day. Review contingency procedures. Ensure that the risk management is complete prior to the execution of the mission and the appropriate signatures are obtained.

> ***Note.*** Evaluate weather impact on the mission. Considerations should include aircraft performance and limitations on visual sensors.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft, MQ-5 simulator, or academically.
2. Evaluation will be conducted while operating the aircraft or MQ-5 simulator.

REFERENCES: Appropriate common references.

TASK 1800

Perform After-Landing Checks

CONDITIONS: Given a Hunter unmanned aircraft system, an operator's manual or checklist (CL), and unmanned aircraft (UA) logbook.

STANDARDS:

1. Without error, perform post-flight/after-landing checks IAW the operator's manual/CL.
2. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. After the aircraft comes to full stop on the active runway, crewmembers will complete the required checks or procedures pertaining to their crew duties IAW the CL and the preflight briefing.
2. Procedures. Crewmembers will perform the following actions:

   a. UACs will accomplish after-landing actions/checks, as required, to include engine shutdown. Verify all checks with the CL.

   b. The aircraft commander (AC) will ensure that system logbooks are correctly filled out, ensuring all deficiencies are annotated.

NIGHT CONSIDERATIONS: Due to limited visibility, taxi speeds should be reduced for a greater margin of safety. External lighting should be requested whenever taxing in areas where obstacles are difficult to see.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or MQ-5 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references.

TASK 2025

Conduct Digital Communications

CONDITIONS: Given a Hunter unmanned aircraft system, and an operator's manual or checklist (CL).

STANDARDS:

1. Ensure proper configuration of ground control station (GCS) tactical local area network (TACLAN) as required.
2. Configure the GCS command, control, communications, computers, and intelligence (C4I) software as required.
3. Exchange C4I messages using common message processor (CMP) and tactical communications (TACCOM).
4. Perform file transfer protocol (XFTP) between consoles.
5. Without error, send closed captioned video.
6. Correctly perform crew coordination procedures.

DESCRIPTION:

1. Crew actions:
   a. The aircraft commander (AC) will provide several items of configuration data for the console.
   b. The operator on payload controls (P) will have primary responsibility for C4I operations, but the operator on flight controls (A) will be required to properly configure their console.
   c. Upon receiving configuration data, the A and P will configure their respective consoles.
2. Procedures:
   a. The A and P will bring up required C4I programs during preset CL.
   b. The P will use the additional configuration data to input address information as required into the CMP.
   c. The P will perform XFTP between consoles.
   d. Upon takeoff, the P will message the launch time via C4I as applicable.
   e. Throughout the flight, the P will respond to any messages received and provide target information as applicable via C4I.

Note. Many missions will appear similar. Always verify mission load before entering mission mode during flight.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or MQ-5 simulator.
2. Evaluation will be conducted while operating the aircraft or MQ-5 simulator.

REFERENCES: Appropriate common references.

TASK 2054

Perform Target Handover Procedures

CONDITIONS: Given a Hunter unmanned aircraft system (UAS), a one-system remote video terminal, or in a classroom environment, and an operator's manual or checklist (CL).

Note. This task can be accomplished between air-to-air and air-to-ground.

STANDARDS:

1. Perform target handover without error.
2. Use the communications procedure that will best accomplish the mission.
3. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. Using the proper radio phraseology and signal operating instructions procedures, the crew will alert the attack helicopter, describe the target, and give its location. In some cases, the attack helicopter may need an escort from its holding area to an attack or firing position to select the target.

2. Procedures. Both the UAS and the attack aircrews must understand the method for locating the target, the execution command, and post-attack method. The standardized elements for target hand over are as follows:

a. Alert and target description. This alerts the attack helicopter that a target hand over is about to occur. It identifies the sender and describes the target (type, number, and activity); for example, "K13 (AH-64), this is KO6 (UAS), three tanks and four BMPs moving west."

b. Target location. The unmanned aircraft crewmember gives the direction of the target in degrees and range from the battle position (for example, "120 degrees at 2,800 meters"). The UAC may reference from a known point (for example, the target reference point or the engagement area) or use grid coordinates.

c. Method of attack. The UAC describes the planned scheme of maneuver, fire distribution, and maneuver for the attack; for example, "Attack targets west of north-south road."

d. Execution. The UAC gives the command to initiate the attack. The two commands are as follows:

(1) "At my command." The attack helicopter engages when the UAC says "fire."

(2) "When ready." The attack helicopter fires when ready. Assume "When ready" when no other command of execution is given.

(3) Post-attack method. The attack helicopter unmasks to evaluate the effect on the target and begins planning subsequent engagements. The UAC describes ingress and egress routes into new positions; for example, "Move to holding area 4; on order, attack from battle position 21."

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft, MQ-5 simulator, or academically.
2. Evaluation will be conducted while operating the aircraft or MQ-5 simulator.

REFERENCES: Appropriate common references, FM 3-04.120 and FM 3-04.126.

TASK 2092

Transmit a Tactical Report

CONDITIONS: Given a Hunter unmanned aircraft system or in a classroom, an operator's manual or checklist (CL), and given sufficient information to compile a tactical report.

STANDARD: Transmit appropriate report using the proper format.

DESCRIPTION:

1. Crew actions:

   a. The operator on flight controls (A) is responsible for aircraft control and obstacle avoidance. The A will coordinate with the operator on payload controls (P) as to who will make the report.

   b. The designated crewmember will prepare the information for the report and coordinate with the mission coordinator (MC) prior to sending it.

2. Procedures. Reports must be timely and concise. To save time, reduce confusion, and ensure completeness, information should be reported IAW an established format. Standard formats for four different types of reports are given below.

   a. Spot Report. A spot report is used to report timely intelligence or status regarding events that could have an immediate and significant effect on current and future operations. This is the initial means for reporting troops in contact and event information. Determine the level of detail based on factors of METT-TC. The minimum report elements are indicated below (SALT-W).

   (1) Size**.** Estimate the number of—

   (a) Persons: Military, Civilian

   (b) Vehicles: Military, Civilian

   (c) Equipment: Military, Civilian

   (2) Activity**.** Describe the activity

   (a) Attacking (Direction From)

   - ADA (Engaging)
   - Aircraft (Engaging) (RW, FW)
   - Ambush (IED (exploded), IED (unexploded), Sniper, Anti-armor, Other).
   - (Indirect Fire (Point of Impact, Point of Origin).
   - CBRNE

   (b) Defending (Direction From)

   (c) Moving (Direction From/To)

   (d) Stationary

   (e) Cache

   (f) Civilian (Criminal Acts, Unrest, Infrastructure Damage)

   (g) Personnel Recovery (Isolating Event, Observed Signal)

   (h) Other (Give name and description)

   (3) Location**.** Grid coordinate of detected element activity or event.

   (4) Time**.** Time of observation.

   (5) What you are doing**.** Describe the actions taken related to the detected activity: attack, bypass, continue to observe, or other. When feasible, state potential for subsequent reports such as close-air support request, battle damage assessment (BDA) Report, call for fire, medical evacuation (MEDEVAC), etc.

   b. BDA Report. Submit a BDA report following naval gunfire, artillery fire (if requested), or a tactical air strike.

- ALPHA: Call sign of observing source.
- BRAVO: Location of the target.
- CHARLIE: Time the strike started and ended.
- DELTA: Percentage of target coverage (pertains to the percentage of projectiles that hit the target area).
- ECHO: Itemized destruction.
- FOXTROT: Remarks. May be omitted; however, they may contain additional information such as the direction the enemy may have taken in leaving the target area.

c. Enemy shelling, bombing, or chemical, biological, radiological, nuclear, and high-yield explosive (CBRNE) warfare activity report. Submit this report following enemy shelling, bombing, or CBRNE warfare activity.

- ALPHA: From (unit call sign) and type of report.
- BRAVO: Position of observer (grid coordinates in code).
- CHARLIE: Azimuth of flash, sound, or groove of shell (state which), or origin of flight path of missile.
- DELTA: Time from (date-time of attack).
- ECHO: Time to (for illumination time).
- FOXTROT: Area attacked (either the azimuth and distance from the observer in code or the grid coordinates in the clear).
- GOLF: Number and nature of guns, mortars, aircraft, or other means of delivery, if known.
- HOTEL: Nature of fire (barrage, registration, and so forth) or CBRNE-1 type of burst (air or surface) or type of toxic agent.
- INDIA: Number and type of bombs, shells, rockets, and so forth.
- JULIETT: Flash-to-bang time in seconds.
- KILO: If CBRNE-1, damage (in code) or crater diameter.
- LIMA: If CBRNE-1, fireball width immediately after shock wave (**do not** report if the data was obtained more than five minutes after detonation).
- MIKE: If CBRNE-1, cloud height (state top or bottom) 10 minutes after burst.
- NOVEMBER: If CBRNE-1, cloud width 10 minutes after burst.

Note. State units of measure used such as meters or miles. For additional information, see FM 3-11. As a minimum, a CBRNE-1 report requires lines A, B, C, D, H, and J, and either L or M.

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d. Meaconing, intrusion, jamming, and interference report. Once jamming is discovered, report the interference as soon as practicable to higher headquarters.

- Line 1: Type of report (meaconing, intrusion, jamming, or interference).
- Line 2: Affected unit (call sign and suffix).
- Line 3: Location (the grid location).
- Line 4: Frequency affected (frequency).
- Line 5: Type of equipment affected (ultra-high frequency [UHF], very high frequency [VHF], frequency modulation (FM), and so forth).
- Line 6: Type of interference (type of jamming and signal).
- Line 7: Strength of interference (strong, medium, or weak).
- Line 8: Time the interference started and stopped (if continuing, so state).
- Line 9: Effectiveness of the interference (estimate percentage of transmission blockage).
- Line 10 Operator's name and rank.
- Line 11: Remarks (list anything else that may be helpful in identifying or locating source of interference, and send it to higher headquarters by an alternate, secure means).

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft, MQ-5 simulator, or academically.
2. Evaluation will be conducted while operating the aircraft or MQ-5 simulator.

REFERENCES: Appropriate common references, FM 3-11, and FM 2-0.

TASK 2472

Perform Airborne Data Relay Mission

CONDITIONS: Given a Hunter unmanned aircraft system (UAS) and an operator's manual or checklist (CL).

STANDARDS:

1. Correctly perform the relay mission.
2. Ensure that the geometry of the aircraft will support good relay operations.
3. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The crew will identify the mission requirements and coordinate mission planning to ensure accomplishment of the relay mission. The crew should know and understand the factors requiring the mission to be aborted or altered.
2. Procedures.
   a. Mission brief. Determine relay orbit and alternate orbit tracks.
   b. Preflight. The crew will establish active relay on the ground prior to launch.
   c. During flight. The operator on flight controls (A) will perform the following actions:
      (1) Fly the aircraft to the entry point of the relay program, and report to the appropriate facility (ground control station [GCS] or launch recovery station [LRS]).
      (2) Adjust airspeed and altitude to the desired relay configuration.
      (3) Establish relay with the mission unmanned aircraft (UA) and conduct the mission.
      (4) Monitor both aircraft instruments and respond appropriately to problems.

Note. If a threat causes deviation from the planned mission, the aircraft commander (AC) should make every effort to continue the mission when the threat has passed.

Note. "OTHER UAS FAIL" is a unique warning to relay operations. Follow the specific guidelines in the checklist for proper procedures.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or MQ-5 simulator.
2. Evaluation will be conducted while operating the aircraft or MQ-5 simulator.

REFERENCES: Appropriate common references.

TASK 2474

Designate for a Laser Guided Missile

CONDITIONS: Given a Hunter unmanned aircraft system (UAS), a missile launch vehicle (air or ground), the laser code for the remote missile, a target(s), and an operator's manual or checklist (CL).

STANDARDS:

1. Prepare laser systems for operation.
2. Determine the status of the laser system.
3. Employ remote designation procedures.
   a. Transmit a request for a remote missile engagement.
   b. Provide precision coded laser energy on the target IAW the operational parameters of the laser, the mission, enemy, terrain, and weather, troops and support available, time available, and civil considerations (METT-TC).
4. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The designation of a target by a remote aircraft or ground designator potentially allows the launch aircraft to increase the stand-off range from the target. A remote designation should be performed whenever the aircrew determines that the current mission situation requires and accommodates a remote Hellfire target engagement. While maneuvering the aircraft into constraints the operator on flight controls (A) must coordinate with the operator on payload controls (P) and cooperative element personnel prior to engagement execution. Each crewmember must know where the other is focused during the laser designation. The crewmembers will coordinate with the remote ground or aircraft designator and develop the techniques and procedures necessary to properly engage the remote target. As a minimum, the coordination will ensure that the applicable minimum/maximum ranges, maximum offset angles, safety zone, laser code, and laser-on time requirements can be met. Coordinate with the remote designator over a pre-briefed voice or tactical-messaging fire-mission request.
   a. The P will remain focused and oriented on the target. The A is responsible for clearing the aircraft and obstacle avoidance and will acknowledge that the P is ready to designate the target and maneuver the aircraft into constraints. The P will announce "laser on" when firing the LASER for designation. The A will coordinate with the P when repositioning the aircraft.
   b. The P will prepare the laser designation system, keep the crosshairs on target, and announce whether the designation is a single target or multiple targets and will announce "ready" when the laser is armed. The P will assist the A into constraints and clear the aircraft (duties permitting).
2. Procedures:

> **WARNING**
>
> **Laser light is dangerous and can cause blindness if it enters the eye either directly or reflected from a surface. Firing non-eye safe lasers is only permitted in approved areas. Personnel will wear approved laser protection whenever in a controlled area when laser rangefinder or laser target designators are being used.**

   a. Coordinate with the remote designator to ensure that the laser code and laser designation time requirements can be met.

b. Ensure the aircraft is oriented in the proper direction prior to designating. Table A-6 shows the standard voice remote Hellfire call for fire.

Table A-6. Voice remote designation call for fire

REMOTE DESIGNATION CALL FOR FIRE	
Designator	"GE15 this is D25 remote hellfire, over."
Shooter	"D25 this is GE15 remote hellfire, out."
Designator	"Grid FU-1234-5678, over."
Shooter	"Grid FU-1234-5678, out."
Designator	"1 T-72 tank stationary in the open, over."
Shooter	"1 T-72 tank stationary in the open, out
Designator	"1 missile, LOAL, code 1122, FU 2345-6789 or LTL 257°, range 6500m, altitude 250', over."
Shooter	"1 missile, LOAL, code 1122, FU 2345-6789 or LTL 257°, range 6500m, altitude 250', out."
Shooter	"Accept or Reject, over."
Designator	"Accept or Reject, out."
Shooter	"Ready, time of flight 19 seconds, over."
Designator	"Ready, time of flight 19 seconds, out."
Designator	"Fire, over."
Shooter	"Shot, over."
Designator	"Shot, out."
Designator	"End of mission, 1 T-72 tank destroyed, over."
Shooter	"End of mission, 1 T-72 tank destroyed, out."

(1) Designator angle—Determine whether the angle created by drawing a line between the designator to the target and then back to the shooter is equal to or less than the maximum allowable. If the tactical situation allows, the shooter may have to reposition to meet requirements to accept the mission.

(2) Min/Max range—Determine whether the range to the target is within the allowable range for the type of shot to be performed. If the tactical situation allows, the shooter may have to reposition, or may adjust the type of shot to meet requirements to accept the mission.

ENVIRONMENTAL CONSIDERATIONS: Evaluate the environmental conditions and conduct a thorough crew briefing prior to operations. Crew coordination is crucial.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted academically, while operating the aircraft, or MQ-5 simulator.
2. Evaluation will be conducted while operating the aircraft or MQ-5 simulator.

Note. Live fire is not necessary for training and evaluation of this task.

REFERENCES: Appropriate common references.

TASK 2601

Perform Functional Preflight Inspection

CONDITIONS: Given a Hunter unmanned aircraft system and an operator's manual or checklist (CL).

STANDARDS:

1. Correctly follow the maintenance preflight CL IAW DTM 1-1550-692-23-1, appendix A.
2. Correctly identify and document any discrepancies.
3. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions:

   a. The operator on flight controls (A) and the external operator (EO) will perform a maintenance preflight inspection IAW the operator's manual/CL and DTM 1-1550-692-23-1, appendix A, for a general maintenance test flight or a limited maintenance test flight.

   b. The crew chief (CE) will prepare the unmanned aircraft (UA) and perform a maintenance preflight inspection IAW the operator's manual/checklist and DTM 1-1550-692-23-1, appendix A, for a general maintenance test flight or a limited maintenance test flight.
2. Procedures. The A will coordinate with the crew chiefs (CE) to ensure all inspections have been completed and the UA is ready for a maintenance preflight. The A and CE will complete every step for the maintenance preflight IAW the operator's manual/CL to prepare the UA for a maintenance flight. The A will properly fill out the maintenance flight profile IAW DTM 1-1550-692-23-1 and complete UA logbook entries as required.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training will be conducted while operating the aircraft.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, DTM 1-1550-692-23-1.

Task 2602

Perform Functional Check Flight

CONDITIONS: Given a Hunter unmanned aircraft system and an operator's manual or checklist (CL).

STANDARDS:

1. Without error, perform the functional check flight IAW DTM 1-1550-692-23-1, appendix A in this ATM.
2. Correctly identify and document any discrepancies during the flight.
3. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions:

   a. The operator on flight controls (A) and/or external operator (EO) will perform a functional check flight IAW DTM 1-1550-692-23-1.

   b. The crew chief (CE) will prepare the unmanned aircraft (UA) for a functional check flight.

2. Procedures:

   a. Prior to conducting the functional check flight the A and EO will coordinate with the crew chief (CE) to ensure all inspections have been completed and the UA is ready for a functional check flight.

   b. The A and EO will coordinate to complete every step for the functional check flight IAW DTM 1-1550-692-23-1. The EO will report any discrepancies during the flight to the A for documentation. The A will properly fill out the maintenance flight profile, document all discrepancies and complete UA logbook entries as required.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training will be conducted while operating the aircraft.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, TM 1-1500-328-23.

TASK 2606

Perform Functional Post-Flight Inspection

CONDITIONS: Given a Hunter unmanned aircraft system and an operator's manual or checklist (CL).

STANDARDS:

1. Correctly perform functional post-flight inspection IAW DTM 1-1550-692-23-1, appendix A in this ATM.
2. Correctly identify and document any discrepancies.
3. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions: The crew chief (CE) will correctly perform a post-flight inspection IAW the operator's manual/ CL.
2. Procedures:
   a. The CE will utilize the TM to correctly perform every step in the post-flight inspection.
   b. The CE will document and report all discrepancies found during the inspection.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training will be conducted while operating the aircraft.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references.

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Appendix B

RQ-7 Shadow Aircrew Training Program Requirements

FLIGHT HOUR MINIMUMS

B-1. Semi-annual aircraft flying-hour requirements. Unit trainers (UTs, standardization instructor operators (SOs), and instructor operators (IOs) may credit hours they fly, while performing assigned duties at any crew position toward their semi-annual flying-hour requirement.

- FAC 1–12 hours, of which 4 hours must be flown in each crew station.
- FAC 2–6 hours, of which 2 hours must be flown in each crew station.
- FAC 3–No crew duties authorized with Army unmanned aircraft systems (UAS).

B-2. Semi-annual simulation device flying-hour requirements. UTs, SOs, and IOs may credit those hours are flown while performing assigned instructor duties at any crew position toward the semi-annual simulation device flying-hour requirements. FAC 1 unmanned aircraft crewmembers may apply a maximum of 20 aircraft hours flown in a semiannual period toward that period's semi-annual UAS simulator requirements. FAC 2 UACs may apply a maximum of 8 aircraft hours flown in a semi-annual period toward that period's semi-annual simulation requirements. A minimum of 4 hours (2 in each crew station) must be completed in the UAS simulator for FAC 1 and FAC 2 operators (this can primarily be used to train emergencies).

- FAC 1–24 hours, of which 8 hours must be flown in each crew station.
- FAC 2–12 hours, of which 4 hours must be flown in each crew station.
- FAC 3–6 hours, of which 2 hours must be flown in each crew station.

Note. ARNG commanders colonel (O-6) and above in the individual's chain of command may reduce semi-annual simulation device flying hours up to 25 percent; in the absence of a commander O-6 and above, the authority is the SAAO.

CURRENCY REQUIREMENTS

B-3. To be considered current, a UAC must—

- Perform every 60 consecutive days, a launch and recovery while operating the UAS or an approved UAS simulator.
- Perform every 180 consecutive days, a launch and recovery while operating the UAS.

Note. SOs/IOs are not authorized to count flights while not physically on the controls to meet currency requirements.

B-4. Units deployed for contingency operations, the first O-6 commander may waive launch and recovery requirements for forward site personnel when conducting split base operations. Prior to resuming launch and recovery duties, the forward site personnel must demonstrate proficiency to an IO.

B-5. A UAC whose currency has lapsed must complete a proficiency flight evaluation IAW paragraph 3-12 of this publication. Simulators may not be used to reestablish currency.

RQ-7 TASK LIST

B-6. **Task number.** Each ATM task is identified by a 10-digit TDC number. For convenience, only the last four digits are listed in this TC. The last four digits of—

- Base tasks are assigned 1000-series numbers (table B-1).
- Mission tasks are assigned 2000-series numbers (table B-2, page B-3).
- Additional tasks are assigned 3000-series numbers.

Note. Additional tasks are designated by the commander as mission essential and are not included in this ATM. The commander will develop conditions, standards, and descriptions for those additional tasks.

B-7. **Task title.** The task title identifies a clearly defined and measurable activity.

B-8. **Conditions.** The conditions specify the situation (normal operation, wartime, training, or evaluations) under which the task will be performed. They describe important aspects of the performance environment. All conditions must be met before task iterations can be credited.

B-9. **SO/IO.** There are currently no designated tasks that require an IO/SO to be at the controls.

B-10. **Annual task and iteration requirements.** The required annual task and iterations are specified in paragraph 2-73.

Table B-1. UAC base task list

Task	*Title*	*CBRNE*	*EVAL*
1000	Participate in a Crew Mission Briefing		S, C
1013	Operate Mission Planning System		S
1022	Perform Preflight Procedures	X	S, C
1024	Perform Engine Start/Systems Check	X	S, C
1032	Perform Radio Communication Procedures		S, C
1040	Perform Normal Takeoff and Climb	X	S, C
1044	Navigate by Pilotage/Dead Reckoning		S
1045	Perform Flight in Knob Control	X	S, C
1048	Perform Fuel Management Procedures		S
1050	Perform Flight Utilizing Automatic Flight Mode		S
1062	Operate Communications Relay Package		S
1070	React to Unmanned Aircraft System Emergencies		S, C
1080	Perform Tactical Automated Landing System Abort		S
1085	Perform Tactical Automated Landing System Recovery		S, C
1099	Operate Identification Friend or Foe System		S, C
1110	* Track a Static Target	X	S
1115	* Track a Moving Target	X	S
1120	* Perform Aerial Reconnaissance		S
1125	Call for and Adjust Indirect Fire		S
1175	Perform Transfer Procedures		S, C
1184	React to Inadvertent Instrument Meteorological Conditions		S
1302	Perform Procedures for Two-Way Radio Failure		S
1402	Perform UAS Mission Planning Procedures		S
1800	Perform After-Landing Checks	X	S, C

Legend:
X-Mandatory annual task iteration requirement
IR-Infrared

Table B-2. UAC mission task list

Task	*Title*
2025	Conduct Digital Communications
2054	Perform Target Hand Over to an Attack Helicopter
2092	Transmit a Tactical Report
2474	Designate for a Laser Guided Missile

TASK 1000

Participate in a Crew Mission Briefing

CONDITIONS: Prior to ground or flight operations with a Shadow unmanned aircraft system (UAS) and given DA Form 5484, a unit-approved crew briefing checklist (CL), and an operator's manual or CL.

STANDARDS:

1. Mission coordinator (MC):
   a. Brief the mandatory and mission-related items detailed on DA Form 5484.
   b. Assign crewmember mission duties and responsibilities IAW the crew briefing CL.
   c. Have the crewmembers acknowledge that they fully understand the assignment of duties and responsibilities.

   Note. AC has overall responsibility for the brief; however, the conduct of the brief may be delegated to the MC as required.

2. Operators and crew chiefs (CE):
   a. Will be briefed by the AC on mandatory and mission-related items detailed on DA Form 5484.
   b. Will verbally acknowledge full understanding of the assignment of duties and responsibilities.
3. Aircraft commander (AC):
   a. Will participate in the mission approval process along with the MC.
   b. Will be briefed by the MC on mandatory and mission-related items detailed on DA Form 5484. If delegated to conduct brief by the MC, the AC will brief mandatory items.
   c. Will verbally acknowledge full understanding of the assignment of duties and responsibilities.

DESCRIPTION:

1. Crew actions.
   a. A designated briefing officer/noncommissioned officer will evaluate and brief key areas of the mission to the AC IAW AR 95-23. The AC will acknowledge a complete understanding of the mission brief and initial DA Form 5484.
   b. The MC has overall responsibility for the crew mission briefing. The MC may direct the other crewmembers to perform all or part of the crew briefing.
   c. The AC will ensure all aircraft system information is correct. The AC will also ensure that the crew is current and qualified to perform the mission.
   d. The crewmembers being briefed will address any questions to the briefer and will acknowledge that they understand the assigned actions, duties, and responsibilities. Lessons learned from previous debriefings should be addressed as applicable during the crew briefing.

2. Procedures. Brief the mission using a unit-approved crew mission briefing CL. Table B-3, page B-5, shows a suggested format for a Shadow UAS crew briefing CL. Identify mission and flight requirements that will demand effective communication and proper sequencing and timing of actions by the crewmembers.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training will be conducted academically.
2. Evaluation will be conducted academically.

REFERENCES: Appropriate common references, AR 95-23, FM 3-04.120, ADP 5-0, FM 5-19, DOD General Planning, and unit SOP.

Table B–3. Sample Shadow crew mission brief

Mission Date: 01012013	***Mission Number: 0123***	***Mission Time Frame: 0100-0200***
SITUATION		
Enemy Forces: (Brief description of threat and estimated enemy courses of action)		
No enemy activity in this area.		
Weather: As per weather brief (temperature, wind, illumination, precipitation).		
Temperature: Min 10 Max 30		
Pressure Altitude: 29.99		
Density Altitude: 1.0		
Ceiling: 250		
Visibility: 10		
Chance of Precipitation: 0		
Surface Winds at LRS: >5		
Altitude Winds: 2,000ft: 7 knots 4,000ft: 8 knots 6,000ft: 10 knots 8,000ft: 12 knots	Freezing Level: 300 Lightning Warnings: None Advisories/Warnings: None	
Friendly Forces: Forward Site	Friendly Forces: LRS Site	
FS Squad Leader/IO: SFC Perfect	LRS Squad Leader/IO: SSG C4	
AC: CW@ Wingman	AC: CPT Target	
AO (A): SGT Joe	AO (A): 1 km south of Home Base	
AO (P): SPC Doe	AO (P): Home Base	
Primary UA Number: 0123	Ground Crew Leader: SSG C4	
Alternate UA Number: 4567	Primary Launch Shelter: Home Base	
Primary Controlling GCS:	Alternate Launch Shelter: N/A	
Alternate Controlling GCS: Home Base	(additional info)	
Forward Site GCS Location: Forward site	LRS GCS Location: 1 km south of base	
Forward Site GDT Location: 1 km south of base	LRS GDT Location: 1 km south	
Forward Site GDT Address: 123 Nowhere	LRS GDT Address: 123 Nowhere	
PGCS Location: 1 km north of Home Base	PGCS Address: 1 km north of Home Base	
Primary TALS Location: Home Base	Alternate TALS Location: 1 km south of Home Base	
TALS Height: 25m	TALS Distance: 5 km	
TDP Location: North end of tower	Runway Heading: 03	
MISSION		

SAMPLE

Table B–3. Sample Shadow crew mission brief

<table>
<tr><td colspan="3">BDE Mission: Conduct recon of field outside North Gate</td></tr>
<tr><td colspan="3">Platoon Mission: Fly UA to location, loiter, and return to base (RTB)</td></tr>
<tr><td colspan="3">Mission: (Mission statement for this flight) Safely conduct recon of intended target area

SAMPLE</td></tr>
<tr><td colspan="3">EXECUTION</td></tr>
<tr><td colspan="3">Intent: (Platoon Leaders intent for this flight) Safely launch, fly, loiter, and RTB</td></tr>
<tr><td colspan="3">Concept of the Operation: (Brief paragraph of how the operation will flow); include movement to hand-off point, hand-off procedures, etc.</td></tr>
<tr><td colspan="2">Task to Maneuver Units: Supply consumables as required.
Unit Supporting: G Company
Launch Time: 0055
Hand-Off Location: 10 km north of Home Base
Hand-Off Time to FS: 0057
Hand-Off Altitude: 100</td><td>TOT of First Target: 0101
Bingo Fuel Procedures: RTB
Hand-Off Time to LRS: 0200
Actions on Delay of Launch: Abort mission
Actions on Delay of Recovery: Send out security detail</td></tr>
<tr><td colspan="3">Return Home: After recon complete or 0200</td></tr>
<tr><td>Location: Field</td><td>Altitude: 150</td><td>Airspeed: 100 knots</td></tr>
<tr><td colspan="3">Estimated Landing Time: 0200
Stand-Off ROZ distances: (by TGT location) 1000m
Flight Pattern: (by TGT location) Circular
ALO Coordination: (any rotary or fixed wing activity in the AO) None
FSE Coordination: (any fire support operations in the AO) None
Air Coordination Restrictions: (any flight restrictions, route specifications or no fly areas) None</td></tr>
<tr><td colspan="3">SERVICE AND SUPPORT</td></tr>
<tr><td colspan="2">BDE TOC Location: Home Base</td><td>MICO ACT Location: Home Base</td></tr>
<tr><td colspan="2">Supported Unit TOC Location: Home Base</td><td>LRS TOC Location: 1 km north of Home Base</td></tr>
<tr><td colspan="2">Refuel Location: Home Base</td><td>ALOC Location: Home Base</td></tr>
</table>

Table B–3. Sample Shadow crew mission brief

MEDEVAC Frequency: 911.10	ALOC Frequency: 567.25
COMMAND AND SIGNAL	
Succession of Command: (list both LRS and FS sites) CPT Target, CW2 Wingman, SSG C4, SGT Joe	
Signal: Green smoke	
Primary FM: 125.025	Alternate FM: 175.25
Control Tower Frequency: 59.6125	High Frequency: 987.25
Platoon Command Frequency: 125.025	UHF: 325.25
Primary UA: 0123	Alternate UA: 4567
IFF Code: See daily chart	IFF Code: See daily chart
Primary C2 Link: 325.75	Primary C2 Link: 355.75
Secondary C2 Link: 225.25	Secondary C2 Link: 325.25
Video Link: 38.75	Video Link: 138.75
Supported Unit Frequency: 150.50	Preflight Frequency: 123.45
TALS Frequency: 175.50	TALS Frequency: 275.75
Net ID/Hop/Key: 200.250	(blank)
CREW ACTIONS, DUTIES, AND RESPONSIBILITIES: (ELEMENTS OF CREW COORDINATION)	
Communicate positively.	Acknowledge actions.
Direct assistance.	Be explicit.
Announce actions.	Provide UA control and obstacle advisories.
Offer assistance.	Coordinate action sequence and timing.
Additional Instructions: Safety first.	
Appendix A: Target Matrix	
Appendix B: Risk Assessment	

SAMPLE

TASK 1013

Operate a Mission Planning System

CONDITIONS: Given a Shadow unmanned aircraft system, mission objectives, mission waypoints and parameters, threats, targets, air traffic control (ATC) restrictions, air corridors, weather information, an operator's manual or checklist (CL), and other materials as required.

STANDARDS:

1. Without error, build and load a mission plan to accomplish mission objectives while maintaining operational parameters.
2. Without error, enter and verify the mission waypoints and parameters.
3. Without error, build and display threat, target, ATC restrictions, and air corridors.
4. Without error, build and load a payload plan.
5. Without error, build and load a return home plan.
6. Correctly perform crew coordination procedures.

DESCRIPTION:

1. Crew actions. The aircraft commander (AC) will ensure that pertinent data has been correctly entered and subsequently saved onto the hard drive. Depending on the situation, the crew may perform programming cooperatively or independently. The AC will perform, or will task the aircraft operator to perform software configuration, data processing, and loading.
2. Procedures. Analyze the mission and mission data. Plan the flight by conducting a map reconnaissance and terrain analysis using the available map database. Terrain analysis may be accomplished by using the topographic view with either the intervisibility plot or height above terrain feature. The profile view and alternate profile view in the mission dialog boxes may be used. If mission independent data is provided, waypoint, target, battlefield graphics list (BFGL), and route information is most easily input via the map. Threat data, if available, should be entered with appropriate values for radius of detection. When detailed information is required for a waypoint or target (for example, an update point or a named area of interest [NAI]), the mission dialog boxes allow the most precise information to be entered by grid coordinate. Ensure the correct datum is being used on the map and in the mission dialog boxes. Enter appropriate frequencies, call signs, and expanders or select them from the appropriate database.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or RQ-7 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, TM 1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL.

TASK 1022

Perform Unmanned Aircraft System Preflight Procedures

CONDITIONS: Given a Shadow unmanned aircraft system, an operator's manual or checklist (CL), and logbook.

STANDARDS:

1. Operators:

   a. Without error, perform the unmanned aircraft (UA) preflight inspection IAW the operator's manual/CL.

   b. Without error, perform the presets and preflight checks, UA preflight, and launcher inspections IAW the operator's manual/CL.

   c. Verify the correct entries of the appropriate information on DA Form 2408-12 (Army Aviator's Flight Record) and DA Form 2408-13 (Aircraft Status Information Record); DA Form 2408-13-1 (Aircraft Inspection and Maintenance Record), and DA Form 2408-18 (Equipment Inspection List) for mission equipment.

   d. Verify the data on the DD Form 365-4 Weight and Balance Clearance Form F–Transport/Tactical.

   e. Correctly perform crew coordination actions.

2. Crew chief (CE):
   a. Without error, perform the pre-operational and preflight checks, UA preflight, and launcher inspections IAW the operator's manual/CL.
   b. Verify the correct entries of the appropriate information on DA Form 2408-12 and DA Form 2408-13, DA Form 2408-13-1, and DA Form 2408-18 for mission equipment.
   c. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions.

   a. The aircraft commander (AC) is responsible for ensuring that a preflight inspection is conducted IAW operator's manual/CL.

   b. The AC will report any aircraft discrepancies that may affect the mission and enter appropriate information on DA Form 2408-12, DA Form 2408-13, DA Form 2408-13-1, DA Form 2408-13-2 (Related Maintenance Actions Record), DA Form 2408-13-3 (Aircraft Technical Inspection Worksheet), DA Form 2408-17 (Aircraft Inventory Record), DA Form 2408-18, and local forms as required.

   c. The operator and crew chief (CE) will complete presets, pre-operational checks, preflight checks, UA preflight inspection and launcher inspection IAW the operator's manual/CL.

   d. All crewmembers will use standard challenge and response communications.

2. Procedures. The operator and CE will review the UA logbook and be aware of any recent maintenance or services that should be considered prior to preflight. Follow all checklist procedures to complete preflight checks. Annotate the results of the preflight in the UA logbook.

ENVIRONMENTAL CONSIDERATIONS:

1. Cold weather operations: For operations under these conditions reference the operator's manual, AR 95-23 and FM 3-04.203.
2. Desert and hot weather operations: For operations under these conditions reference the operator's manual, and FM 3-04.203
3. Turbulence and thunderstorm operations: For operations under these conditions reference the operator's manual, airworthiness release, AR 95-23, and FM 3-04.203.

NIGHT CONSIDERATIONS: If time permits, accomplish the preflight inspections during daylight hours. During the hours of darkness, use a flashlight with an unfettered lens to supplement available lighting. Oil leaks and other defects are difficult to see using a flashlight with a colored lens.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or RQ-7 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, TM 1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL.

TASK 1024

Perform Engine Start/Systems Check

CONDITIONS: Given a Shadow unmanned aircraft system and an operator's manual or checklist (CL).

STANDARDS:

1. Operators:
   a. Without error, perform procedures and checks IAW the operator's manual/CL and unit SOP.
   b. Ensure that engine and systems are operating within prescribed tolerances.
   c. Correctly perform crew coordination actions.
2. Crew chiefs:
   a. Without error, perform procedures and checks IAW the operator's manual/CL and unit SOP.
   b. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. Crewmembers will complete the required checks and procedures pertaining to their crew duties IAW the operator's manual/CL and the crew briefing. All crewmembers will use the standard challenge and response communications.
2. Procedures. Crew chiefs (CEs) will position the unmanned aircraft system properly for run-up IAW the operator's manual/CL. The operator on flight controls (A) will complete the engine start and systems checks and will ensure that the engine, related systems, and equipment are operating properly. The CL will be used to verify that all checks are completed.

ENVIRONMENTAL CONSIDERATIONS:

1. Cold weather operations: For operations under these conditions reference the operator's manual, AR 95-23 and FM 3-04.203.
2. Desert and hot weather operations: For operations under these conditions reference the operator's manual, and FM 3-04.203
3. Turbulence and thunderstorm operations: For operations under these conditions reference the operator's manual, airworthiness release, AR 95-23, and FM 3-04.203.

NIGHT CONSIDERATIONS:

WARNING

Exercise extreme caution during limited visibility and night operations.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or RQ-7 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, FM 3-04.203, TM 1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL.

TASK 1032

Perform Radio Communication Procedures

CONDITIONS: Given a Shadow unmanned aircraft system, an operator's manual or checklist (CL), and an operational radio.

STANDARDS:

1. Adjust system radios to establish communications between internal crewmembers, controlling agencies and supported/higher echelon units.
2. When communicating with ATC facilities, internal crewmembers, controlling agencies and supported/higher echelon units, use the correct radio communication procedures and phraseology IAW the Department of Defense flight information publication.
3. Acknowledge each radio communication with correct aircraft call sign.
4. Acknowledge and comply with air traffic control (ATC) and supported/higher echelon unit instructions.
5. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. Radio communication is primarily the operator on flight controls (A) responsibility. However, if crewmembers monitor two frequencies simultaneously, they will keep each other informed of any actions or communications conducted on their respective frequency.
2. Procedures.

   a. The crew will use radio communications procedures and phraseology as appropriate for the area of operations. Standard phrases and terms will be used during all transmissions.

   b. The crew will tune the system radios as required and maintain a continuous listening watch on the assigned frequencies. When required, crew members will establish communications with the appropriate ATC facility and supported/higher echelon units. Crew members will monitor frequencies before transmitting and use the correct radio call sign when acknowledging each communication. Crew members will transmit pilot reports, position reports, and flight plan changes (as required).

   c. When advised to change frequencies, crew members will acknowledge the transmission before making the change. Crew members will select the new frequency as soon as possible unless instructed to do so at a specific time, fix, or altitude.

Note. When performing this task, the A will coordinate IAW the mission briefing.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training will be conducted while operating the aircraft.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, TM 1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL.

TASK 1040

Perform Normal Takeoff and Climb

CONDITIONS: Given a Shadow unmanned aircraft system with preflight and engine start procedures completed, air traffic control (ATC) clearance (if required), an operator's manual or checklist (CL), and launch crew.

STANDARDS:

1. Operators.
   a. Without error, perform unmanned aircraft (UA) launch procedures IAW the operator's manual/ CL and unit SOP.
   b. Without error, perform UA post-launch procedures IAW the appropriate operator's manual/CL and unit SOP.
   c. Correctly perform crew coordination actions.
2. Crew chiefs:
   a. Without error, perform UA launch procedures IAW the operator's manual/CL and unit SOP.
   b. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions:
   a. The operator on flight controls (A) will coordinate with the crew to safely execute operator's manual/CL procedures to achieve UA departure from launcher.
   b. All crewmembers will use standard challenge and response communication

2. Procedures. The A will select the auto-launch button located on the AV control panel, ONLY when the preflight, engine start, and pressurization of the launcher have been completed IAW the operator's manual/CL; and the UA is prepared for launch. Either aircraft operator (AO) will make the required radio transmissions, maintain the flight log, and perform all designated actions requested. Once the A has completed all required checks, proceed with the countdown. After the UA has departed the launcher, proceed with the post-launch checks.

ENVIRONMENTAL CONSIDERATIONS:

1. Cold weather operations: For operations under these conditions reference the operator's manual, AR 95-23 and FM 3-04.203.
2. Desert and hot weather operations: For operations under these conditions reference the operator's manual, and FM 3-04.203.
3. Turbulence and thunderstorm operations: For operations under these conditions reference the operator's manual, airworthiness release, AR 95-23, and FM 3-04.203.
4. Mountain operations: For operations under these conditions reference the operator's manual and FM 3-04.203.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or RQ-7 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, TM 1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL.

TASK 1044

Navigate by Pilotage and Dead Reckoning

CONDITIONS: Given a Shadow unmanned aircraft system, appropriate maps, and last known unmanned aircraft (UA) range and azimuth.

STANDARDS:

1. Maintain orientation within ±2,000 meters.
2. Navigate safely to recovery point.
3. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The operator on flight controls (A) main focus will be on the heading of the unmanned aircraft (UA), airspeed and azimuth of the ground data terminal (GDT). The A or the operator on payload controls (P) will calculate the proper heading, distance and time to navigate to the recovery point.
2. Procedures:

   a. The A/P will record the last known UA position, heading and airspeed and calculate the proper heading and time required to navigate to the recovery point. The A will consider winds at altitude and set a proper heading accordingly. The P should assist with all planning and computations, if they are available. Compute the time, distance, and heading to reach the recovery point.

   b. Use the GDT azimuth and dead reckoning icon to aid in navigation and maintain UA position. Adjust estimated times of arrival using the latest in-flight computed data. The payload should be used to aid in navigation if possible.

NIGHT CONSIDERATIONS: Periods of darkness or reduced visibility may require more detailed flight planning.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or RQ-7 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, TM 1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL.

TASK 1045

Perform Flight in Knob Control

CONDITIONS: Given a Shadow unmanned aircraft system and an operator's manual or checklist (CL).

STANDARDS:

1. Change heading commands to meet waypoints/targets.
2. Adjust for winds.
3. Adjust airspeed commands as required to meet time-on-target (TOT) requirements while staying within operating parameters.
4. Adjust altitude commands to meet waypoint requirements or ATC directions.
5. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The operator on flight controls (A) focus will be on the flight instruments ensuring that the unmanned aircraft (UA) is responding appropriately. The A will also coordinate with the operator on payload controls (P), who cross-checks TOT calculations for airspeed.
2. Procedures:

   a. Determine heading. From the current UA location, use the map display or appropriate paper map and determine the correct magnetic heading to the next waypoint or target with corrections for wind.

   b. Determine airspeed. From the current UA position, determine distance to the next waypoint or target. Calculate the proper airspeed to reach the waypoint/target within the specified time and operational parameters with corrections for wind. Initiate new airspeed command on the airspeed slider on the air vehicle (AV) control panel. Monitor pitch indication and airspeed for proper response.

   c. Determine altitude. Set the altitude command, with the altitude slider on the AV control panel, for the correct altitude for the next waypoint/target. Monitor throttles/revolutions per minute (RPM) and engine instruments as well as altitude and rate-of-climb indicators for proper response.

   d. Course corrections. If the next target is too close to fit within TOT specifications, adjust heading and airspeed to delay arrival on the waypoint/target.

ENVIRONMENTAL CONSIDERATIONS:

1. Cold weather operations: For operations under these conditions reference the operator's manual, AR 95-23 and FM 3-04.203.
2. Desert and hot weather operations: For operations under these conditions reference the operator's manual, and FM 3-04.203.
3. Turbulence and thunderstorm operations: For operations under these conditions reference the operator's manual, airworthiness release, AR 95-23, and FM 3-04.203.
4. Mountain operations: For operations under these conditions reference the operator's manual and FM 3-04.203.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or RQ-7 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, TM 1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL.

TASK 1048

Perform Fuel Management Procedures

CONDITIONS: Given an appropriate scale map with mission route denoted, altitude, weather conditions, takeoff weight of UAS, and airspace available.

STANDARDS:

1. Verify that the required amount of fuel is on board at the time of takeoff.
2. Correctly perform an in-flight fuel consumption check after achieving mission altitude and airspeed.
3. Initiate alternate course of action if actual fuel consumption varies from the planning value and the flight cannot be completed with the required reserve.
4. Monitor fuel quantity and consumption rate during the flight.
5. Correctly perform crew coordination procedures.

DESCRIPTION:

1. Crew actions.

   a. The operator on flight controls (A) will check and record fuel data as appropriate. The A will compute or determine fuel remaining and fuel required to complete mission and reach recovery site with the appropriate fuel reserve. The A will announce when a fuel check is initiated and the results of the check when completed.

   b. The aircraft commander (AC) will acknowledge the results of all fuel checks.

2. Procedures.

   a. Before-takeoff fuel check. The AC will ascertain total fuel on board, and compare with fuel requirements determined during pre-mission planning. If fuel is inadequate, have the aircraft refueled or abort/revise the mission.

   b. Fuel consumption check. After aircraft has achieved mission altitude and airspeed, the A will note the total fuel quantity. After ten minutes have elapsed, the A will check fuel quantity again and calculate the fuel consumed. Multiply by six to determine fuel consumption per hour. As part of in-flight checks, the A will determine flight time remaining based on fuel remaining versus mission time remaining, transit to recovery site, and fuel reserve requirement. The A will determine whether the remaining fuel is sufficient to complete the flight with the required reserve. If the fuel quantity is inadequate, the A will advise the AC and recommend an alternate course of action or determine the alternate course of action if the A is the AC.

   c. Fuel quantity and consumption. The A will periodically monitor the fuel quantity and consumption rate. Fuel consumption can vary due to changes in altitude, airspeed, and environmental conditions. A fuel consumption check should be performed periodically or whenever a change in these variables occurs. If fuel consumption check indicates a deviation from computed values, the A will repeat the fuel consumption check to determine whether fuel is adequate to complete the flight.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft, RQ-7 simulator, or academically.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, TM 1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL.

TASK 1050

Perform Flight Utilizing Automatic Flight Modes

CONDITIONS: Given a Shadow unmanned aircraft system and an operator's manual or checklist (CL).

STANDARDS:

1. Without error, perform flight utilizing flight plan and points navigation (NAV) flight modes.
2. Without error, verify waypoints, airspeed and altitude are appropriate for the mission and **do not** exceed system limitations.
3. Without error, select the correct flight mode and verify the aircraft enters the selected flight mode.
4. Without error, verify airspeed, heading, and altitude are set to programmed settings.
5. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions: The operator on flight controls (A) will announce selected flight mode. The A will verify that the aircraft reports the commanded flight mode on the air vehicle (AV) control panel.
2. Procedures:

   a. Flight plan flight mode: The A selects and loads a flight plan to the aircraft as required. Verify waypoints, airspeed and altitude are appropriate for the mission and **do not** exceed system limitations. The A will select flight plan flight mode on the AV control panel. The A will override the airspeed and altitude and control each in knobs as required, until the aircraft enters fully automated flight. Verify the aircraft achieves designated waypoints and executes flight plan parameters within programmed limitations.

   b. Points NAV flight mode: The A will select "POINTS NAV" on the AV control panel. Airspeed and altitude sliders shall be adjusted, as required, and verified. Command POINTS NAV destination by selecting location on the vehicle control station (VCS) map display, or by data entry in the "POINTS NAV" dialog box in the AV control panel. Verify that the aircraft achieves designated point and executes orbit parameters within programmed limitations.

ENVIRONMENTAL CONSIDERATIONS:

1. Cold weather operations: For operations under these conditions reference the operator's manual, AR 95-23 and FM 3-04.203.
2. Desert and hot weather operations: For operations under these conditions reference the operator's manual, and FM 3-04.203.
3. Turbulence and thunderstorm operations: For operations under these conditions, reference the operator's manual, airworthiness release, AR 95-23, and FM 3-04.203.
4. Mountain operations: For operations under these conditions reference the operator's manual and FM 3-04.203.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or RQ-7 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, TM 1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL.

TASK 1062

Configure Communications Relay Package

CONDITIONS: Given a Shadow unmanned aircraft system or classroom, and operator's manual/checklist (CL).

STANDARDS:

1. Correctly perform or describe the appropriate procedures according to the listed references.
2. Correctly load radio frequencies into the communication relay interface box (CRIB).
3. Correctly operate the communications relay graphical user interface (GUI).
4. Correctly perform crew coordination procedures.

DESCRIPTION:

1. Crew actions:

   a. The operator on flight controls (A) will obtain the altitude required to communicate effectively with the ground forces.

   b. The operator on payload controls (P) will access the sensor control menu and open the communications relay GUI, and navigate through the menus to operate the CRP.

   c. The ground crewmember will utilize the Falcon III radio programming application to load frequencies into the CRIB.

2. Procedures:

   a. The P will apply power, set NET to F1/F1 for single channel mode (non-secure) and perform BIT.

      (1) Load a frequency between 30.0000 and 511.999 megahertz (MHz) into Radio 1.
      (2) Load a different frequency between 30.0000 and 511.999 MHz into Radio 2.
      (3) Choose same preset number between 0-99 for Radio 1 and Radio 2.
      (4) Ensure all 6 digits are input to avoid round off.
      (5) Ensure proper radio function.

   b. The P will conduct a search of Radio 1's available presets.

      (1) Enter a search value in the Preset field
      (2) Press Query to retrieve preset data from Radio 1.
      (3) Status field displays Key, Hopset and Frequencies associated with the queried preset value.
      (4) Select Apply to make the queried Preset become the Current Preset.
      (5) Repeat steps 1-4 for Radio 2.
      (6) Ensure proper radio function.

   c. The P will set Radio 1 and Radio 2 to same network identification (NET ID) for frequency hopping mode (F1/F1)

      (1) Load preset via the radio key pad.
      (2) Choose 0-99 for preset number.
      (3) Load Radio 1 frequency between 30.0000 and 511.999 MHz.
      (4) Load Radio 2 frequency between 30.0000 and 511.999 MHz.
      (5) Ensure all 6 digits are input to avoid round off.
      (6) Ensure NET ID on radio 1 is same as NET ID of radio 2.
      (7) Ensure proper radio function.

   d. The P will set NET to F1/F2, set Radio 1 NET ID and Radio 2 NET ID different from each other.

(1) Load preset into Radio 1.
(2) Choose 0-99 for preset number.
(3) Load a frequency between 30.0000 and 511.999 MHz.
(4) Ensure all 6 digits are input to avoid round off.
(5) Load NET ID into Radio 1.
(6) Load preset into Radio 2.
(7) Choose same preset number as Radio 1.
(8) Load a frequency between 30.0000 and 511.999 MHz.
(9) Ensure all 6 digits are input to avoid round off.
(10) Load different NET ID into Radio 2.
(11) Ensure proper radio function.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or RQ-7 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, AN/PRC-152 Radio Retransmit Procedures Shadow 200 Specific AN/PRC-152 Programming Guide for CRIB Interface, TM 1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL.

TASK 1070

React to Unmanned Aircraft System Emergencies

CONDITIONS: Given a Shadow unmanned aircraft system or classroom an operator's manual or checklist (CL), and an Instructor Operator (IO)/Standardization Instructor Operator (SO).

STANDARDS:

1. Operators:
   a. Without error, perform, simulate the performance, or describe the appropriate emergency procedure IAW the operator's manual or CL.
   b. Correctly perform crew coordination actions.
2. Crew chiefs:
   a. Without error, perform, simulate the performance, or describe the appropriate emergency procedure IAW the operator's manual or CL.
   b. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. Crewmembers will perform all emergency procedures described in the operator's manual/CL as applicable for their duty position (operators). They will also state the actions required in performing those emergency procedures that cannot be practiced or simulated. The discussion will include procedures outlined in the operator's manual, the flight information handbook, and the applicable crew coordination actions.
2. Procedures. In the event of a compound emergency, the emergency most critical to the safe operation of the aircraft shall take priority.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft, RQ-7 simulator, or academically.
2. Evaluation will be conducted while operating the aircraft or RQ-7 simulator.

REFERENCES: Appropriate common references, TM 1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL.

TASK 1080

Perform Tactical Automated Landing System Abort

CONDITIONS: Given a Shadow unmanned aircraft system, clearance by air traffic control (ATC) (as required), unmanned aircraft (UA) on approach, and an operator's manual or checklist (CL).

STANDARDS:

1. Monitor safe flight towards the predetermined wave-off point.
2. Without error, perform tactical automated landing system (TALS) recovery failure IAW the appropriate operator's manual/CL and unit SOP as required.
3. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. During ground control station preset and preflight checks, the altitude and distance from the touchdown point to the wave-off point are programmed. Use local SOP and guidance to set these parameters. If during recovery, an abort occurs, crew will notify ATC as required.
2. Procedures. Given that the aircraft has aborted the TALS landing or the operator on flight controls (A) has selected wave-off on the Autoland menu, the following steps should be followed.
   a. The A will verify that the aircraft flight mode is reporting wave-off on the air vehicle (AV) control panel. The A will note the following:
      (1) The engine revolutions per minute are increasing.
      (2) The UA is climbing to the programmed altitude.
      (3) The aircraft is heading towards the wave-off point.
   b. The A will announce, "Wave-off."
   c. The A will take control of the aircraft in knobs mode once the aircraft has established a safe altitude and is heading towards the wave-off point.
   d. Once safe flight is established, the A may continue with normal operations IAW local SOPs.
3. If the abort was not commanded by the A, then the A will perform TALS recovery failure procedures IAW the appropriate operator's manual/CL.

ENVIRONMENTAL CONSIDERATIONS:

1. Cold weather operations: For operations under these conditions reference the operator's manual, AR 95-23 and FM 3-04.203.
2. Desert and hot weather operations: For operations under these conditions reference the operator's manual, and FM 3-04.203.
3. Turbulence and thunderstorm operations: For operations under these conditions reference the operator's manual, airworthiness release, AR 95-23, and FM 3-04.203.
4. Mountain operations: For operations under these conditions reference the operator's manual and FM 3-04.203.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or RQ-7 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, TM 1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL.

TASK 1085

Perform Tactical Automated Landing System Recovery

CONDITIONS: Given a Shadow unmanned aircraft system, clearance by air traffic control (ATC) (as required), and an operator's manual or checklist (CL).

STANDARDS:

1. Without error, verify tactical automated landing system (TALS) setup and survey tabs.
2. Maneuver the unmanned aircraft (UA), using the appropriate flight mode, to the acquisition altitude ±100 feet.
3. Complete TALS recovery IAW the operator's manual/CL.
4. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The aircraft commander (AC) will ensure setup and survey data is correct for current weather and runway considerations. Using an appropriate flight mode, ensure the aircraft safely descends to the acquisition altitude IAW local recovery procedures.
2. Procedures. Select the appropriate flight mode to maneuver the aircraft into the recovery initiation window (RIW).
   a. Initiate recovery utilizing one of the following:
      (1) TALS Loiter Mode: Select the TALS Loiter button located on the air vehicle (AV) control panel and verify the aircraft reports the commanded flight mode. The operator on flight controls (A) will ensure the aircraft enters the loiter circle on the vehicle control station (VCS) map display and loiters in the appropriate direction defined in the TALS setup menu. The A will verify the aircraft transitions to the appropriate acquisition altitude as reported in the TALS setup menu. Select Land AV button located on the Autoland menu when appropriate.
      (2) One-Button Autoland: If using this feature, select Autoland AV button after it has become available. The A will verify the aircraft executes One Button Autoland programmed procedures, ensuring the aircraft enters the loiter circle on the VCS map display and loiters in the appropriate direction defined in the TALS setup menu. The A will verify the aircraft transitions to the appropriate acquisition altitude as reported in the TALS setup menu.
      (3) Knobs/automatic flight modes: Activate TALS airborne subsystem and select acquire. Select Land AV button located on the Autoland menu when appropriate.
   b. Monitor RIW, master caution panel, and the warning panel for system failures. Be prepared to abort TALS landing, if out-of-parameter conditions develop. If the system automatically aborts the Autoland sequence (prior to decision point), refer to Task 1080.

ENVIRONMENTAL CONSIDERATIONS:

1. Cold weather operations: For operations under these conditions reference the operator's manual, AR 95-23 and FM 3-04.203.
2. Desert and hot weather operations: For operations under these conditions reference the operator's manual, and FM 3-04.203.
3. Turbulence and thunderstorm operations: For operations under these conditions reference the operator's manual, airworthiness release, AR 95-23, and FM 3-04.203.
4. Mountain operations: For operations under these conditions reference the operator's manual and FM 3-04.203.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or RQ-7 simulator.

2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, TM 1-1550-689-10-1, TM 1-1550-689-10-2, TM 1-1550-689-CL.

TASK 1099

Operate Identification Friend or Foe System

CONDITIONS: Given a Shadow unmanned aircraft system equipped with an identification friend or foe (IFF) system and an operator's manual or checklist (CL).

STANDARDS:

1. Correctly prepare the system for operation.
2. Correctly perform the self-test check.
3. Correctly operate the equipment without assistance.
4. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The unmanned aircraft crewmembers will accomplish all IFF CL procedures. The crew will perform or simulate the operational and employment procedures and precautions for the IFF system.
2. Procedures. The crew chief and the operator on flight controls (A) will perform preflight inspection; turn on, load Mode IV (if required), self-test, and conduct operational checks; apply mission employment doctrine and operating procedures; indication or signal interpretation of Mode IV reply; and shutdown procedures.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or RQ-7 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, TM 1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL.

TASK 1110

Track a Static Target

CONDITIONS: Given a Shadow unmanned aircraft system (UAS) and an operator's manual or checklist (CL).

STANDARDS:

1. Position the aircraft payload to maintain a resolution of 1.75 or less in infrared (IR) or 1.17 or less in electro-optical.
2. The operator on flight controls (A) will maintain the unmanned aircraft (UA) in position to allow the tracking of the static target.
3. The operator on payload controls (P) will maintain crosshairs centered on the target and maintain required resolution.
4. Correctly perform crew coordination actions.
5. If required to illuminate/designate target for acquisition when using the UAS payload with a laser pointer/designator.

DESCRIPTION:

1. Crew actions:
   a. The A will maneuver the aircraft to maintain optimum resolution.
   b. The P will coordinate with the A to prevent obscurations from disrupting the view of the target. The P will determine the resolution using either the Coverage Parameters dialog or the Auto Search menu.
2. Procedures:
   a. The A will maneuver the aircraft to assist in tracking the static target.
   b. The P will track the static target using Point-at-Coordinate (P@C), Autotrack, or Inertial mode.
   c. The P will observe and record any pertinent information and report it to the appropriate unit in a timely and accurately manner in the proper format.
   d**. If there is a requirement to provide a laser spot or designation for target acquisition by other sources, ensure the P observes the principles of laser operations.** The P will provide accurate target illumination/designation. The crew will continue to monitor the flight instruments as well as keeping the laser spot/designator free of obstacles.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or RQ-7 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, TM-1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL.

TASK 1115

Track a Moving Target

CONDITIONS: Given a Shadow unmanned aircraft system, an operator's manual or checklist (CL), and appropriate maps.

STANDARDS:

1. Track a moving target by maintaining the target centered with the video crosshairs and by maintaining a resolution of 1.75 or less in infrared (IR) or 1.17 or less in electro-optical (EO).
2. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions:
   a. The operator on flight controls (A) will maneuver the aircraft to maintain optimum resolution.
   b. The operator on payload controls (P) will coordinate with the A to prevent obscurations from disrupting the view of the target. The P will determine the resolution using either the Coverage Parameters dialog or the Auto Search menu.
2. Procedures:
   a. The A will maneuver the aircraft to assist in tracking the static target.
   b. The P will track the static target using, Autotrack, or Inertial mode.
   c. The P will observe and record any pertinent information and report it to the appropriate unit in a timely and accurately manner in the proper format.
   d. **If there is a requirement to provide a laser spot or designation for target acquisition by other sources, ensure the P observes the principles of laser operations.** The P will provide accurate target illumination/designation. The crew will continue to monitor the flight instruments as well as keeping the laser spot/designator free of obstacles.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or RQ-7 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, TM 1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL.

TASK 1120

Perform Aerial Reconnaissance

CONDITIONS: Given a Shadow unmanned aircraft (UA) system or in a classroom and an operator's manual or checklist (CL).

STANDARDS:

1. Conduct thorough mission planning.
2. Conduct a detailed map reconnaissance as required.
3. Make specific and timely reports about information obtained.
4. Conduct a systematic visual search.
5. Accurately identify targets as required.
6. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The operator on flight controls (A) main focus will be on the flight instruments to ensure the aircraft is responding appropriately to airspeed, altitude and heading inputs to achieve proper aircraft position. The operator on payload controls (P) main focus will be to coordinate with the A to maintain proper position, in order to maintain proper payload resolution as applicable. A proper resolution is 1.75 or less in infrared (IR) or 1.17 or less in electro-optical (EO).

2. Procedures:

   a. Aerial Observation.

      (1) During missions involving direct observation, the crew is primarily concerned with detection, identification, location, and reporting. Tactical and nontactical environments use aerial observation.

         (a) Detection. Detection requires determining that an object or an activity exists.

         (b) Identification. Major factors in identifying a target are size, shape, and type of armament.

         (c) Location. The exact location of targets is the objective of the mission. Depending on the nature of the targets, the crew may be able to locate the center of mass, the boundaries of the target, or the boundaries of the entire area.

- Locate target using manual payload control. The P will begin to use the payload to locate the general area of the target by identifying terrain and/or cultural features leading into the target area as well as the camera pointing indicators. The P will begin to narrow the field of view (FOV) of the payload and identify the target through the relationship of the identified features in the target area and payload indicators.
- Locate target using Point-at-Coordinate (P@C) menu. After coordinating the initial heading and airspeed to the target area with the A, the P will open the "Point-at-Coordinate" menu and key in the coordinates of the target. The P will then verify the coordinates are correct, select "Apply", which sends the data to the unmanned aircraft (UA). The P will verify the payload turns toward the target area. The A will then fly towards the P's payload position, while monitoring the flight instruments and the depression angle. The P will begin to narrow the FOV of the payload to identify the target. The P will maintain the crosshairs on the target and coordinate with the A on resolution and bearing indicator changes that will require an adjustment to the UA position to maintain the required orbit parameters.
- Locate the target with the aid of "POINTS NAV". The P will provide the coordinates of the target and determine groundspeed required to meet the TOT requirements. The A will enter "POINTS NAV" mode. The A will then verify the UA is flying to the

target coordinates at the appropriate airspeed. As the UA flies over the target coordinates, the A will verify it enters "POINTS NAV" hold mode above the target. The P will identify the target by steering the payload to a bearing of 90 degrees left or right of the nose of the UA at a distance of approximately 1 kilometer.

(d) Reporting. Spot reports provide commanders with critical information during the conduct of missions. The requesting agency specifies the method of spot reporting. Reports of no enemy sightings are frequently just as important as actual enemy sightings.

(2) Visual search is the systematic visual coverage of a given area that observes all parts of the area. The purpose of visual search is to detect objects or activities on the ground. The crew's ability to search a given area effectively depends on several factors: in addition to the limitations of the human eye itself, the most important of these factors are altitude, airspeed, terrain and meteorological conditions, and visual cues.

(a) Altitude. Higher altitudes offer greater visibility with less detail. Use higher altitudes for survivability considerations.

(b) Airspeed. The altitude, the terrain, the threat, and meteorological conditions determine selection of the airspeed (cruise/loiter/dash).

(c) Terrain and meteorological conditions. Recognizable size and details of the area largely depend on the type of terrain such as dense jungle or barren wasteland. The prevailing terrain and meteorological conditions often mask objects and allow only a brief exposure period.

(d) Visual Cues. In areas where natural cover and concealment make detection difficult, visual cues may indicate enemy activity. Some of these cues are as follows:

- Color. Foliage used to camouflage will differ from the color of natural foliage.
- Texture. Smooth surfaces, such as glass windows or canopies, will shine when reflecting light. Rough surfaces will not.
- Shapes and shadows. Synthetic objects cast distinctive shadows characterized by regular shapes and contours as opposed to random patterns that occur naturally.
- Trails. Observe trails for clues as to the type/quantity of traffic, and how recently it passed.
- Smoke and dust. Observe smoke for color and volume. Dust from moving vehicles is visible at great distances.
- Movement and light. The most easily detectable sign of enemy activity is movement and, at night, IR light. Movement may include disturbance of foliage, snow, soil, or birds. laser-aiming devices are easily recognizable.
- Obvious sightings. The enemy is skillful in the art of camouflage. The crew must be aware that obvious sightings may be intentional because of high concentrations of antiaircraft weapons.

b. Zone Reconnaissance.

(1) Zone reconnaissance is the directed effort to obtain detailed information concerning enemy, terrain, society, and infrastructure IAW the commander's intent. It is conducted within a location delineated by boundaries. A zone reconnaissance is executed when the enemy situation is vague or when information concerning cross-country traffic-ability is desired. It is suitable when knowledge of the terrain is limited or when combat operations have altered the terrain. Zone reconnaissance may be threat-, terrain-, society, or infrastructure-oriented, or a combination of two or more of these factors.

(2) Additionally, the commander may focus the reconnaissance effort on a specific enemy force. A terrain-focused zone reconnaissance includes the identification of natural and man-made obstacles. It takes more time to execute than any other reconnaissance mission, because the area of operation and the breadth of information to be gathered are larger. Adequate time to plan and execute the mission must be provided. The aircrew must reconnoiter the zone in a systematic manner using either manual or automatic search techniques

(a) After receiving the mission assignment, the crew should conduct a detailed map reconnaissance and analyze the known enemy situation IAW the factors of METT-TC, and select altitudes and waypoints that will best accomplish the mission.

(b) The crew must check—

- Fording sites.
- Trails for recent use.
- Densely wooded areas for stay-behind or ambush units.
- Bridges for condition, location, demolition, and classification.
- Hilltops and dominant manmade features for observation posts.

(c) The A flies the mission on the predetermined route or another route if required by the situation. The P uses the sensors to identify terrain and detect possible enemy activity. The A maintains navigation within specified boundaries unless authorized to cross them.

(d) The crew must report the evidence or absence of enemy activity. They must also provide specific reports about route conditions and any other information requested. Reports must be timely and specific.

c. Area Reconnaissance.

(1) Area reconnaissance is the directed effort to obtain detailed information concerning enemy, terrain, society, and infrastructure of a specific area IAW the commander's intent. The objective in an area reconnaissance, however, is relatively smaller than that for a zone reconnaissance. As a result, area reconnaissance proceeds faster than zone.

(2) Reconnaissance objectives may be a small village or town; facilities such as water treatment plants, weapon storage sites, or political headquarters; or other sites of tactical importance, such as a suspected assembly area, a cache site, or an airport. The aircrew must reconnoiter the area in a systematic manner using either automatic or manual search techniques.

(a) After receiving the mission assignment, the crew should conduct a detailed map reconnaissance and analyze the known enemy situation IAW the factors of METT-TC, and select altitudes and waypoints that will best accomplish the mission.

(b) Search techniques.

- Auto search. Provides the P with the ability to methodically control an area search without having to control the payload manually. The two search types available to the operator are point and pattern (line and area). Searches are created using the mission planner.
- Point search. The P selects the initial location for the search to begin, then the payload slowly spirals the camera outward from the center in a clockwise direction. The spiral pattern is based on the following predefined factors: camera FOV, camera type, and overlap.
- Pattern (area) search. The mission planner is used during preflight or just prior to starting the search to define the search polygon. The steps of the search pattern are calculated just prior to starting the search based on the UA height above the ground and sensor FOV.
- Manual search. The P will scan the entire area using a preplanned pattern to cover the entire area. Coverage parameters in the options menu on the sensor control panel may be selected to view coverage splotches on the scrolling map to facilitate complete and accurate coverage of the area to be searched. The P will zoom in and out to observe the area to be searched.

e. Route Reconnaissance.

(1) Route reconnaissance is the directed effort to obtain information, IAW the commander's intent, along a specified route and the adjacent terrain from which movement could be influenced. The route is a prescribed course from a start point to a specified destination.

(2) Route reconnaissance is conducted to analyze traffic ability and determine whether the route is clear of obstacles and/or enemy forces. Route reconnaissance can be performed as either a stand-alone mission or an additional task during zone reconnaissance.

(a) The P will verify the start point and the direction of the road/route search. The P will optimize the payload to facilitate obtaining satisfactory video of the road/route and the immediate area. When the A maneuvers the UAS into a position with optimal resolution based on mission requirements, the P will begin the road/route scan. The P will maintain the video crosshairs centered on the road and perform the road/route scan until a target is encountered or the UA is no longer in position to maintain optimal resolution. At this time, the P will stop the scan and hold the position on the road until the A again maneuvers the UAS into a position where the resolution is optimal. The P will then resume the road/route scan.

(b) The A and P must coordinate to determine which side of the road is best for observation, where obstructions might occur, and what maneuvers to perform in the event that obstructions are encountered. The A may have to maneuver the UAS from one side to the other or fly down the center of the road to avoid obstructions to the road search and maintain optimal resolution based on mission requirements.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or RQ-7 simulator or classroom.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, TM 1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL.

TASK 1125

Call For and Adjust Indirect Fire

CONDITIONS: Given a Shadow unmanned aircraft system (UAS) and an operator's manual or checklist (CL).

STANDARDS:

1. The crew will positively identify the target and perform the "call for fire" and artillery adjustment following the format in ATP 3-09.32.
2. Upon positive identification of the target, the operator on flight controls (A) will maneuver the unmanned aircraft (UA) around the target(s) in order to provide an un-obstructed view.
3. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The A's main focus will be on the flight and data link instruments to ensure the UA is responding to all inputs correctly and is maintaining continuous link with the ground data terminal. The P's main focus will be to locate and identify the target. The focus of the A and P will then be to coordinate and follow the CL to accomplish an artillery adjustment on the target.

   a. P actions. The P will coordinate the checklist with the A to ensure all items are accomplished in order. The P will maintain the video crosshairs on the target (especially prior to the video being frozen) for the artillery adjustment function to be performed and during the period the A's video is frozen.

   b. A actions. The A will maintain an orbit above or to the side of the target. The A will attain optimum resolution or better prior to freezing the video. Upon freezing the video, the A will perform the artillery adjustment procedure and provide the data to the firing artillery unit.

2. Procedures:

   a. Planned targets. Planned targets may be scheduled or on call. They should be planned against confirmed, suspected, or likely enemy locations and on prominent terrain to serve as reference points for shifting fires onto targets of opportunity.

   b. Unplanned targets. Targets of opportunity are engaged by grid or shift from a known point. Subsequent indirect artillery adjustments are made based on a reference line and indirect aerial fires can be adjusted similarly.

   c. Call for fire elements. The call for fire elements are—

      (1) Observer identification (appropriate call sign).
      (2) Warning order (type mission; for example, adjust fire, fire for effect, suppression, immediate suppression).
      (3) Location of target (grid coordinates, known location designation, shift with appropriate reference line).
      (4) Description of target.
      (5) Method of engagement (type adjustment, trajectory, ammunition, or distribution desired).
      (6) Method of fire and control (for example, "At my command" or "When ready").

   d. Figure B-1, page B-32, shows a suggested format from ATP 3-09.32 for a Shadow UAS Call For/Adjust Indirect Fire.

Note. Compass directions are sent to the fire direction center (FDC) in mils. If the direction is in degrees, the observer must so indicate.

Note. When using a spotting line for adjustments, the FDC will assume that the gun-target line is used unless otherwise specified by the observer.

Note. If the observer is using a spotting line and repositions the aircraft, the observer must inform the FDC if the spotting line changes by 5 degrees or more.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or RQ-7 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references TM 1-1550-689-10-1, TM 1-1550-689-10-2, TM 1-1550-689-CL, ATP 3-09.30, ATP 3-09.32, and unit SOP.

Mission Format
Adjust Fire Mission (Grid Method)
Observer: "(FDC call sign) this is (observer call sign), adjust fire, over". Grid "(Minimum 6 digits), over". Target Description: "(Target description, size, activity)" Method of Engagement (Optional): "(Danger close, mark, high angle, ammo/fuze type)" "(At my command time on target, request splash, request TOF, request ordinate altitude information), over." FDC may challenge after they read back the above. The observer should be prepared to authenticate.
Message to Observer (*= Mandatory Call)
Units to Fire* (Firing unit, adjusting unit) Changes to Call for Fire (if any) Number of Rounds* (per tube) Target Number* Time of Flight (seconds) Ordinate Altitude Information
Given After Message to Observer
Direction "(Mills or degrees), over". [* Mils is the default—specify if using degrees.] When requesting mortar fires, direction is given as OTL when talking to the FDC. Direction is given as GTL when sending directly to the mortar crew (see FM 3–22.90, *Mortars*)
Adjustments
"Left/Right (Meters, distance from impact to OTL)". "Add/Drop (Meters, distance from impact to target), over". "Up/Down (Meters, distance from height of burst (HOB) to desired HOB)". (Only for airburst rounds—typically USMC only).
Mission Completion
"End of mission (results/effect of fires), over". (BDA and target activity) or "Refinements, record as target, end of mission, and surveillance (RREMS)". (RREMS transmission is optional)

Figure B-1. Sample Shadow UAS Call For/Adjust Indirect Fire

TASK 1175

Perform Transfer Procedures

CONDITIONS: Given a Shadow unmanned aircraft system and an operator's manual or checklist (CL).

STANDARDS:

1. Without error, perform procedures and checks IAW the appropriate operator's manual/CL.
2. Correctly determine any malfunctions and apply corrective action/troubleshooting procedures.
3. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The operator on flight controls (A) coordinates and conducts transfer with other controlling station.
2. Procedures. For transferring and receiving control of the unmanned aircraft (UA), the A completes the required checks or procedures pertaining to their crew duties IAW operator's manual/CL.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or RQ-7 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, TM 1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL.

TASK 1184

React to Inadvertent Instrument Meteorological Conditions

CONDITIONS: Given a Shadow unmanned aircraft system under simulated inadvertent instrument meteorological conditions (IIMC) or orally in a classroom environment and an operator's manual or checklist (CL).

STANDARDS:

1. Conducts weather and aircraft scans periodically.
2. Maneuvers the unmanned aircraft (UA) out of obscurations. Climb, descend or turn as required.
3. Requests air traffic control (ATC) assistance; acknowledge and record the appropriate information.
4. If unable to maintain visual meteorological conditions (VMC), then comply with recovery procedures for less than visual flight rules (VFR) conditions.
5. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions:
   a. The operator on the flight controls (A) will—
      (1) Maintain proper aircraft control.
      (2) Maneuver unmanned aircraft (UA) out of obscurations. Climb, descend, or turn as required.
      (3) Set the transponder to the appropriate code as required.
      (4) If unable to maintain VMC, then comply with IIMC recovery procedures.
   b. The operator on payload controls (P) will—
      (1) Without error, tune the radios to the appropriate frequency as required.
      (2) Conduct weather and aircraft scans periodically.
   c. Request ATC assistance; acknowledge and record the appropriate information.
   d. Correctly perform crew coordination actions.
2. Procedures:
   a. The A, upon IIMC will;
      (1) Maneuver UA out of IIMC as required.
      (2) Command a climb, descent, or turn as required to clear obscurations.
      (3) Complete the IIMC recovery procedures IAW local regulations and policies.
   b. The P will—
      (1) Assist the A by utilizing the payload to aid in navigating out of obscurations.
      (2) Conduct weather and aircraft scans with the payload to inform the A when the aircraft is clear of clouds and obstacles. Aircraft scans are to ensure the aircraft is not developing ice on the surfaces.
      (3) Assist the A by contacting the appropriate ATC facilities as required. Maintain the required communications with ATC, and record ATC information when appropriate.

NIGHT CONSIDERATIONS: When using infrared, the crew can see through thin obscurations, such as light fog or drizzle, with little degradation.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft, RQ-7 simulator, or academically.
2. Evaluation will be conducted while operating the aircraft or RQ-7 simulator.

REFERENCES: Appropriate common references, TM 1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL.

TASK 1302

Perform Procedures for Two-Way Radio Failure

CONDITIONS: Given a Shadow unmanned aircraft system and an operator's manual or checklist (CL).

STANDARDS:

1. Implement the correct procedures for two-way radio failure.
2. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. Correcting the loss of two-way radio communication is primarily the operator on payload controls (P) responsibility, while the operator on flight controls (A) attention is on flying the unmanned aircraft (UA).
2. Procedures:

   a. The P will advise the A of the communications problem and attempt to identify and correct the malfunction.

   b. If two-way radio communication cannot be established, the crew will perform the following actions:

      (1) Visual flight rules (VFR) conditions. If two-way radio failure occurs while operating under VFR or if visual meteorological conditions are encountered after the failure, continue the flight under VFR. Land as soon as practical.

      (2) Inadvertent instrument meteorological conditions.

         (a) If two-way radio failure occurs while operating in the National Airspace System, continue the flight IAW instructions in the flight information handbook.

         (b) If ultra-high frequency two-way radio failure occurs while operating outside continental United States (CONUS), comply with International Civil Aviation Organization rules or applicable host-country regulations.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or RQ-7 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, TM 1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL.

TASK 1402

Perform Unmanned Aircraft System Mission Planning

CONDITIONS: Given a Shadow unmanned aircraft system , mission briefing, access to the latest weather information, Notice to Airmen, flight planning aides, necessary charts, forms and publications, approved software, and other materials as required.

STANDARDS:

1. Analyze the mission using the factors of mission, enemy, terrain and weather, troops and support available, time available, civil considerations (METT-TC).
2. Perform a map/photo reconnaissance using the available map media or photos. Ensure that all known hazards are plotted on the map or into the approved software.
3. Select appropriate routes and enter all of them on a map, route sketch, or into the approved software.
4. Determine the distance ±1 kilometer and estimate time en route (ETE) ±1 minute for each leg of the flight.
5. Complete for the mission:
   a. Total flight time and mission time.
   b. Determine fuel required for mission ensuring fuel reserve requirements are met IAW the operator's manual.
6. Obtain the weather briefing and confirm that the weather and environmental conditions are adequate to complete the mission.
7. Perform risk management.

DESCRIPTION:

1. Crew actions:
   a. The aircraft commander (AC) will ensure that all necessary tactical flight information is obtained and will conduct a thorough crewmember briefing IAW the unit SOP and Task 1000. The AC may delegate mission planning tasks to the other crewmember, but retains overall responsibility for mission planning. The AC will analyze the mission in METT-TC terms.
   b. The aircraft operator (AO) will perform the planning tasks directed by the AC. They will report the result of the mission planning to the AC.
2. Procedures: Analyze the mission using the factors of METT-TC. Conduct a map or aerial photo reconnaissance. Obtain a thorough weather briefing that covers the entire mission and input as necessary into the approved software. Include sunset and sunrise times, density altitudes, winds, and visibility restrictions. If the mission is to be conducted at night, the briefing should also include moonset and moonrise times, ambient light levels, and an electro optical forecast, if available. Determine altitudes, routes, time, distances, winds aloft, and fuel requirements using approved software. Annotate the map, overlay, or approved software with sufficient information to complete the mission. Consider such items as hazards, checkpoints, observation posts, and friendly and enemy positions. Determine the sensor appropriate for the environment time of day. Review contingency procedures. Ensure that the risk management is complete prior to the execution of the mission and the appropriate signatures are obtained.

> ***Note.*** Evaluate the weather impact on the mission. Considerations should include aircraft performance and limitations on visual sensors.

NIGHT CONSIDERATIONS: Due to limited visibility external lighting should be requested whenever maneuvering in areas where obstacles are difficult to see.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft, RQ-7 simulator, or academically.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, TM 1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL.

TASK 1800

Perform After-Landing Checks

CONDITIONS: Given a Shadow unmanned aircraft system, an operator's manual or checklist (CL), and unmanned aircraft (UA) logbook.

STANDARDS:

1. Without error, perform all post-flight procedures.
2. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The unmanned aircraft crewmembers will complete the required checks or procedures pertaining to their crew duties IAW the CL and the preflight briefing.
2. Procedures:

   a. UACs will accomplish after-landing actions/checks, as required. Verify all checks IAW the CL.

   b. The aircraft commander will ensure that system logbooks are correctly filled out, ensuring all deficiencies are annotated.

NIGHT CONSIDERATIONS: Due to limited visibility external lighting should be requested whenever moving the UA in areas where obstacles are difficult to see.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or RQ-7 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, TM 1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL.

TASK 2025

Conduct Digital Communications

CONDITIONS: Given a Shadow unmanned aircraft system and an operator's manual or checklist (CL).

STANDARDS:

1. Ensure proper configuration of ground control station (GCS) tactical local area network (TACLAN) as required.
2. Configure the GCS command, control, communications, computers, and intelligence (C4I) software as required.
3. Exchange C4I messages using common message processor (CMP) and tactical communications (TACCOM).
4. Perform file transfer protocol (XFTP) between consoles.
5. Without error, send closed captioned video.
6. Correctly perform crew coordination procedures.

DESCRIPTION:

1. Crew actions:
   a. The aircraft commander (AC) will provide several items of configuration data for the console.
   b. The operator on payload controls (P) will have primary responsibility for C4I operations, but the operator on flight controls (A) will be required to properly configure their console.
   c. Upon receiving configuration data, the A and P will configure their respective consoles.
2. Procedures:
   a. The A and P will bring up required C4I programs during preset CL.
   b. The P will use the additional configuration data to input address information as required into the CMP.
   c. The P will perform XFTP between consoles.
   d. Upon takeoff, the P will message the launch time via C4I as applicable.
   e. Throughout the flight, the P will respond to any messages received and provide target information as applicable via C4I.

Note. Many missions will appear similar. Always verify mission load before entering mission mode during flight.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft or RQ-7 simulator.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, TM 1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL.

TASK 2054

Perform Target Handover Procedures

CONDITIONS: Given a Shadow unmanned aircraft system, or in a classroom environment, and an operator's manual or checklist (CL).

Note. This task can be accomplished between air-to-air and air-to-ground.

STANDARDS:

1. Complete target hand over.
2. Use the communications procedure that will best accomplish the mission.
3. Correctly perform crew coordination actions.

DESCRIPTION:

1. Crew actions. The operator on flight controls (A) main focus will be on the flight instruments to ensure the aircraft is responding appropriately to airspeed, altitude and heading inputs to achieve proper aircraft position. The operator on payload controls (P) main focus will be to coordinate with the A to maintain proper position, in order to maintain proper payload resolution. This is performed in order to identify and maintain the crosshairs on the target. The P will prepare information for target handover.
2. Procedures:

   a. On station crew (current asset) will establish communications with asset that is acquiring target (gaining asset).

   b. Current asset will describe the target, give target location, mark (if applicable) and coordinate with gaining asset.

   c. Any unit specific handover procedures should be utilized (for example laser, voice).

   d. Gaining asset will properly locate the target and confirm location.

   e. Once gaining asset has confirmed target, current asset will continue mission.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft, RQ-7 simulator, or academically.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, TM 1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL.

TASK 2092

Transmit a Tactical Report

CONDITIONS: Given a Shadow unmanned aircraft system or in a classroom and given sufficient information to compile a tactical report.

STANDARD: Transmit appropriate report using the proper format.

DESCRIPTION:

1. Crew actions:

   a. The operator on flight controls (A) is responsible for aircraft control and obstacle avoidance. The A will coordinate with the operator on payload controls (P) as to who will make the report.

   b. The designated crewmember will prepare the information for the report and coordinate with the mission coordinator (MC) prior to sending it.

2. Procedures. Reports must be timely and concise. To save time, reduce confusion, and ensure completeness, information should be reported IAW an established format. Standard formats for four different types of reports are given below.

   a. **Spot Report**. A spot report is used to report timely intelligence or status regarding events that could have an immediate and significant effect on current and future operations. This is the initial means for reporting troops in contact and event information. Determine the level of detail based on factors of METT-TC. The minimum report elements are indicated below (size, activity, location, time, and what you are doing [SALT-W]).

      (1) **SIZE.** Estimate the number of—

         (a) Persons: Military, civilian.

         (b) Vehicles: Military, civilian.

         (c) Equipment: Military, civilian.

      (2) **ACTIVITY.** Describe the activity—

         (a) Attacking (direction from)

         - ADA (engaging).
         - Aircraft (engaging) (RW, FW).
         - Ambush (IED [exploded], IED [unexploded], sniper, anti-armor, or other).
         - (Indirect fire (point of impact, point of origin).
         - CBRNE.

         (b) Defending (direction from).

         (c) Moving (direction from/To).

         (d) Stationary.

         (e) Cache.

         (f) Civilian (criminal acts, unrest, infrastructure damage).

         (g) Personnel recovery (isolating event, observed signal).

         (h) Other (give name and description).

      (3) **LOCATION.** Grid coordinate of detected element activity or event.

      (4) **TIME.** Time of observation.

      (5) **WHAT YOU ARE DOING.** Describe actions taken related to the detected activity: attack, bypass, continue to observe, or other. When feasible, state potential for subsequent reports (such as CAS request, BDA report, call for fire, or MEDEVAC).

   b. **Battle Damage Assessment (BDA) Report**. Submit a BDA report following naval gunfire, artillery fire (if requested), or a tactical air strike.

(1) ALPHA: Call sign of observing source.

(2) BRAVO: Location of the target.

(3) CHARLIE: Time the strike started and ended.

(4) DELTA: Percentage of target coverage (pertains to the percentage of projectiles that hit the target area).

(5) ECHO: Itemized destruction.

(6) FOXTROT: Remarks. May be omitted; however, they may contain additional information such as the direction the enemy may have taken in leaving the target area.

c. **Enemy Shelling, Bombing, or Chemical, Biological, Radiological, Nuclear, and High-Yield Explosive (CBRNE) Warfare Activity Report.** Submit this report following enemy shelling, bombing, or CBRNE warfare activity.

(1) ALPHA: From (unit call sign) and type of report.

(2) BRAVO: Position of observer (grid coordinates in code).

(3) CHARLIE: Azimuth of flash, sound, or groove of shell (state which) or origin of flight path of missile.

(4) DELTA: Time from (date-time of attack).

(5) ECHO: Time to (for illumination time).

(6) FOXTROT: Area attacked (either the azimuth and distance from the observer in code or the grid coordinates in the clear).

(7) GOLF: Number and nature of guns, mortars, aircraft, or other means of delivery, if known.

(8) HOTEL: Nature of fire (barrage, registration, and so forth) or CBRNE-1 type of burst (air or surface) or type of toxic agent.

(9) INDIA: Number and type of bombs, shells, rockets, and so forth.

(10) JULIETT: Flash-to-bang time in seconds.

(11) KILO: If CBRNE-1, damage (in code) or crater diameter.

(12) LIMA: If CBRNE-1, fireball width immediately after shock wave (**do not** report if the data was obtained more than five minutes after detonation).

(13) MIKE: If CBRNE-1, cloud height (state top or bottom) 10 minutes after burst.

(14) NOVEMBER: If CBRNE-1, cloud width 10 minutes after burst.

Note. State units of measure used such as meters or miles. For additional information, see FM 3-11. As a minimum, a CBRNE-1 report requires lines A, B, C, D, H, and J and either L or M.

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d. **Meaconing, Intrusion, Jamming, and Interference Report.** Once jamming is discovered, report the interference as soon as practicable to higher headquarters.

(1) Line 1: Type of report (meaconing, intrusion, jamming, or interference).

(2) Line 2: Affected unit (call sign and suffix).

(3) Line 3: Location (grid location).

(4) Line 4: Frequency affected (frequency).

(5) Line 5: Type of equipment affected (ultra-high frequency [UHF], very high frequency [VHF], frequency modulation [FM], and so forth).

(6) Line 6: Type of interference (type of jamming and signal).

(7) Line 7: Strength of interference (strong, medium, or weak).

(8) Line 8: Time the interference started and stopped (if continuing, so state).

(9) Line 9: Effectiveness of the interference (estimate percentage of transmission blockage).

(10) Line 10 Operator's name and rank.

(11) Line 11: Remarks (list anything else that may be helpful in identifying or locating source of interference, and send it to higher headquarters by an alternate, secure means).

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted while operating the aircraft, RQ-7 simulator, or academically.
2. Evaluation will be conducted while operating the aircraft.

REFERENCES: Appropriate common references, FM 3-11, FM 2-0, ATP 3-09.32, TM 1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL.

TASK 2474

Designate for a Laser Guided Missile

CONDITIONS: Given a shadow unmanned aircraft system, on an approved range or simulated tactical environment and an operator's manual or checklist (CL).

STANDARDS:

1. Prepare laser systems for operation.
2. Determine the status of the laser system.
3. Provide accurate laser spot using laser designator (LD).
4. Select the correct laser code.
5. Select unobstructed laser target line (LTL)
6. Employ remote designation procedures.
   a. Transmit a request for a remote missile engagement.
   b. Provide precision coded Laser energy on the target IAW mission, enemy, terrain and weather, troops and support available, time available, civil considerations (METT-TC).
7. Engage target(s) with remote designation based on the operational parameters of the Laser, target location, and the tactical situation.
8. Correctly perform crew coordination actions

DESCRIPTION:

1. Crew actions. The designation of a target by a remote aircraft or ground designator potentially allows the launch aircraft to increase the stand-off range from the target. A remote designation should be performed whenever the aircrew determines that the current mission situation requires and accommodates a remote Hellfire target engagement. While maneuvering the aircraft into constraints, the operator on flight controls (A) must coordinate with the operator on payload controls (P) and cooperative element personnel prior to engagement execution. Each crewmember must know where the other is focused during the laser designation. The crewmembers will coordinate with the remote ground or aircraft designator and develop the techniques and procedures necessary to properly engage the remote target. At a minimum, the coordination will ensure that the applicable minimum/maximum ranges, maximum offset angles, safety zone, laser code, and laser-on time requirements can be met. Coordinate with the remote designator over a pre-briefed voice or tactical messaging–fire mission request.
   a. The P will remain focused and oriented on the target. The A is responsible for clearing the aircraft and obstacle avoidance and will acknowledge that the P is ready to designate the target and maneuver the aircraft into constraints. The P will announce the" laser on" when firing the laser for designation. The A will coordinate with the P when repositioning the aircraft.
   b. The P will keep the crosshairs on target, prepare the laser designation system, and announce when ready to designate. The P will announce if the designation is a single target or multiple targets and will announce "ready" when the laser is armed. The P will assist the A into constraints and clear the aircraft (duties permitting).
2. Procedures.
   a. Coordinate with the remote designator to ensure that the laser code and laser designation time requirements can be met.
   b. Ensure the aircraft is oriented in the proper direction prior to designating. Figure B-4, page B-46, shows the standard voice remote hellfire call for fire.

Table B-4. Voice remote designation call for fire

Designator	"GE15 this is D25 remote hellfire, over."
Shooter	"D25 this is GE15 remote hellfire, out."
Designator	"Grid FU-1234-5678, over."
Shooter	"Grid FU-1234-5678, out."
Designator	"1 T-72 tank stationary in the open, over."
Shooter	"1 T-72 tank stationary in the open, out
Designator	"1 missile, LOAL, code 1122, FU 2345-6789 or LTL 257°, range 6500m, altitude 250', over."
Shooter	"1 missile, LOAL, code 1122, FU 2345-6789 or LTL 257°, range 6500m, altitude 250', out."
Shooter	"Accept or Reject, over."
Designator	"Accept or Reject, out."
Shooter	"Ready, time of flight 19 seconds, over."
Designator	"Ready, time of flight 19 seconds, out."
Designator	"Fire, over."
Shooter	"Shot, over."
Designator	"Shot, out."
Designator	"End of mission, 1 T-72 tank destroyed, over."
Shooter	"End of mission, 1 T-72 tank destroyed, out."

WARNING

Laser light is dangerous and can cause blindness if it enters the eye either directly or reflected from a surface. Personnel will wear approved laser protection whenever in a controlled area when laser rangefinder or laser target designators are being used.

(1) Designator angle—Determine whether the angle created by drawing a line between the designator to the target and then back to the shooter is equal to or less than the maximum allowable. If the tactical situation allows, the shooter may have to reposition to meet requirements to accept the mission.
(2) Min/max range—Determine whether the range to the target is within the allowable range for the type of shot to be performed. If the tactical situation allows, the shooter may have to reposition, or may adjust the type of shot to meet requirements to accept the mission.

ENVIRONMENTAL CONSIDERATIONS: Evaluate the environmental conditions and conduct a thorough crew briefing prior to operations. Crew coordination is crucial.

TRAINING AND EVALUATION REQUIREMENTS:

1. Training may be conducted academically, while operating the aircraft, or RQ-7 simulator.
2. Evaluation will be conducted while operating the aircraft.

Note. Live fire is not necessary for training and evaluation of this task.

REFERENCES: Appropriate common references, TM 1-1550-689-10-1, TM 1-1550-689-10-2, and TM 1-1550-689-CL**.**

Glossary

SECTION I – ACRONYMS AND ABBREVIATIONS

A	operator on flight controls
AAR	after action review
AC	aircraft commander
ACT-E	aircrew coordination training-enhanced
AGL	above ground level
AIM	aeronautical information manual
AIRF	aircrew information reading files
AO	aircraft operator
APART	annual proficiency and readiness test
AR	Army regulation
ARNG	Army National Guard
ARTEP	Army training and evaluation program
APA	aviation physician assistant
ATC	air traffic control
ATLS	automatic takeoff/landing system
ATM	aircrew training manual
ATP	aircrew training program
AV	air vehicle
BDA	battle damage assessment
CAFRS	centralized aviation flight records system
CALFEX	combined arms live-fire exercise
CAT	combined arms training
CATS	combined arms training strategy
CBRNE	chemical, biological, radiological, nuclear, and high-yield explosive
CE	crew chief
CID	combat identification
CL	checklist
CMP	common message processor
CONUS	continental United States
CPC	crew practice course
CTC	combat training center
CTG	commander's training guidance
CTL	commander's task list
DA	Department of the Army
DAC	Department of the Army civilian
DA Pam	Department of the Army Pamphlet
DART	downed aircraft recovery team
DOD	Department of Defense

DD	Defense Department (Department of Defense)
DZ	drop zone
EDI-PI	electronic data interchange personnel identifier
EO	external operator
ETE	estimated time en route
FAA	Federal Aviation Administration
FAC	flight activity category
FAR	Federal Aviation Regulation
FCO	functional check operator
FDC	fire direction center
FIH	flight information handbook
FLIP	flight information publication
FM	frequency modulation
FM	field manual
FOV	field of view
FS/APA	flight surgeon/ aviation physician assistant
FTX	field training exercise
GCM	ground crew member
GCS	ground control station
GR	grade
GDT	ground data terminal
GT	gunnery table
GTP	ground tactical plan
HOB	height of burst
HQDA	Headquarters, Department of the Army
IATF	individual aircrew training folder
IAW	in accordance with
ICAO	international civil aviation organization
IFF	identification friend or foe
IFRF	individual flight record folder
IIMC	inadvertent instrument meteorlogical conditions
IO	instructor operator
IR	infrared
KIAS	knots indicated airspeed
LAO	local area orientation
LD	laser designator
LRS	launch recovery station
LTL	laser target line
LZ	landing zone
MARSA	military assumes responsibility for separation of aircraft
MC	mission coordinator

MEDEVAC	medical evacuation
METL	mission-essential task list
METT-TC	mission, enemy, terrain and weather, troops and support available, time available, and civilian considerations
MHz	megahertz
MOPP	mission-oriented protective posture
MOS	military occupational specialty
MOSP	multi-mission optronic stabilized platform
MTOE	modification table of organization and equipment
MTP	mission training plan
NCO	noncommissioned officer
NET ID	network idnetification
NOTAM	Notice to Airmen
NVD	night vision device
OPORD	operation order
P@C	point-at-coordinate
PFE	proficiency flight evaluation
PGCS	portable ground control station
PID	personnel identifier
POP	plug-in optronic payload
RIW	recovery initiation window
RL	readiness level
ROC-V	recognition of combat vehicle
RPM	revolutions per minute
RREMS	refinements, record as target, end of mission, and surveillance
RVT	remote video terminal
S	satisfactory
S-3	operations staff officer
SAAO	State Army Aviation Officer
SO	standardization operator
SOP	standing operating procedure
SPINS	special instructions
SSN	social security number
STX	situational training exercise
T&EO	training and evaluation outline
TACCOM	tactical communications
TACLAN	tactical local area network
TADSS	training aids, devices, simulators, and simulation
TALS	tactical automated landing system
TB	technical bulletin
TC	training circular
TDA	table of distribution and allowance

TDC	training development capabilities
TDY	temporary duty
TM	technical manual
TOE	table of organization and equipment
TOT	time on target
TRADOC	Army Training and Doctrine Command
TRC	training readiness condition
TTP	tactics, techniques, and procedures
U	unsatisfactory
UA	unmanned aircraft
UAC	unmanned aircraft crewmember
UAS	unmanned aircraft system
UHF	ultra-high frequency
USAACE	United States Army Aviation Center of Excellence
U.S.	United States
USAR	United States Army Reserve
UT	unit trainer
UTL	unit task list
VFR	visual flight rules
VHF	very high frequency
VMC	visual meteorological conditions
XFTP	transfer protocol
WO	warrant officer

SECTION II–TERMS

V_r	rotation speed
V_{ref}	indicated airspeed that the aircraft should have on the approach path when the aircraft is approximately 50 feet higher than the intended touchdown point, in the landing configuration. It is the approach speed shown in the aircraft operator's manual.
V_{so}	stall speed in landing configuration

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RAYMOND T. ODIERNO
General, United States Army
Chief of Staff

Official:

GERALD B. O'KEEFE
Administrative Assistant to the
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1400601

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