Aviation Policy Letter 95-1-1

USACE Aviation Policies and Standards

Headquarters
U.S. Army Corps of Engineers
Washington, DC
9 September 2022

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1. Summary. This is the base document for USACE Aviation. It covers mission planning, aviation safety, aircrew standardization, reporting requirements, data protection, and contractor surveillance. The term crewmember applies to those directly involved in operating an aircraft. The term contractor surveillance describes the Federal requirement to monitor an aviation contractor's flight and ground operations in accordance with Army Regulation 95-20*, Contractor Flight and Ground Operations*.

2. Applicability. This document applies to all USACE operational activities, hereinafter referred to as Field Operating Activities (FOAs), that operate aircraft in any capacity (owned, leased, contracted, etc.). It also applies to non-public organizations operating Unmanned Aircraft on USACE projects and persons contracted by USACE for aviation services.

3. Public Aircraft Operation. USACE Aviation is a Public Aircraft Operation. This designation applies to all flights conducted by USACE personnel and contractors utilizing USACE-owned aircraft. It also applies to contractor owned and operated aircraft that meet the criteria of a Public Aircraft Operation, per Title 49 of the United States Code, Section 40125, *Qualifications for Public Aircraft Status*, and as determined by the Aviation Program Manager.

4. Proponent and Exception Authority. The USACE Aviation proponent is the Aviation Program Manager (APM). The proponent has authority to approve exceptions or waivers to this policy that are consistent with U.S. Army and Federal Aviation Administration (FAA) regulations. FOAs may request an exception to policy or waiver by providing justification that includes an analysis of the expected benefits endorsed by the FOA Commander/Director.

5. Legal and Regulatory Authority. USACE aviation activities are supervised by the APM, who is designated by the Assistant Secretary of the Army (Civil Works) and delegated authority by the Commanding General, USACE, to implement and oversee the USACE Aviation Program. These duties include contractor surveillance, crewmember standards, SUAS fleet management, and operational flight activities. The authority to do so is granted by Title 33 of the United States Code, Section 576(c), *Corps of Engineers Operation of Unmanned Aircraft Systems*, Army Regulation 95-1, *Flight Regulations*, and the Aviation Program Manager Delegation of Authority Memorandum.

6. Supplementation. Key leaders will reference this document when generating FOA-level Standard Operating Procedures (SOPs) and supplement it, as necessary, with FOA-specific best practices. FOA's may define more rigorous standards and practices but may not define less rigorous, alternate, or contradictory standards and practices to those found herein.

7. SUAS flights in the National Airspace System. USACE SUAS flights in the National Airspace System are conducted in accordance with all aspects of Title 14 of the Code of Federal Regulations, Part 107, *Small Unmanned Aircraft Systems*, that apply to Public Aircraft Operations.

8. Policy. This document takes precedence if conflicting information is found in external sources of guidance.

9. General. USACE Aviation values your feedback. Please e-mail comments, suggested changes, and/or questions regarding this document to HQ Aviation at HQAviation@usace.army.mil. Suggested changes should be submitted in a problem, discussion, recommendation format.

10. Availability. This document is available on the Small UAS Community of Practice Shared Documents Library at, https//usace.dps.mil/sites/KMP-UAS.

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Section 1: Terms and Definitions

1. Background. The following terms and definitions are official descriptors for USACE Aviation.

1.1. Air Gap – the approved method of transferring data into and out of a Closed Restricted Network (CRN). Data is transferred through an Air-Gap Computer, utilizing CIO-G6 approved scanning software, to ensure unwanted files do not enter, nor sensitive data be transferred from, the CRN.

1.2. Air Mission – an approved flight, or series of flights, for a clearly defined task, purpose, and end-state.

1.3. Air Mission Approval Authority (AMAA) – individual approved by the APM and delegated authority by the Commander/ Director to accept risk and approve missions.

NOTE: Missions are planned, briefed, and approved by three separate individuals unless otherwise approved in writing by the APM.

NOTE: "Self-briefing" and/or "Self-approval" is not authorized without written approval from the APM.

1.4. Aircrew Training Program Manager (ATPM) – individual designated in writing by the Commander/Director, with concurrence from the APM, who is delegated authority to implement and manage the SUAS program. ATPMs are selected for their maturity, judgement, and leadership qualities.

1.5. Aviation Program Manager (APM) – individual designated by the Assistant Secretary of the Army (Civil Works), and delegated authority by the Commanding General, USACE, to implement and oversee the USACE Aviation Program.

1.6. Aviation Resource Management Survey (ARMS) – a comprehensive analysis of the Commander's/Director's Aviation Program conducted every 24 – 36 months, or as necessary, to assess organizational readiness, identify trends, resolve issues, and propagate best practices.

1.7. Air Worthiness Release (AWR) – a technical document that authorizes operation of a specified aircraft system, subsystem, or component and provides instructions, procedures, limitations, and inspection procedures necessary for safe flight.

1.8. Closed Restricted Network (CRN) – a self-contained network. It may only host systems within the network and does not transmit, receive, route, or interchange information outside the network.

NOTE: USACE operates a CRN III per guidelines in the U.S. Army NETCOM SIS-CRN TTP, *Stand-Alone Information System and Closed Restricted Network Assessment and Authorization*, 27 June 2016.

1.9. Crewmember – individual(s) directly involved in the operation of an aircraft. (For example: Pilot and Copilot for manned aircraft; Remote Pilot and Visual Observer for Small Unmanned Aircraft System.)

1.10. Flight – starts when an aircraft begins to taxi or lift from the ground and ends when it lands, and motor(s)/engine(s) have stopped.

1.11. Flight Training Folder (FTF) – the digital, and optional paper, means of standardizing and recording historical data, training history, and annual requirements for each crewmember.

1.12. Government Flight Representative (GFR) – a rated U.S. Military officer, or Government Civilian in an aviation position, to whom the approving authority has delegated responsibility for approval of contractor flights, procedures, and crewmembers, and ensuring contractor compliance with applicable provisions of AR 95-20.

NOTE: Government Civilians in an aviation position performing GFR duties for USACE must be a former rated Military Officer or a current rated Military Officer in the Reserve Component.

1.13. Launch and Recovery Site (LRS) – the location from which a Small Unmanned Aircraft is launched and recovered.

1.14. Management Information System (MIS) for Aviation and Remote Systems (MARS) — a management information database that tracks equipment and personnel, and assists in mission planning, approvals, tracking, and archiving.

1.15. Mobile Map Server (MMS) – a standalone, encrypted server and field-expedient solution to securely load basemaps onto Ground Control Stations.

1.16. Public Aircraft Operation (PAO) – an entity performing aviation activities in pursuit of inherently Governmental functions that meet the criteria for a Public Aircraft Operation, as defined by Title 49 of the U.S. Code, Section 40125.

NOTE: USACE Aviation is a Public Aircraft Operation.

1.17. Small Unmanned Aircraft Qualification Course (SQC) –USACE Aviation SUAS Crewmember certification training that combines Federal Aviation Administration (FAA) and Army

requirements for the safe, legal, and effective operation of Small Unmanned Aircraft in the National Airspace System.

1.18. Small Unmanned Aircraft System (SUAS) – a Group 2 and below (gross takeoff weight no greater than 55 pounds) remotely piloted aircraft, the associated control unit, antennas, and ancillary equipment.

1.19. SUAS Crewmember – graduate of the USACE Small Unmanned Aircraft Systems Qualifications Course (SQC) and authorized in writing as an RP, RPI, SRP, or VO by the ATPM on the EF 7120 (DRAFT) and EF 7122 (DRAFT). SUAS crewmembers are selected for their professionalism and teambuilding skills.

1.20. Third Party Operator – entity conducting SUAS operations on USACE project sites for commercial purposes (must have District Commander/Lab Director approval in accordance with Title 36 of the Code of Federal Regulations, Section 327, *Rules and Regulations Governing Public Use of Water Resource Development Projects Administered by the Chief of Engineers*).

1.21. Unmanned Aircraft System (UAS) – a Group 3 and above (gross takeoff weight greater than 55 pounds) remotely piloted aircraft, the associated control unit, antennas, and ancillary equipment.

1.22. USACE SUAS Crewmember Certification Card – similar in appearance to the Combined Access Card (CAC), it identifies the bearer as an SQC graduate authorized to operate Small Unmanned Aircraft Systems for USACE. Crewmembers must have this card in their possession during all phases of SUAS flight operations.

NOTE: The USACE SUAS Crewmember Certification Card may not be used in lieu of an FAA-issued Remote Pilot Certificate for Civil Aircraft Operations under the provisions of 14 CFR Part 107.

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Section 2: Medical Requirements

2. Policy. Safety is the key consideration in all USACE aviation operations. Crewmembers are trained and encouraged to remove themselves from flight duty when their ability to safely complete the mission is in doubt. Mission approvers will foster a non-retribution policy and not ask for medical information of any kind. Contract crewmembers must maintain the medical standards defined in the Flight and Ground Procedures. The medical requirements for USACE crewmembers are:

- Review the EF 6150, *USACE Small Unmanned Aircraft Systems Operator - Health Self-Assessment Tool* (Appendix F) prior to each flight. It is the ATPM's responsibility to ensure all crewmembers complete and sign the EF 6150 at the beginning of each ATP Year and annotated on the EF 7122, *SUAS Crewmember Training Record*.
- Be aware that the use of certain medications may cause impairment that is not always obvious. As such, crewmembers must adopt an abundance of caution and should discuss medication side-effects with a medical professional.

2.1. SUAS Crewmember Medical Waivers. Waivers are initiated by Crewmembers and approved on a case-by-case basis by the USACE Command Surgeon. The steps to receive a medical waiver are:

a. Initiate the request: Contact the Civil Engineering Support Office-Medical (CESO-MED)/USACE Command Surgeon, at HQMedical@usace.army.mil, to request initiation of a medical waiver.

NOTE: Crewmembers should not provide medical information until requested to do so by the Command Surgeon.

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b. Submit information: The CESO-MED/USACE Command Surgeon will request a telecon with the individual to address the case or communicate via encrypted e-mail.

c. Receive notification: The CESO-MED/USACE Command Surgeon reviews the case to determine relevant limitations and mitigating factors, then notifies the individual if the waiver is approved. The approved medical waiver must define duration and imposed limitations, with a corresponding entry on the individual's EF 7122.

2.2. Crew Endurance. Crews should be afforded the opportunity for 8 hours of off-duty rest between mission days and understand how flights in the last 1/3 of a duty day are susceptible to increased risk due to fatigue. Under no circumstances should individuals compromise safety for mission accomplishment.

2.2.1. Duty Day. The maximum duty day is 12 hours. It begins when the crew member arrives at work and ends after the final flight is complete.

2.2.2. Duty Day Extension. Crews must receive an extension from the AMAA (or organizational equivalent) to continue flying past their duty day. The extension request should cover new risk factors and existing factors that are increased due to fatigue, environmental conditions, and any other pertinent information. Extensions must be initiated by the crew and may not be extended beyond 14 hours.

Section 3: SUAS Flight Regulations and Operations

3. Policy. USACE Aviation operates SUAS in the National Airspace System in accordance with all aspects of 14 CFR Part 107 applicable to Public Aircraft Operations.

3.1. The Management Information System for Aviation and Remote Systems (MARS). MARS is the USACE Aviation SUAS online database and primary resource for:

a. the Commander/Director to review missions and manage the Aircrew Training Program

b. crewmembers to plan, request approval for, and archive missions.

NOTE: Request MARS access at https://uas.sec.usace.army.mil or HQAviation@usace.army.mil.

NOTE: Crewmembers will complete and submit SUAS mission forms outlined in Section 6 when MARS is not available.

3.2. Personnel Authorized to Fly/Operate USACE SUAS:

a. USACE Soldiers, Civilian employees (civil servants), and Contractors who are current, qualified, and in possession of a USACE SUAS Crewmember Certification Card

b. USACE Soldiers, Civilian employees (civil servants), and Contractors who are under the instruction of an RPI

c. Service Members and Civilian employees of other Government agencies who –

(1) have completed the SQC or equivalent training

(2) have written authorization from the USACE Aviation Program Manager.

3.3. Prohibited Missions. USACE SUASs will be used for authorized purposes only. USACE SUASs will not be used in any manner outside of the definition of public aircraft operations.

3.4. Operating Limits. SUAS flights in the National Airspace System will:

a. not exceed 87 knots or 100 mph ground speed

b. not exceed 400 feet above ground level (AGL), unless within a 400-foot radius of a structure and its uppermost limit

c. be cancelled or terminated if visibility is less than 3 statute miles (SM)

d. be cancelled or terminated if the ceiling is less than 500 feet above mission altitude

e. be cancelled or terminated if maintaining a 2000-foot horizontal separation from clouds is not possible

f. be cancelled or terminated if crewmembers are unable to see and avoid other aircraft

g. not occur beyond visual line of site (BVLOS) of the VO

h. not involve prolonged flight over people in the open without written approval from HQ Aviation

i. not involve simultaneous control of multiple UAs by a single RP

NOTE: Simultaneous control of multiple UAs in Restricted Airspace requires a dedicated VO for each UA.

j. not involve visual monitoring of multiple UAs by a single VO.

3.5. Flight Modes. USACE SUAS flight modes are divided into two categories: Standard and Special.

a. Standard Flight Modes do not require additional authorization or training. The Standard Flight Modes are:

(1) Day – the period between 30 minutes prior to official sunrise (morning civil twilight) and 30 minutes after official sunset (evening civil twilight).

(2) Visual Line of Sight – visual contact with the UA is maintained by the RP or the RP can determine its location with assistance from the VO.

(3) Flight over people – crewmembers maintain a lateral separation and clear zones in accordance with the USACE Aviation Risk Index for Flight Over People.

(4) Operation from a moving vehicle –launch and recovery from a moving ground vehicle or boat in sparsely populated areas.

NOTE: Crewmembers should consider marking a clear zone to prevent non-participating individuals from entering the mission area.

b. Special Flight Modes require additional training or approval for flights that partially or entirely involve:

(1) Night – the period between end of evening civil twilight (30 min past official sunset) and the beginning of morning civil twilight (30 min prior to official sunrise).

NOTE: UAs not equipped with anti-collision lighting that is visible for at least 3 nautical miles will not be flown at night.

(2) Beyond Visual Line of Sight (BVLOS) –if, at any time, the RP and VO cannot maintain visual contact with the UA.

NOTE: BVLOS flights are prohibited unless authorized in writing by the APM.

(3) Deviations from operating limitations in paragraph 3.4

(4) Operation from a moving vehicle near an area that is moderately or heavily populated.

3.6. Flight Violations. Flight violations are defined as an act, regardless of intent, which results in airspace intrusion, an unauthorized mode of flight, and failure to comply with Air Traffic Control (ATC). Flight violations are reported by crewmembers as soon as practicable via the EF 178 (DRAFT) and investigated by the APM or designated representative.

3.7. Minimum Crew. The minimum crew to operate an SUAS is an RP and VO. Waivers and exceptions to this rule are granted by the APM.

3.8. SUAS Mission Packet. Crewmembers cannot rely solely on electronically stored mission documents. At a minimum, hard copies of the following forms and coordination measures must be on-hand, updated, and ready for presentation while performing SUAS operations:

a. USACE SUAS Crewmember Operator's Card (all crewmembers)

b. EF 6150 (both RP and VO)*, USACE Small UAS Operator - Health Self-Assessment Tool*

c. EF 176 (Draft), *SUAS Air Mission Plan*

d. DD 2977, *Deliberate Risk Assessment Worksheet*

e. SUAS Daily Risk Assessment

f. Coordination forms and/or emails for SUAS operations at the location.

3.9. Aircrew Checklists (CLs). Crewmembers will follow checklist procedures, except in rare circumstances when they do not adequately address the situation and crewmembers must act instinctively to maintain aircraft control.

NOTE: Crewmembers must use the Operators Checklist Template in Appendix D or ATPM approved equivalent.

3.10. SUAS Aircrew Reading File. Managed by HQ Aviation, and augmented for local operations by the ATPM, the SUAS Aircrew Reading File is the repository for temporary notices and policy changes. Crewmembers will ensure they are up to date on the reading file before each mission.

NOTE: The SOP Template is located in the MARS Reference Library.

3.11. Lateral Separation from People. Minimum lateral separation from people not directly involved in the mission is determined by a 1:1 ratio of UA altitude to lateral distance from people. In other words, the distance between the UA ground track and people must be at least equal to its height above the ground. This requirement applies to all phases of flight and cannot be waived, adjusted, or altered.

3.12. Battery Handling, Storage, and Maintenance. Crewmembers will comply with EM 385-1-1, *Safety and Health Requirements*, and manufacturers' recommendations for handling, storage, and maintenance of SUAS batteries. Failure to do so increases the risk of inflight emergencies and personal injury. The most common SUAS batteries are lithium polymer and lithium ion. A lithium-ion battery uses a liquid electrolyte while a lithium-polymer battery uses a dry solid, gel-like electrolyte. Physical damage or short circuits, overcharging, and high temperature can cause a thermal runaway. Thermal runaway begins when the heat generated within a battery exceeds the amount of heat that is dissipated creating an exothermic response and chain reaction within adjacent cells. The severity of the reaction is generally a function of battery size, chemistry, construction, and state of charge. ATPMs will ensure that each organization conducts annual battery safety training on, at a minimum, the following topics:

a. Recommended Charging Methods:

(1) always follow manufactures specifications

(2) charge batteries in a fireproof bag or cabinet

(3) continuously monitor charging batteries

(4) charge and discharge batteries before long-term storage or transport in accordance with instructions from the manufacturer

(5) disconnect batteries immediately if they emit an unusual smell, radiate heat, change shape, or behave abnormally

(6) remove cells and pack from chargers promptly after charging is complete

(7) do not use the charger as a storage location.

b. Recommended Storage Methods:

(1) always follow manufactures specifications

(2) store batteries in a climate-controlled area away from combustible materials

(3) remove batteries from the device and charger for storage

(4) store batteries in a fireproof storage cabinet or fireproof battery storage bags

(5) avoid storage in non-laboratory areas such as offices and desks

(6) visually inspect batteries and battery storage areas weekly

NOTE: The requirement to store UA batteries inside dedicated battery cabinets or fireproof bags can be waived by the APM.

(7) charge batteries in storage to its manufacture specification capacity at least once every six months.

c. Recommended Handling Methods:

(1) keep batteries from contacting conductive materials, water, seawater, strong oxidizers, and strong acids

(2) do not place batteries in direct sunlight, on hot surfaces, or in hot locations

(3) inspect batteries for signs of damage before use. Never use and properly dispose of misshapen or damaged batteries

(4) transport batteries in a fireproof battery bag with covered leads.

d. Travel Limitations:

(1) LiPo batteries rated at or below 100-watt hours or less can travel on a commercial airplane

(2) LiPo batteries rated between 101- and 160-watt hours require airline approval before allowed on the plane

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NOTE: Confirm battery restrictions with commercial and military air carriers while arranging travel.

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(3) any LiPo battery that is not installed securely in the aircraft must be carried in your carry-on luggage

(4) LiPo batteries that exceed 160-watt hours are prohibited from air transport

(5) the airline may require proof of your battery's watt-hour rating if it is not clearly marked on the label.

3.13. Weight and Balance. An airframe not within its manufacturer-defined weight and balance limits will not fly as intended and may become uncontrollable. Crewmembers must be aware of the minimum and maximum allowable weight and acceptable attachment locations for mission equipment.

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Section 4: SUAS Training and Standards

4. Background. The USACE SUAS Training and Standards Program is the USACE set of policies and procedures for:

a. crewmember, mission, and risk management standards

b. USACE Aviation formal training courses

c. FOA SUAS program oversight through the Aviation Resource Management Survey (ARMS).

4.1. FOA Aircrew Training Program (ATP). The FOA ATP is the Commander's/Director's set of policies for maintaining crewmember proficiency and mitigating risk. An effective ATP combines the USACE SUAS Training and Standards Program, mission requirements, and current or compliant technology to produce mission-ready crewmembers.

4.2. FOA ATP Roles and Responsibilities.

4.2.1. Commander/Director – is responsible for overseeing and implementing the FOA Aviation Program.

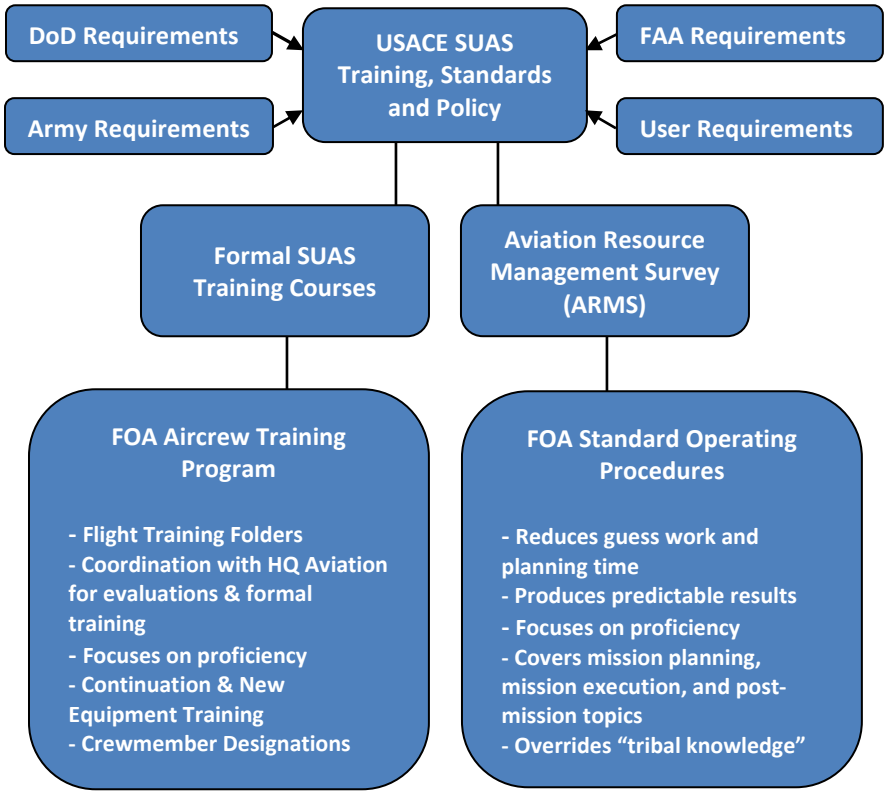


Figure 1 – USACE SUAS Crewmember Training and Standards Program

4.2.2. Aircrew Training Program Manager (ATPM) – is responsible for maintaining a professional, standards-based SUAS program and the Commander's/Director's primary point of contact for all SUAS related activities. ATPMs perform a variety of managerial and risk management functions, which are:

a. manage the SUAS Aircrew Training Program
b. integrate SUAS into the FOA's operations
c. temporarily delegate authority to an Alternate ATPM when the primary ATPM is not available
d. other duties as assigned by the Commander/Director.

NOTE: ATPMs must delegate their authority in writing to an alternate when they are not available to perform ATPM duties.

NOTE: The ATPM Designation Memorandum endures until reissued by a new Commander/Director.

4.2.3. SUAS Crewmembers – are designated by the ATPM and responsible for the safe, legal, and effective use of SUASs for USACE. SUAS crewmember positions are:

a. Remote Pilot (RP). The RP is responsible for safe mission execution and is the final authority for operating, servicing, and securing the UA. Remote Pilot is the base qualification for crewmembers, MBOs, and AMAAs.

b. Remote Pilot Instructor (RPI). RPIs are experienced Small Unmanned Aircraft Remote Pilots designated by the appropriate ATPM to train and evaluate Crewmembers. RPIs are the primary executors of the ATP.

c. Standardization Remote Pilot (SRP). SRPs are SUAS Aircrew Training Program management experts and responsible for training and evaluating RPIs and other Crewmembers.

d. Visual Observer (VO). VOs are fully integrated crewmembers who attend and participate in the crew brief and debrief. VOs maintain visual contact with the UA and communicate its proximity to hazards, other aircraft, direction of travel, and location. RPs are automatically qualified to perform VO duties, but in rare circumstances when a second crewmember is not available, the RP may select an untrained individual by briefing the following topics:

(1) identifying hazards to flight and communication

(2) directional, steering, and flight path cues to avoid hazards

(3) crew coordination

(4) conducting two-way radio communications

(5) emergency procedures

(6) monitor system indications

(7) medical requirements.

NOTE: Frequent utilization of untrained VOs requires an exception to policy approval from the APM.

NOTE: VOs are required for all USACE SUAS flights unless waived in writing by the APM.

4.2.4. SUAS Administrative Positions. The Commander/Director or ATPM may appoint experienced Remote Pilots to perform SUAS administrative duties, which are:

a. Mission Briefing Officer (MBO). MBOs interact with the mission crew to validate the flight plan, risk assessment, and risk mitigation measures for approval by the AMAA.

b. Mission Coordinator (MC). MCs are the overall SUAS mission leader and operational authority. MCs are selected for their level of aviation proficiency, judgment, and communication skills. The RP is automatically the MC unless otherwise directed. MC and RP duties may be performed simultaneously. A single MC must be designated for missions involving more than one crew.

NOTE: The APM may direct HQ Aviation to perform administrative duties for FOAs that have not yet established those positions.

NOTE: RP is the minimum qualification for an individual to perform MC, MBO, RPI, and SRP duties.

4.3. Crewmember Evaluations. RPIs conduct evaluations to determine an individual's proficiency, regain currency, or conduct post-mishap flight analysis. RPIs also advise the ATPM on overall readiness. Evaluations should be considered as a means of increasing proficiency and not a punitive event (Figure 2).

4.3.1. Conducting Evaluations. ATPMs coordinate evaluations through HQ Aviation, which assigns evaluators through the following hierarchy:

a. HQ Aviation

b. another USACE FOA

c. FOA Internal.

NOTE: Crewmembers that fail an evaluation must be re-tested within 30 days and are prohibited from performing aviation duties, except under instruction, until passing a re-evaluation.

4.3.2. Annual Comprehensive Evaluation (ACE). The ACE is designed to measure crewmember knowledge and proficiency. It consists of oral, written, and hands-on components. The written portion is a locally produced open-book exam and an open-book APL 95-1-1 exam. The locally produced open-book exam covers information found in the SUAS Operator's Manual, Aircrew Reading File, local SOP, and other sources as determined by the evaluator. The hands-on and oral evaluations should be conducted concurrently during a real-world mission if possible.

4.3.3. Proficiency Flight Evaluation (PFE). An evaluation to determine proficiency and/or regain currency. The ATPM determines whether a PFE is conducted as a no-notice or pre-planned event.

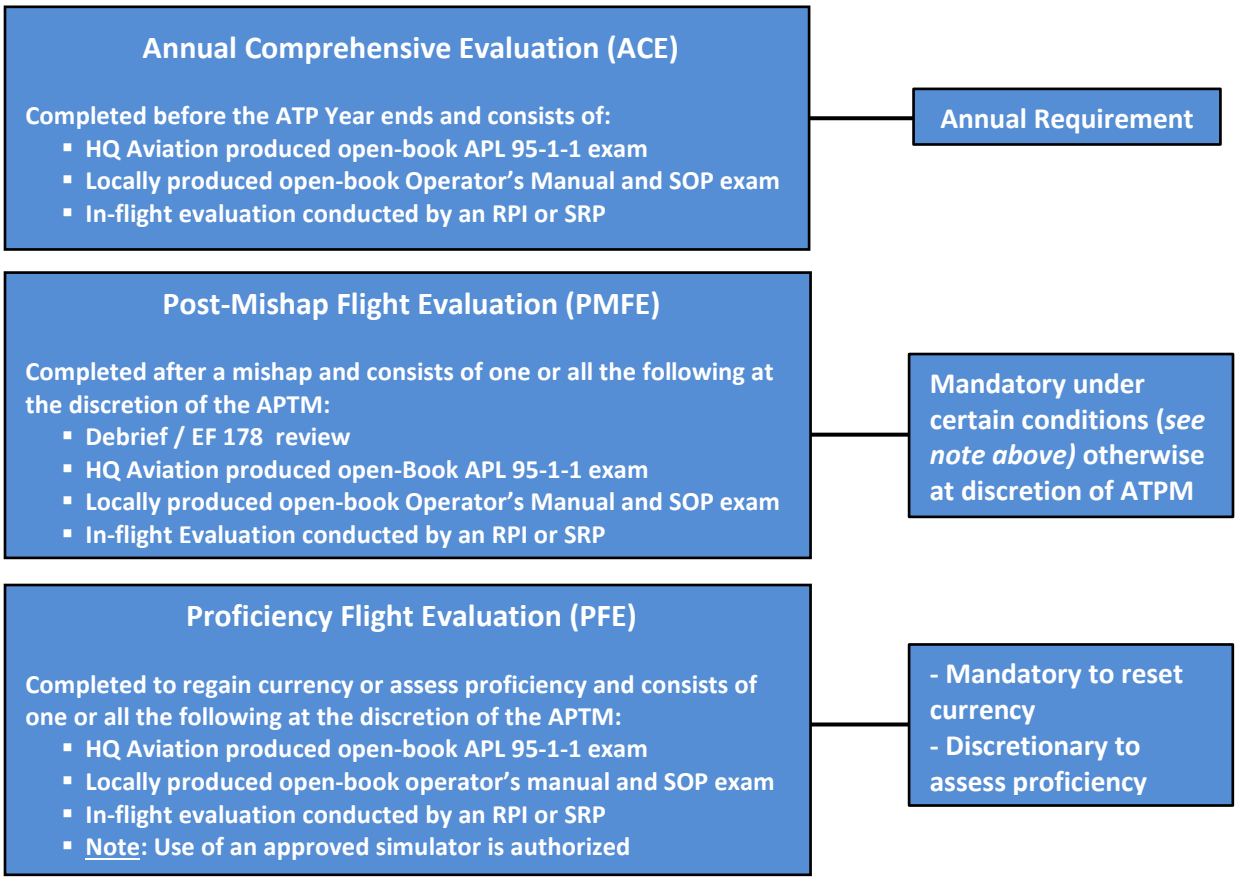


Figure 2 – Crewmember Evaluation

4.3.4. Post-Mishap Flight Evaluation (PMFE). An evaluation administered to crewmembers involved in a mishap. The PMFE is a passive event in which an evaluator observes the crew operating in conditions that are as close as possible to those present during the mishap.

4.3.5. The ATP Year. Crewmember annual requirements are divided into two semi-annual periods. For example, the first semi-annual period for crewmembers born in September begins on 1 October and ends on 31 March. The second semi-annual period begins on 1 April and ends on 30 September (see Table 1).

4.4. Adjustments of the ATP Year. ATPMs may adjust a crewmember's ATP Year to begin on the first day of a different month by submitting justification to HQ Aviation. A copy of the approved request will be included in the Crewmember's FTF.

4.5. Currency. To maintain currency, crewmembers complete at least three 10-minute flights (two as an RP and one as a VO) during each semi-annual period. The maximum period between flights is 90 days (see Table 1).

Table 1 – SUAS Crewmember Currency Requirements

ATP Year	1st Semi-annual Period	2nd Semi-annual Period
September Birth Month, so ATP Year begins on 1 October.	1 Oct – 31 Mar	1 Apr – 30 Sep
Currency ***Note:*** *Flight Evaluations and missions satisfy currency requirements*	Three 10-minute flights (2 as RP and 1 as VO) consisting of a takeoff and landing. Maximum period between RP currency flights is 90 days and 180 for VO.	Three 10-minute flights (2 as RP and 1 as VO) consisting of a takeoff and landing. Maximum period between RP currency flights is 90 days and 180 for VO.
Academic Training	Annual ATPM-directed blocks of instruction *(Webinars, SUAS capabilities, mission planning, post-flight data transfer, new software, etc.)*	
Evaluations	▪ No-notice ▪ Proficiency Flight Evaluation ▪ Post Mishap Flight Evaluation ▪ Annual Comprehensive Evaluation (Mandatory)	

4.5.1. Currency Lapse. Crewmembers who are not current must complete a Proficiency Flight Evaluation Exam (PFE) prior to resuming crewmember duties. The PFE will be conducted in accordance with (IAW) Appendix B, *SUAS Crewmember Evaluations*.

4.6. Minimum Flight Count Prorations. The semi-annual minimum flight count requirement is reduced by:

a. 66% for crewmembers who are active members of the ATP for less than 30 days

b. 33% for crewmembers who are active members of the ATP between 30 and 60 days.

4.7. Waivers and Extensions. The ATPM will determine a course of action and make appropriate entries on the crewmember's EF 7122, *SUAS Crewmember Training Record* (Appendix F) for failure to satisfy an ATP requirement. The ATPM's investigation should consider the individual's performance history and circumstances out of the individual's control. Based on that assessment, ATPMs may:

a. grant a 30-day extension request a 60-day extension from the APM

b. request an ATP waiver from the APM

c. request further investigation by HQ Aviation.

4.8. Suspensions. Suspensions from flight duty are voluntary or involuntary. Voluntary suspensions are initiated by the crewmember and approved by the APM. Involuntary suspensions are initiated by the ATPM, then investigated and approved by the APM. Involuntary suspension for a medical reason is initiated through the Command Surgeon and may not reveal protected health information at any time. Nonmedical involuntary suspensions result from:

a. poor airmanship and decision making

b. failure to meet ATP requirements

c. inability to effectively perform crew duties.

NOTE: Crewmembers in mishaps involving injuries, mid-air collision with manned aircraft, airspace violations, or property damage more than $5,000 are automatically grounded pending the results of an investigation and PMFE.

NOTE: Nonmedical suspensions are specific to aviation duties and not applicable to other personnel actions.

Section 5: SUAS Flight Training Folder

5. Policy. FTFs are permanent records of a crewmember's training and operational history. FTF forms are official documents derived from the Army Aviation Flight Records System and designed to minimize management workload. FTF forms are:

- EF 6150 (DRAFT)
- EF 7120 (DRAFT)
- EF 7122 (DRAFT)
- EF 4507 (DRAFT)
- Miscellaneous Certificates

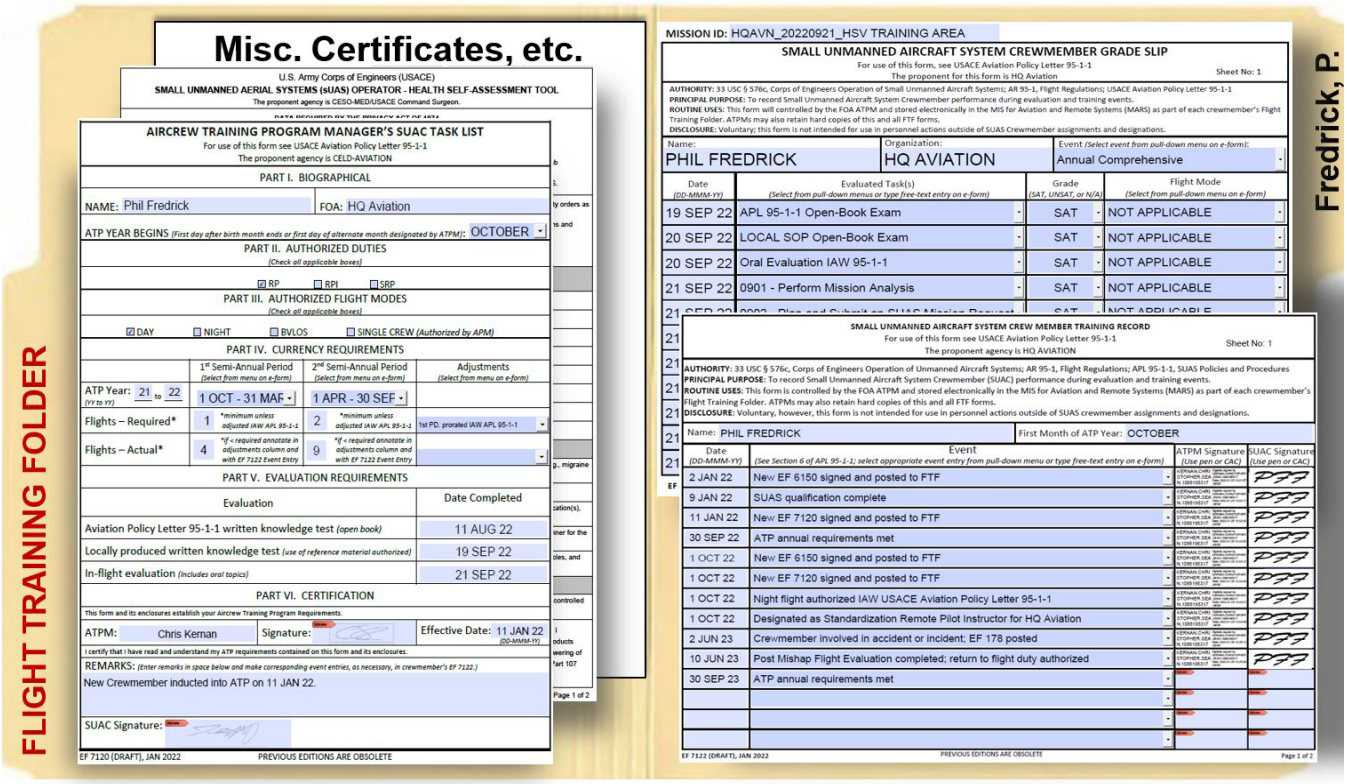


Figure 3 — Example of Complete FTF

NOTE: Current versions of all USACE Aviation forms are found in the MARS Reference Library or requested via HQAviation@usace.army.mil.

5.1. FTF Storage and Maintenance. The ATPM maintains up to date FTFs in each crewmember's MARS profile and saves a second copy elsewhere to guard against data loss.

5.2. FTF Management. FTFs are prepared and maintained with the following forms and records:

5.2.1. EF 7120, Aircrew Training Manager's SUAC Task List (Appendix F). The ATPM uses this form to designate flight duties, flight modes, currency requirements, and evaluations. Crewmembers sign the EF 7120 prior to flying in the new ATP Year, certifying they understand their requirements.

5.2.2. Instructions for Completing the EF 7120 (DRAFT) (see Figure 4–Figure 5 and Appendix F).

Part I, *Biographical*:

1) NAME: Enter Crewmember's name (Last, First, M.I.)

2) FOA: Crewmember's Field Operating Activity

3) MONTH ATP YEAR BEGINS: Select the first month of the ATP year from the pull-down menu on the electronic form, or write it in the space provided, in accordance with Section 4, *SUAS Training and Standards*.

Part II, *Authorized Duties*:

4) Check box for each authorized duty position:
   - VO: Visual Observer
   - RP: Remote Pilot
   - RPI: Remote Pilot Instructor
   - SRP: Standardization Remote Pilot.

Part III, *Authorized Flight Modes*:

5) Check box for each authorized mode of flight:
   - DAY: No flights during periods of civil twilight (30 minutes before official sunrise and 30 minutes after official sunset)
   - NIGHT: Period between official sunset to sunrise
   - BVLOS: Beyond Visual Line of Sight.

Part IV, *Currency Requirements*:

6) ATP Year: Enter the last two digits of the beginning year and ending year in the spaces provided using the following format: YY to YY.

7) 1st Semi-Annual Period: This period begins on the first day of the ATP Year. Select the appropriate dates from the pull-down menu on the e-form or write them in the space provided in the following format: DD-MMM.

8) Flights (required): Enter number of flights [minimum of 3] for each period of the ATP Year.

9) Flights-Required Adjustments: ATPMs may prorate or increase from the base-standard of three flights per Semi-Annual Period in accordance with Section 4, *SUAS Training and Standards*. Select the appropriate justification from the pull-down menu on the e-form or write one in the space provided.

10) Flights-Actual Adjustments: If the Crewmember did not complete three flights in a semi-annual period, the ATPM selects the appropriate entry from the pull-down menu in the events column on the Crewmember's EF 7122, *SUAS Crewmember Training Record.*

11) Flights (actual): Enter the number of flights during that period.

Part V, *Evaluation Requirements*:

12) Remarks/Date Complete: Enter date (dd-mmm-yy) that each evaluation was completed.

Part VI, *Certification*: The ATPM generates and signs a new EF 7120 at the beginning of each ATP Year and the Crewmember signs the new EF 7120 at the beginning of each ATP Year or resuming flight duties.

NOTE: This image is the first of a two-part graphic designed to illustrate training history over a 2-yr period.

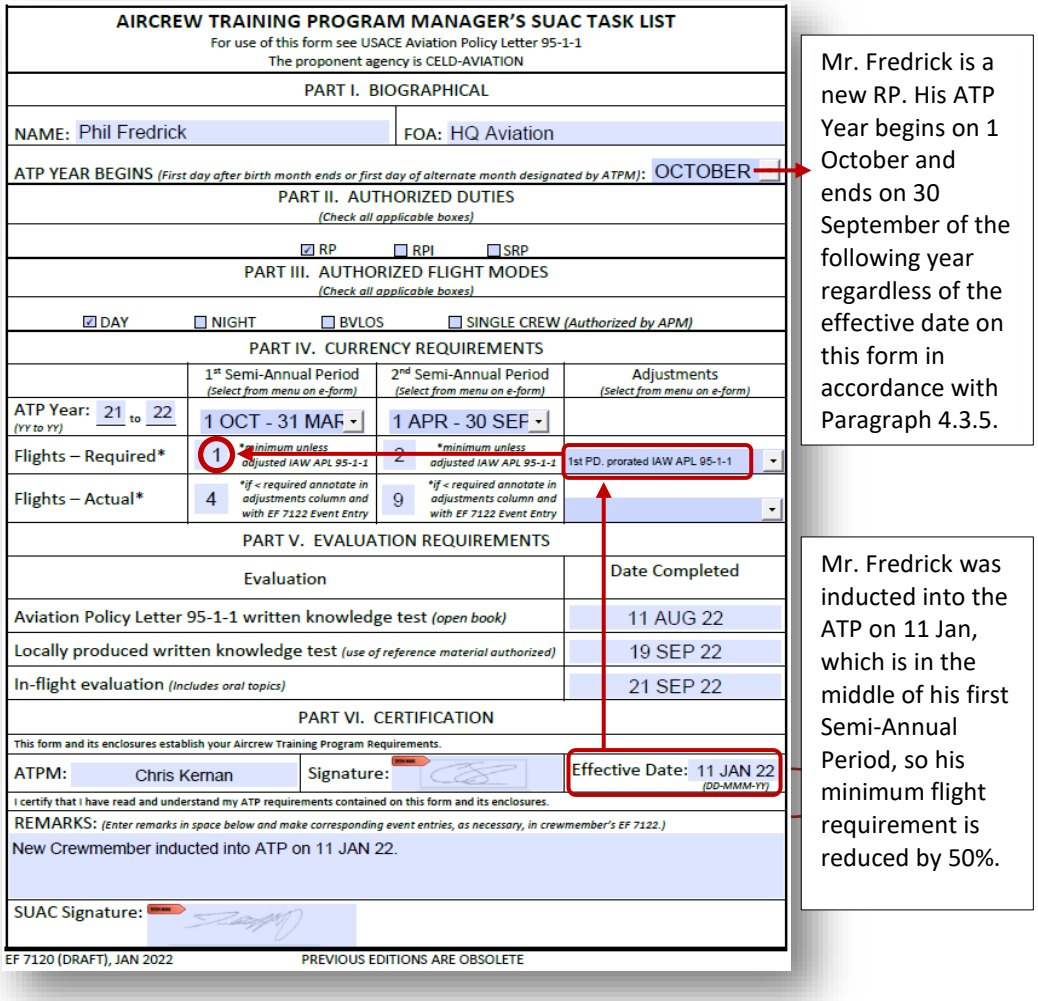


Figure 4 – Sample of Completed EF 7120 (DRAFT)

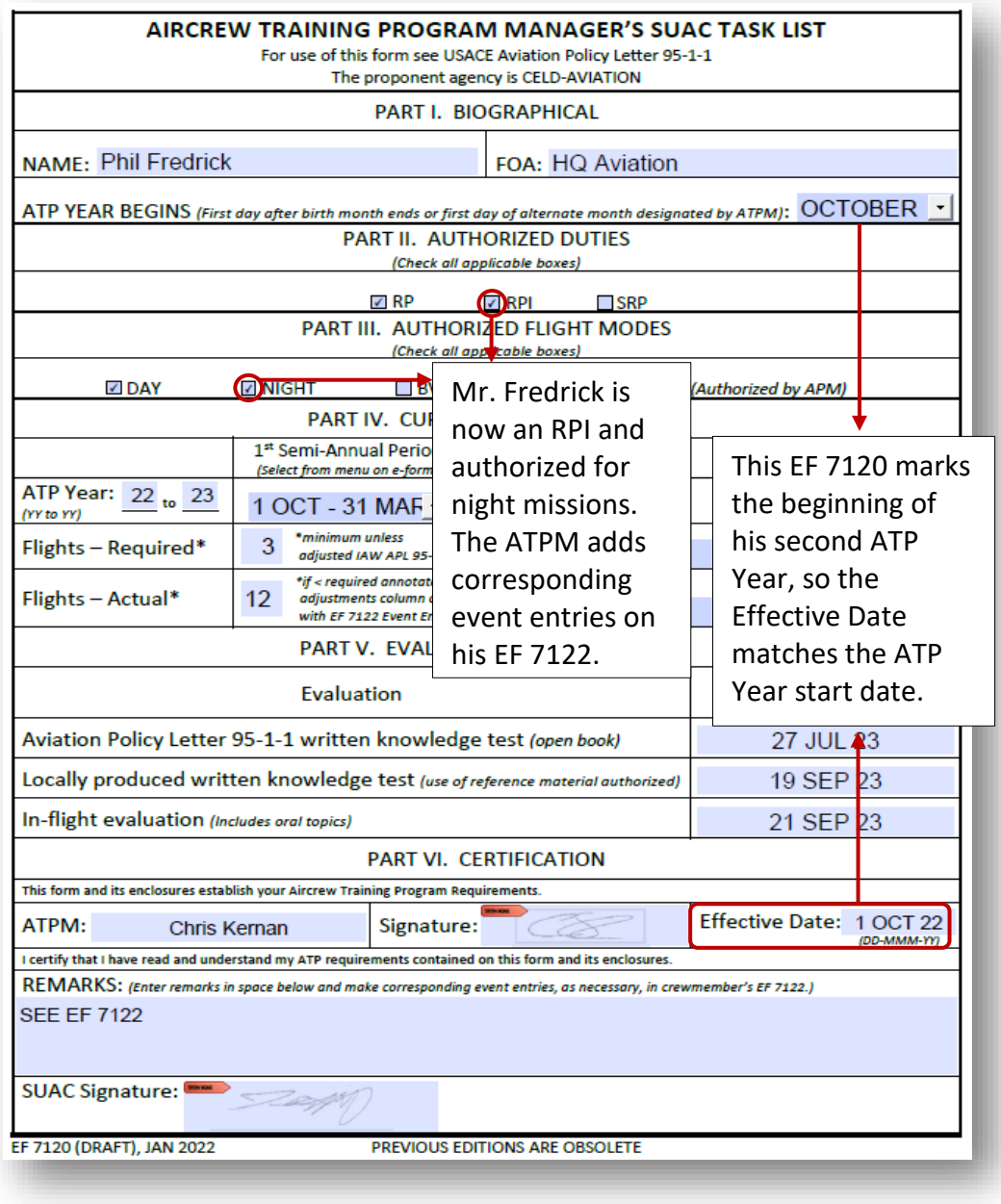


Figure 5 – Sample of Completed EF 7120 (DRAFT)(continued)

5.3. EF 7122 (DRAFT), SUAS Crewmember Training Record. The EF 7122 is a permanent record of significant events throughout a crewmember's operational history. Event entries are selectable from the event line pull-down menu and divided into four categories. Those categories and their associated events are (Figure 6):

a. Mandatory entries at the beginning of each ATP Year:

(1) New EF 7120, *Aircrew Training Program Manger's SUAC Task List*, signed and posted to FTF

(2) New EF 6150, Small *Unmanned Aerial Systems (SUAS) Operator – Health Self-Assessment Tool*, signed and posted to FTF.

b. Additional entry for new Crewmembers:

(1) SUAS Qualification complete.

c. Mandatory entry at the end of each ATP Year (choose one; explain action taken if ATP requirements not met):

(1) ATP annual requirements met

(2) ATP annual requirements not met (requires additional free-text entry explaining circumstances and path forward).

Additional entries, as required:

i. Night flight authorized IAW USACE APL 95-1-1

ii. BVLOS-Day flight authorized IAW USACE APL 95-1-1

iii. BVLOS-Night flight authorized IAW USACE APL 95-1-1

iv. FOA-specific mission training complete (may add further details, as necessary)

v. 30-day extension for – ENTER ATP REQUIREMENT – approved by ATPM

vi. 60-day extension for – ENTER ATP REQUIREMENT – approved by APM

vii. Proficiency Flight Exam completed to regain currency

viii. Crewmember involved in accident or incident; EF 178, *SUAS Flight Mishap and Incident Report*, posted

ix. Post-Mishap Flight Exam completed; return to flight duty authorized

x. Designated as Remote Pilot Instructor for -ENTER FOA-

xi. Designated as Standardization Remote Pilot Instructor for -ENTER FOA-

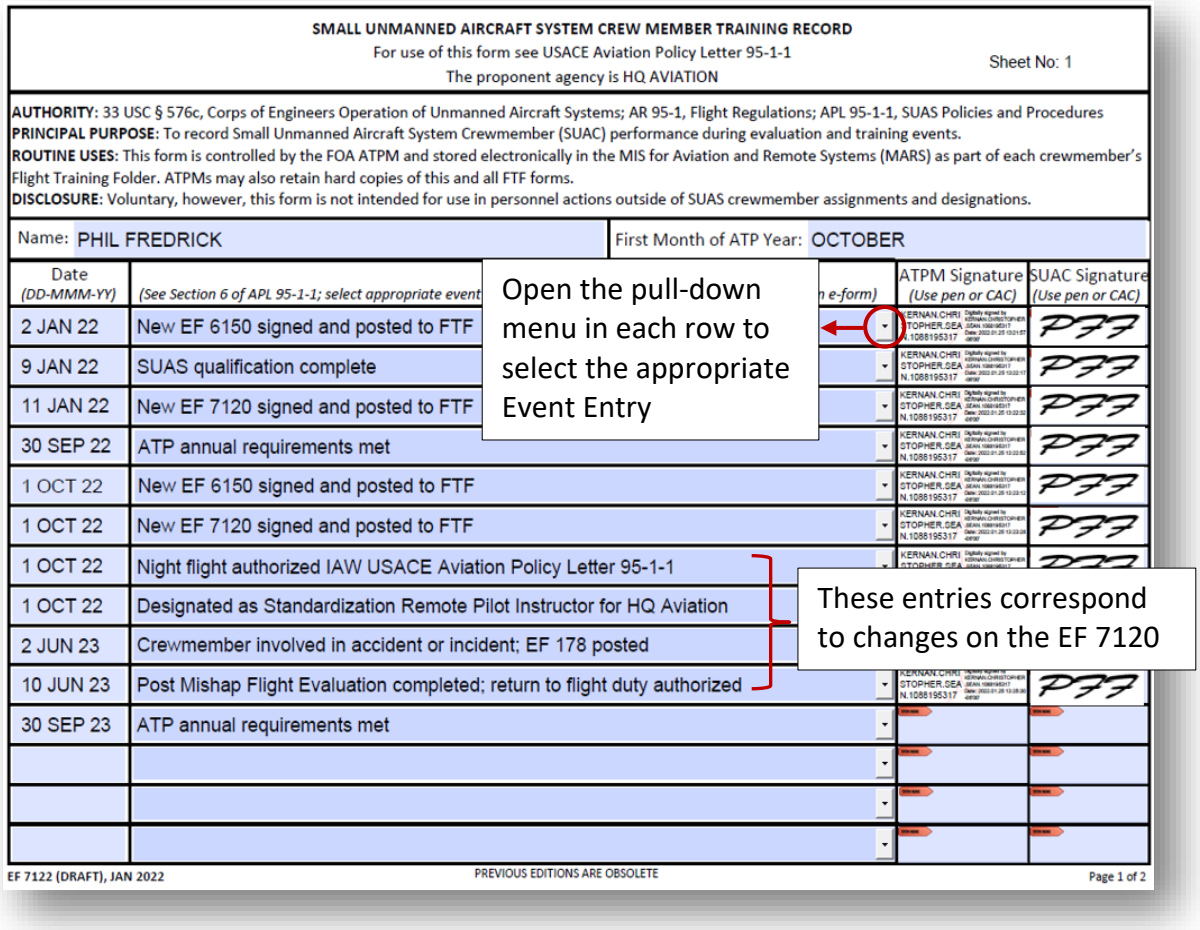
xii. Designated as Mission Briefing Officer for -ENTER FOA-

xiii. Designated as Mission Approver for -ENTER FOA-

xiv. Transferred from -ENTER FOA-

xv. Removed from ATP IAW APL 95-1-1

xvi. (ENTER FREE-TEXT HERE)



SMALL UNMANNED AIRCRAFT SYSTEM CREW MEMBER TRAINING RECORD

For use of this form see USACE Aviation Policy Letter 95-1-1
The proponent agency is HQ AVIATION

Sheet No: 1

AUTHORITY: 33 USC § 576c, Corps of Engineers Operation of Unmanned Aircraft Systems; AR 95-1, Flight Regulations; APL 95-1-1, SUAS Policies and Procedures
PRINCIPAL PURPOSE: To record Small Unmanned Aircraft System Crewmember (SUAC) performance during evaluation and training events.
ROUTINE USES: This form is controlled by the FOA ATPM and stored electronically in the MIS for Aviation and Remote Systems (MARS) as part of each crewmember's Flight Training Folder. ATPMs may also retain hard copies of this and all FTF forms.
DISCLOSURE: Voluntary, however, this form is not intended for use in personnel actions outside of SUAS crewmember assignments and designations.

Name: PHIL FREDRICK | First Month of ATP Year: OCTOBER

Date (DD-MMM-YY)	(See Section 6 of APL 95-1-1; select appropriate event	n e-form)	ATPM Signature (Use pen or CAC)	SUAC Signature (Use pen or CAC)
2 JAN 22	New EF 6150 signed and posted to FTF		KERNAN.CHRISTOPHER.SEAN.1088195317	PFF
9 JAN 22	SUAS qualification complete		KERNAN.CHRISTOPHER.SEAN.1088195317	PFF
11 JAN 22	New EF 7120 signed and posted to FTF		KERNAN.CHRISTOPHER.SEAN.1088195317	PFF
30 SEP 22	ATP annual requirements met		KERNAN.CHRISTOPHER.SEAN.1088195317	PFF
1 OCT 22	New EF 6150 signed and posted to FTF		KERNAN.CHRISTOPHER.SEAN.1088195317	PFF
1 OCT 22	New EF 7120 signed and posted to FTF		KERNAN.CHRISTOPHER.SEAN.1088195317	PFF
1 OCT 22	Night flight authorized IAW USACE Aviation Policy Letter 95-1-1		KERNAN.CHRI	
1 OCT 22	Designated as Standardization Remote Pilot Instructor for HQ Aviation			
2 JUN 23	Crewmember involved in accident or incident; EF 178 posted			
10 JUN 23	Post Mishap Flight Evaluation completed; return to flight duty authorized		KERNAN.CHRISTOPHER.SEAN.1088195317	PFF
30 SEP 23	ATP annual requirements met			

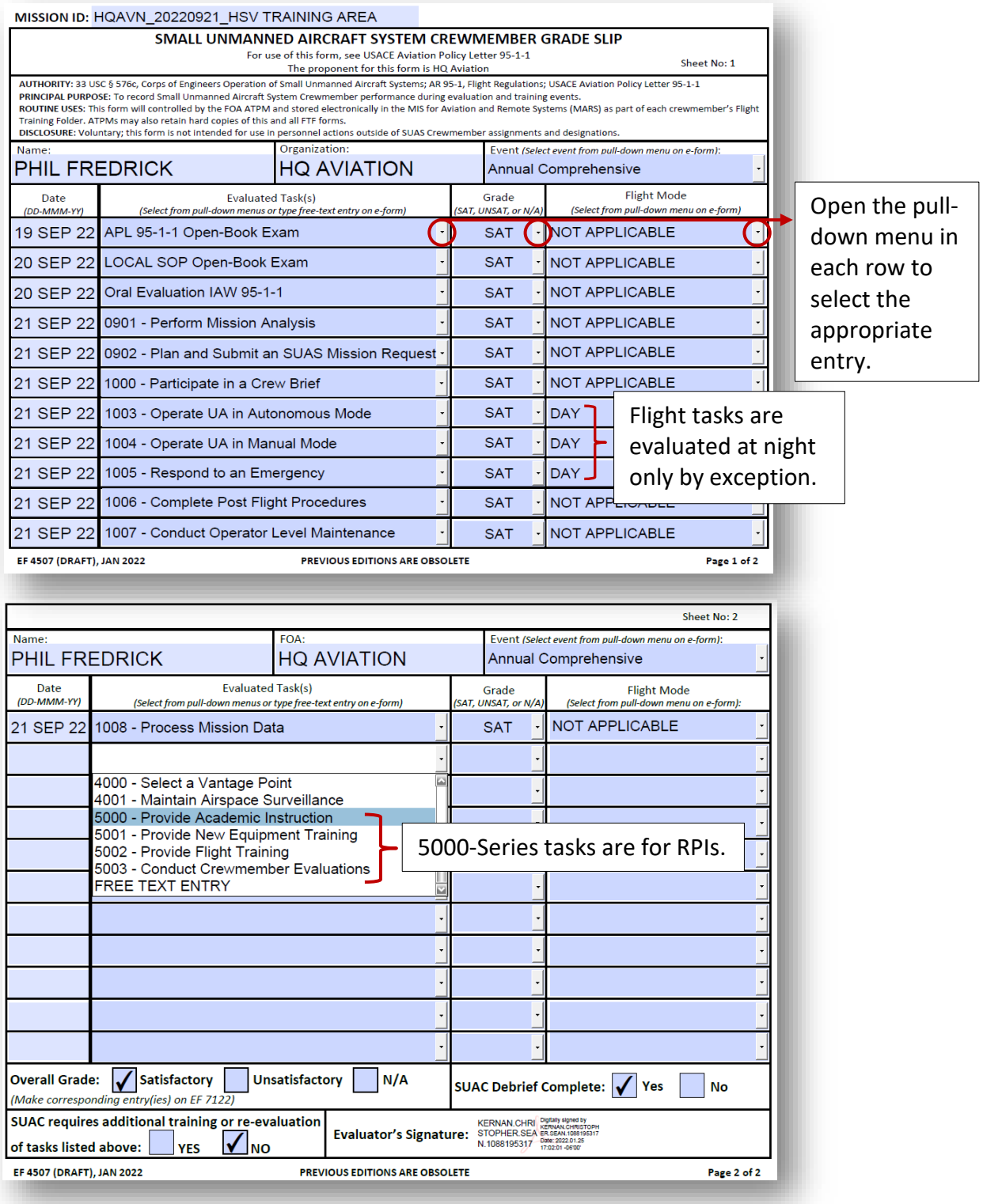
Open the pull-down menu in each row to select the appropriate Event Entry

These entries correspond to changes on the EF 7120

EF 7122 (DRAFT), JAN 2022 PREVIOUS EDITIONS ARE OBSOLETE Page 1 of 2

Figure 6 – Sample of Completed EF 7122 (DRAFT)

5.4. EF 4507 (DRAFT), *Small Unmanned Aircraft System Crewmember Grade Slip*. The EF 4507 (DRAFT) is used to record performance during training events and evaluations. See Figure 7 for detailed explanation of the EF 4507 (DRAFT).



MISSION ID: HQAVN_20220921_HSV TRAINING AREA

SMALL UNMANNED AIRCRAFT SYSTEM CREWMEMBER GRADE SLIP

For use of this form, see USACE Aviation Policy Letter 95-1-1
The proponent for this form is HQ Aviation

Sheet No: 1

AUTHORITY: 33 USC § 576c, Corps of Engineers Operation of Small Unmanned Aircraft Systems; AR 95-1, Flight Regulations; USACE Aviation Policy Letter 95-1-1
PRINCIPAL PURPOSE: To record Small Unmanned Aircraft System Crewmember performance during evaluation and training events.
ROUTINE USES: This form will controlled by the FOA ATPM and stored electronically in the MIS for Aviation and Remote Systems (MARS) as part of each crewmember's Flight Training Folder. ATPMs may also retain hard copies of this and all FTF forms.
DISCLOSURE: Voluntary; this form is not intended for use in personnel actions outside of SUAS Crewmember assignments and designations.

Name:	Organization:	Event *(Select event from pull-down menu on e-form)*:
PHIL FREDRICK	HQ AVIATION	Annual Comprehensive

Date *(DD-MMM-YY)*	Evaluated Task(s) *(Select from pull-down menus or type free-text entry on e-form)*	Grade *(SAT, UNSAT, or N/A)*	Flight Mode *(Select from pull-down menu on e-form)*
19 SEP 22	APL 95-1-1 Open-Book Exam	SAT	NOT APPLICABLE
20 SEP 22	LOCAL SOP Open-Book Exam	SAT	NOT APPLICABLE
20 SEP 22	Oral Evaluation IAW 95-1-1	SAT	NOT APPLICABLE
21 SEP 22	0901 - Perform Mission Analysis	SAT	NOT APPLICABLE
21 SEP 22	0902 - Plan and Submit an SUAS Mission Request	SAT	NOT APPLICABLE
21 SEP 22	1000 - Participate in a Crew Brief	SAT	NOT APPLICABLE
21 SEP 22	1003 - Operate UA in Autonomous Mode	SAT	DAY
21 SEP 22	1004 - Operate UA in Manual Mode	SAT	DAY
21 SEP 22	1005 - Respond to an Emergency	SAT	DAY
21 SEP 22	1006 - Complete Post Flight Procedures	SAT	NOT APPLICABLE
21 SEP 22	1007 - Conduct Operator Level Maintenance	SAT	NOT APPLICABLE

EF 4507 (DRAFT), JAN 2022 PREVIOUS EDITIONS ARE OBSOLETE Page 1 of 2

Open the pull-down menu in each row to select the appropriate entry.

Flight tasks are evaluated at night only by exception.

Sheet No: 2

Name:	FOA:	Event *(Select event from pull-down menu on e-form)*:
PHIL FREDRICK	HQ AVIATION	Annual Comprehensive

Date *(DD-MMM-YY)*	Evaluated Task(s) *(Select from pull-down menus or type free-text entry on e-form)*	Grade *(SAT, UNSAT, or N/A)*	Flight Mode *(Select from pull-down menu on e-form)*:
21 SEP 22	1008 - Process Mission Data	SAT	NOT APPLICABLE
	4000 - Select a Vantage Point		
	4001 - Maintain Airspace Surveillance		
	5000 - Provide Academic Instruction		
	5001 - Provide New Equipment Training		
	5002 - Provide Flight Training		
	5003 - Conduct Crewmember Evaluations		
	FREE TEXT ENTRY		

5000-Series tasks are for RPIs.

Overall Grade: ☑ Satisfactory ☐ Unsatisfactory ☐ N/A
(Make corresponding entry(ies) on EF 7122)

SUAC Debrief Complete: ☑ Yes ☐ No

SUAC requires additional training or re-evaluation of tasks listed above: ☐ YES ☑ NO

Evaluator's Signature: KERNAN.CHRISTOPHER.SEAN.1088195317 Digitally signed by KERNAN.CHRISTOPHER.SEAN.1088195317 Date: 2022.01.25 17:02:01 -06'00'

EF 4507 (DRAFT), JAN 2022 PREVIOUS EDITIONS ARE OBSOLETE Page 2 of 2

Figure 7 – Sample of Completed EF 4507 (Draft)

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Section 6: SUAS Mission Planning, Approval, and Reporting

6. Policy. SUAS mission planning is an iterative process that is primarily completed in MARS. The process shown below guides crewmembers as they analyze the mission and consider alternatives.

6.1. SUAS Mission Planning Procedures. The Standard planning method described in Figure 9, *Airspace Planning Considerations*, is most suitable for the majority of SUAS missions. The abbreviated planning method described in Figure 10 is most suitable for emergency support functions (ESF) and repeated missions over a specified time frame.

6.2. SUAS Mission Roles and Responsibilities.

a. The ATPM is responsible for:

(1) determining if the data already exists

(2) considering alternatives

(3) ensuring available Crewmembers are current

(4) determining if available Crewmembers are proficient in the tasks to be performed

(5) determining if equipment on hand is suitable.

NOTE: ATPMs must complete the SUAS Qualification Course (SQC) prior to an organization obtaining AMAA.

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b. The Mission Planner is responsible for:

(1) determining the airspace classification and associated requirements (Figure 8)

(2) defining the mission environment in accordance with Section 10, *Mission Environment Assessment*

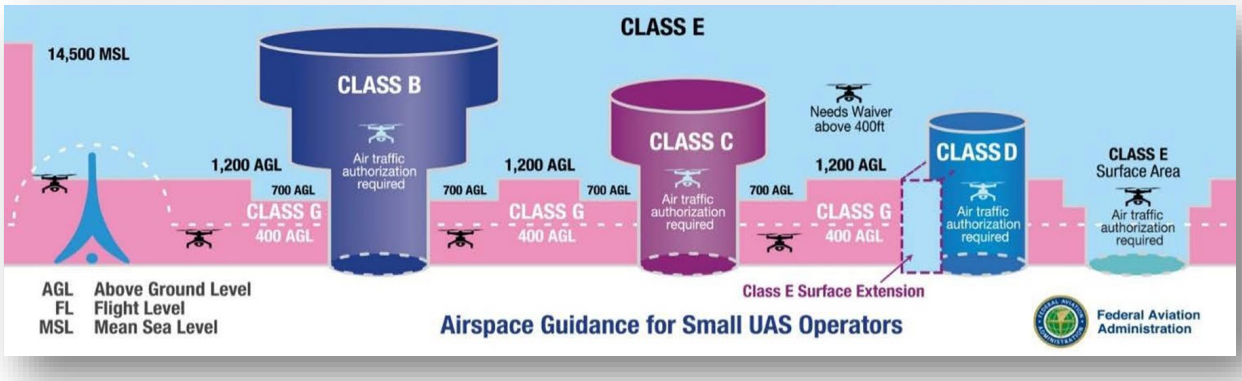


Figure 8 – FAA Airspace Guidance for Small UAS Operators

(3) selecting the appropriate equipment

(4) completing the mission planning packet in accordance with EF 176, *SUAS Air Mission Plan*, and instructions in MARS (Appendix G).

NOTE: Missions must be planned, briefed, and approved by three separate individuals.

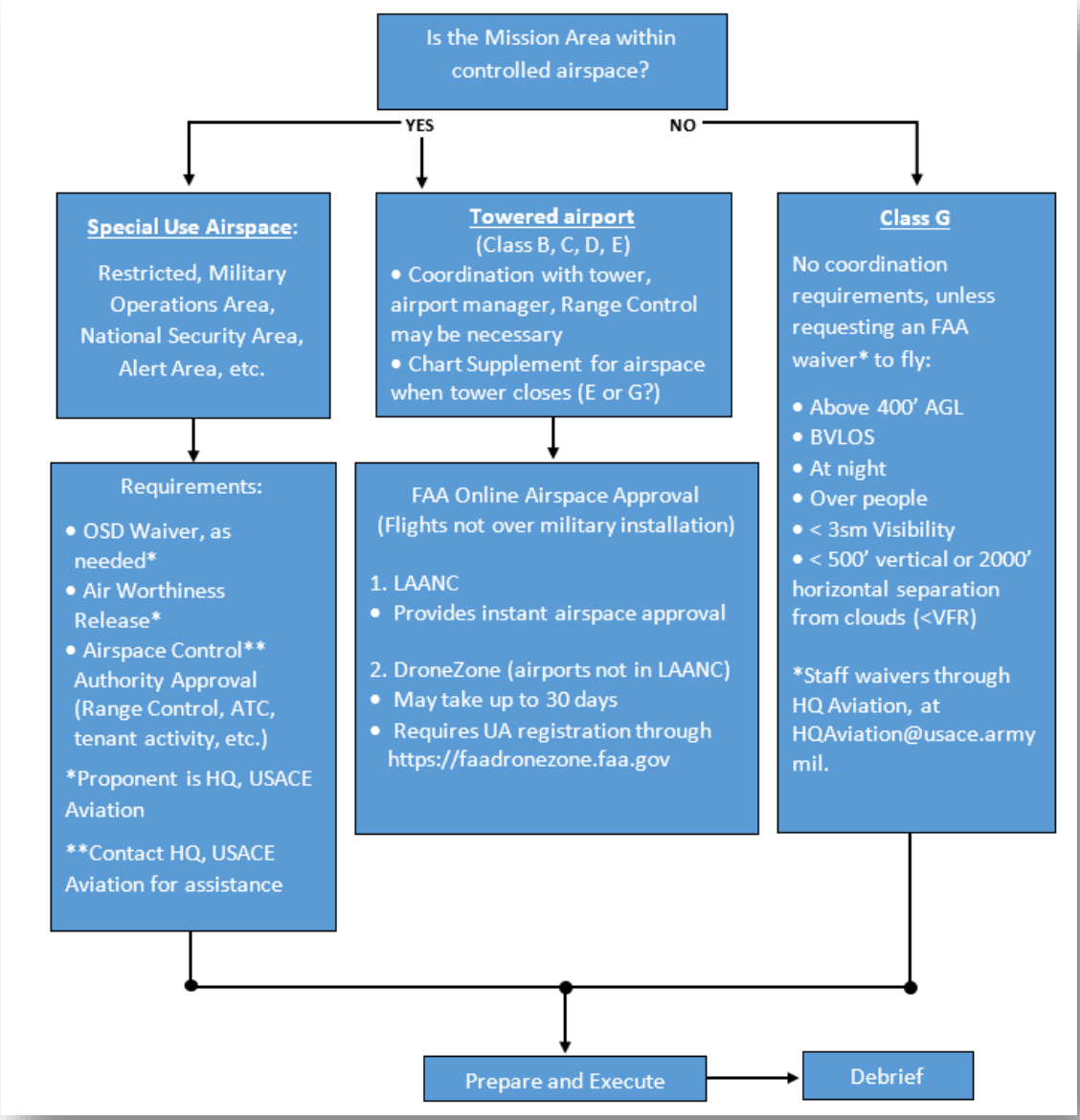


Figure 9 – Airspace Planning Considerations

Standard Mission Planning Workflow **Abbreviated Mission Planning Workflow**

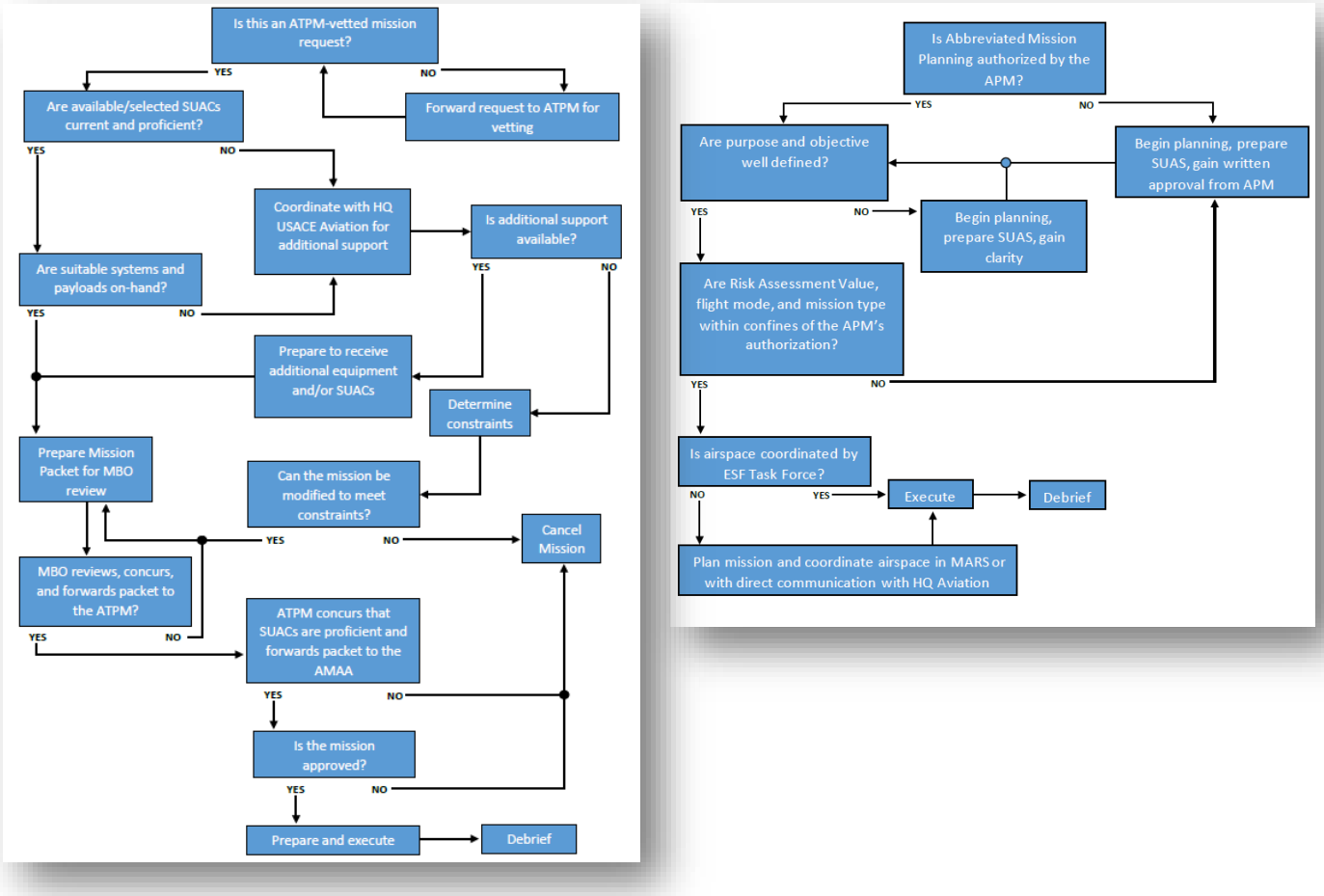


Figure 10 – Standard and Abbreviated Mission Planning Workflows

6.3. SUAS Mission Forms. USACE Aviation utilizes standardized forms for SUAS air mission planning, debrief, and mishap reporting. Crewmembers will use the paper or electronic version to plan, record, and store mission forms if MARS is not available.

NOTE: Current versions of all USACE Aviation forms are found in the MARS Reference Library or can requested via HQAviation@usace.army.mil.

6.3.1. EF 176 (DRAFT), *SUAS Air Mission Plan*. Crewmembers use the EF 176, which is also the basis for the MARS mission planning tool, to plan SUAS flights that meet SUAS and FAA requirements.

NOTE: MARS automatically completes the EF 176 as a function of the Mission Planning Tool.

6.3.1.1. Instructions for Completing the EF 176 (DRAFT), *SUAS Air Mission Plan.*

a. MISSION ID. Enter the Mission ID in the following format: FOA_Mission Start Date-End Date_Location Name (e.g., HQAVN_04062022-04082022_HAZEL GREEN).

b. Block 1. Enter information as indicated.

c. Block 2 – 3. Select all boxes that apply and enter information as indicated.

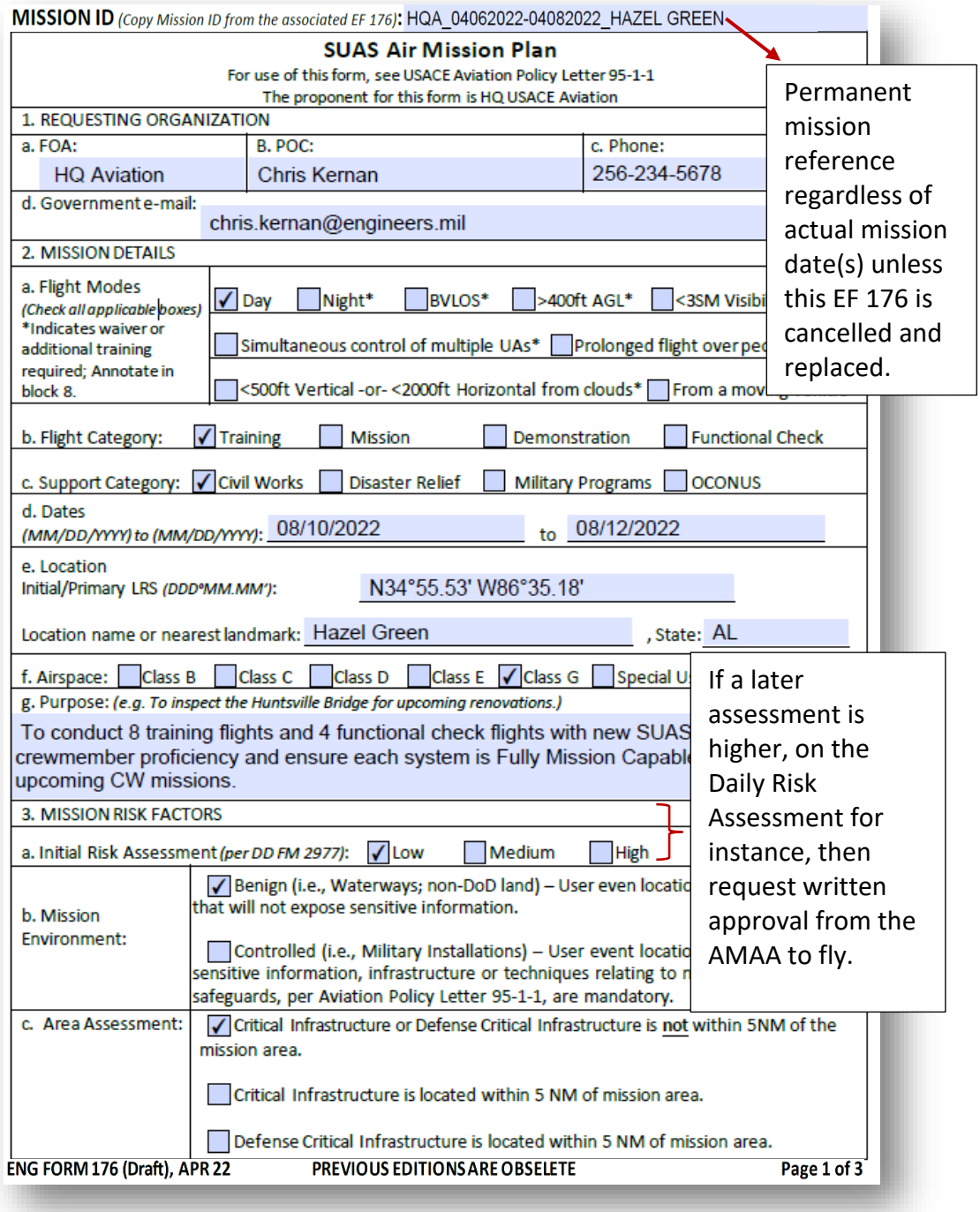


Figure 11 – Sample of a Completed EF 176 (Draft)

d. Block 4. Select the “edit PDF” icon, then “add image” icon to attach map images and flight plan view (Figure 12).

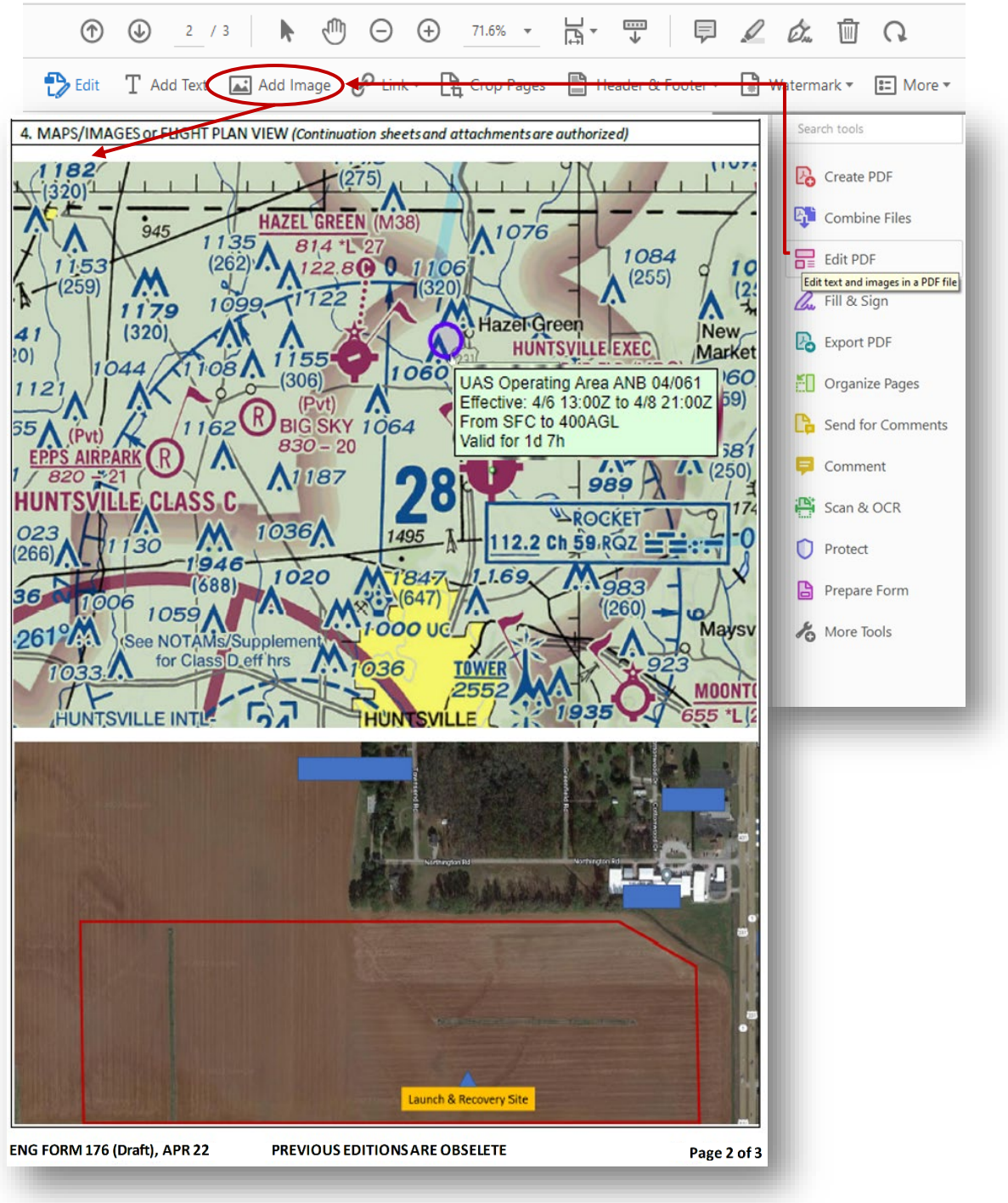


Figure 12 – Sample of a Completed EF 176 (Draft) (Continued)

e. Block 5. Enter crewmember names and select the appropriate crew position from the pull-down menu in block 5a. Crewmembers may alternate between VO and RP duties between flights, but may not do so while inflight (Figure 13).

f. Blocks 6 – 8. Enter the name and serial number (S/N) for each mission UA, Payload(s), and Battery.

g. Block 9. The mission is not approved until each member of the approval chain either signs the appropriate section of Block 9 or provides their concurrence/approval in writing.

5. CREWMEMBERS	a. CREW POSITION
1. CHRIS KERNAN	(Select from menu on e-form) RPI-Remote Pilot Instructor
2. FRANK VOLPE	(Select from menu on e-form) RP/VO-Alternating between flights
3. SCOTT ROGERSON	(Select from menu on e-form) RP/VO-Alternating between flights
4. DAVID IBSEN	(Select from menu on e-form) RP/VO-Alternating between flights
5.	(Select from menu on e-form)
6.	(Select from menu on e-form)

Alternating crew positions between flights is authorized but alternating while inflight is prohibited.

6. MISSION UA(s) *(Enter last five unique characters of S/N; simultaneous control of multiple UAs requires approval):*

1. REDFOX S/N 12345	4. FalconLight S/N 27012	7. S/N
2. Blackhawk S/N 20210	5. S/N	8. S/N
3. DeltaWing S/N 23874	6. S/N	9. S/N

7. MISSION PAYLOAD(s) *(Enter last five unique characters of S/N)*

1. EyeScan S/N 26610	4. EyeScan S/N 56214	7. S/N
2. Raven S/N 56789	5. S/N	8. S/N
3. Batvision S/N 72113	6. S/N	9. S/N

8. BATTERY/BATTERIES *(Enter last five unique characters of S/N)*

1. LiPo S/N 89456	4. LiPo S/N 55541	7. LiPo S/N 23864
2. LiPo S/N 701C	5. LiPo S/N 83234	8. LiPo S/N 23875
3. LiPo S/N 701D	6. LiPo S/N 52879	9. LiPo S/N 64217

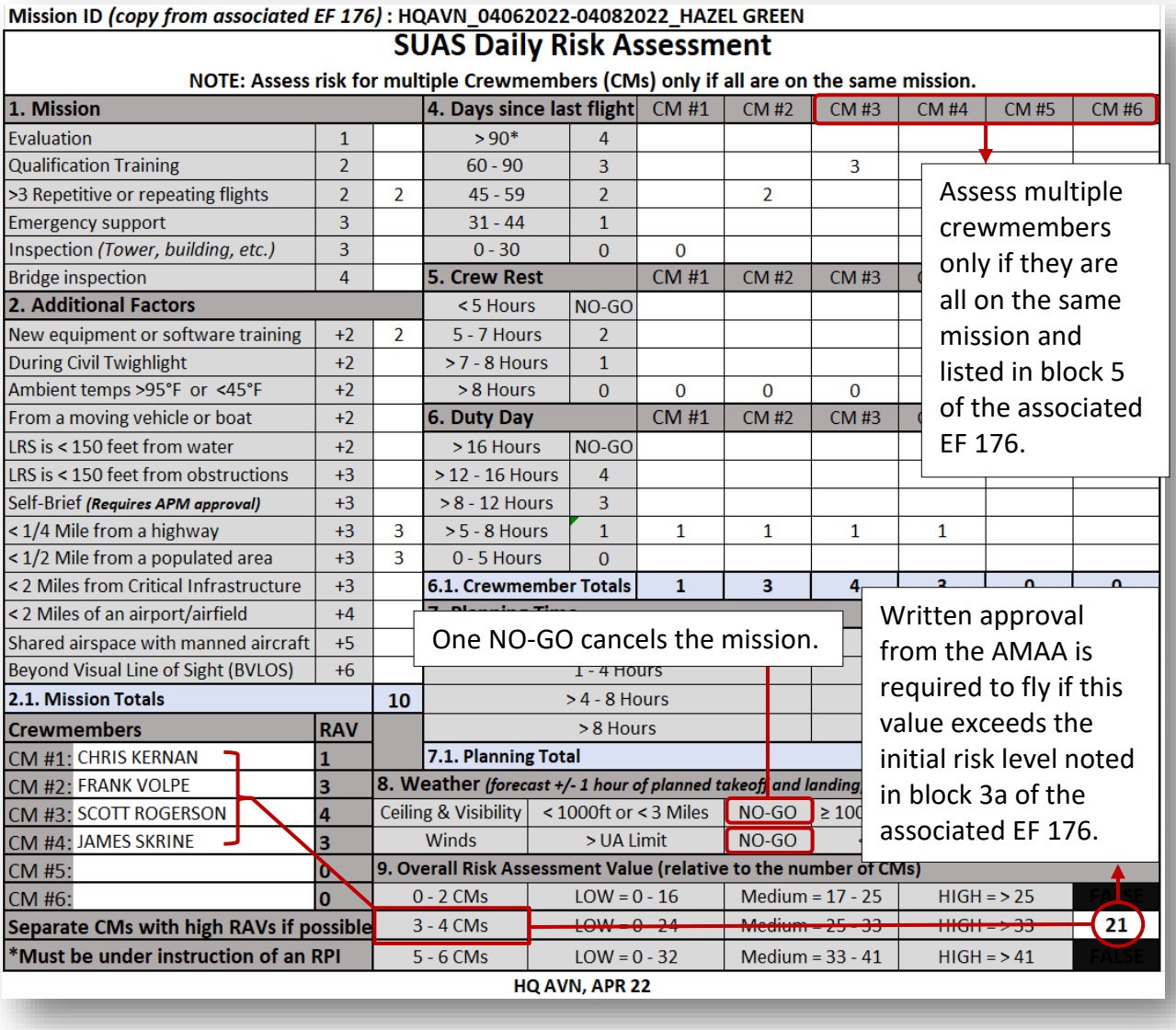
9. CERTIFICATION

a. Preparer	b. MBO
Chris Kernan (Date) 04012022	Pam Irwin (Date) 04012022
c. ATPM	d. AMAA
Preston Martin (Date) 04012022	Stan Levitan (Date) 04032022

ENG FORM 176 (Draft), APR 22 PREVIOUS EDITIONS ARE OBSELETE Page 3 of 3

Figure 13 – Sample of a Completed EF 176 (Draft) (Continued)

6.3.2. Daily Risk Assessment Worksheet (RAW). Crewmembers complete the RAW as close as possible to takeoff to assess the most current mission risk factors. If the Risk Assessment Value on the RAW is higher than the projected level on the EF 176, then the mission is cancelled until crewmembers receive written approval from the AMAA to fly. Text messages are an authorized means of written mission approval (Figure 14).



Mission ID *(copy from associated EF 176)* : HQAVN_04062022-04082022_HAZEL GREEN

SUAS Daily Risk Assessment

NOTE: Assess risk for multiple Crewmembers (CMs) only if all are on the same mission.

1. Mission			4. Days since last flight		CM #1	CM #2	CM #3	CM #4	CM #5	CM #6
Evaluation	1		> 90*	4						
Qualification Training	2		60 - 90	3			3			
>3 Repetitive or repeating flights	2	2	45 - 59	2		2				
Emergency support	3		31 - 44	1						
Inspection *(Tower, building, etc.)*	3		0 - 30	0	0					
Bridge inspection	4		**5. Crew Rest**		CM #1	CM #2	CM #3			
2. Additional Factors			< 5 Hours	NO-GO						
New equipment or software training	+2	2	5 - 7 Hours	2						
During Civil Twighlight	+2		> 7 - 8 Hours	1						
Ambient temps >95°F or <45°F	+2		> 8 Hours	0	0	0	0			
From a moving vehicle or boat	+2		**6. Duty Day**		CM #1	CM #2	CM #3			
LRS is < 150 feet from water	+2		> 16 Hours	NO-GO						
LRS is < 150 feet from obstructions	+3		> 12 - 16 Hours	4						
Self-Brief ***(Requires APM approval)***	+3		> 8 - 12 Hours	3						
< 1/4 Mile from a highway	+3	3	> 5 - 8 Hours	1	1	1	1	1		
< 1/2 Mile from a populated area	+3	3	0 - 5 Hours	0						
< 2 Miles from Critical Infrastructure	+3		**6.1. Crewmember Totals**		**1**	**3**	**4**	**3**	**0**	**0**
< 2 Miles of an airport/airfield	+4									
Shared airspace with manned aircraft	+5									
Beyond Visual Line of Sight (BVLOS)	+6		1 - 4 Hours							
2.1. Mission Totals		**10**	> 4 - 8 Hours							
Crewmembers	**RAV**		> 8 Hours							
CM #1: CHRIS KERNAN	**1**		**7.1. Planning Total**							
CM #2: FRANK VOLPE	**3**		**8. Weather** ***(forecast +/- 1 hour of planned takeoff and landing)***							
CM #3: SCOTT ROGERSON	**4**		Ceiling & Visibility	< 1000ft or < 3 Miles		NO-GO	≥ 100			
CM #4: JAMES SKRINE	**3**		Winds	> UA Limit		NO-GO				
CM #5:	**0**		**9. Overall Risk Assessment Value (relative to the number of CMs)**							
CM #6:	**0**		0 - 2 CMs	LOW = 0 - 16		Medium = 17 - 25		HIGH = > 25		FALSE
Separate CMs with high RAVs if possible			3 - 4 CMs	LOW = 0 - 24		Medium = 25 - 33		HIGH = > 33		**21**
***Must be under instruction of an RPI**			5 - 6 CMs	LOW = 0 - 32		Medium = 33 - 41		HIGH = > 41		FALSE

HQ AVN, APR 22

Assess multiple crewmembers only if they are all on the same mission and listed in block 5 of the associated EF 176.

One NO-GO cancels the mission.

Written approval from the AMAA is required to fly if this value exceeds the initial risk level noted in block 3a of the associated EF 176.

Figure 14 – Sample of a Completed Daily Risk Assessment (RAW)

6.3.3. Emergency Activation. Crewmembers activated to participate in an Emergency Support Mission are authorized to self-brief and approve with the APM's written authorization, which includes:

a. official name or designation of the emergency response event

b. acceptable mission risk (not to exceed Medium)

c. period of authorization (not to exceed 30 days)

d. SUAS operating limitations imposed by the Airspace Control Authority or USACE ESF Team Lead

e. other applicable operating limitations

f. reporting requirements

g. requirement to submit the first two pages of the EF 176 and complete Daily Risk Assessment at the beginning of each mission day.

6.3.4. EF 177 (DRAFT), *Daily Flight and SUAS Status Log* (Figure 15 – Sample of Completed EF 177 (DRAFT) (Page 1 of 3). Instructions for Completing the *Daily Flight and SUAS Status Log*, EF 177 (DRAFT) (Figure 15 – Sample of Completed EF 177 (DRAFT) (Page 2 of 3).

a. MISSION ID. Enter the Mission ID as it appears on the associated EF 176 regardless of actual mission date(s).

b. Block 1a – 1c. Check the appropriate box to indicate if the mission was completed according to the EF 176 and if the data is available for future use. If not, provide details in Block 2.

c. Block 1d. Check the appropriate box to indicate if all SUAS components are Fully Mission Capable (FMC). If not, provide details in Block 3.

d. Block 1e. Check the appropriate box to indicate if a mishap or incident occurred. Mishaps include damage to the UA, battery, payload or SUAS components that is not the result of fair-wear-and tear resulting from normal flight operations. Incidents include airspace violations, inadvertent collection of data not specific to the mission, and violations of cyber rules.

NOTE: Complete and submit an EF 178, *SUAS Mishap and Incident Report*, within 7 days of an incident or mishap (See Figures 17-19).

e. Block 1f – 1g. Enter the total number of flights and cumulative minutes of flight time.

f. Block 2 – 3. Enter the name, serial number, and minutes of flight time for each mission UA, Payload, Battery.

MISSION ID *(Copy Mission ID from the associated EF 176)*: HQA_04062022-04082022_HAZEL GREEN

Mission Debrief and SUAS Status Log

For use of this form, see USACE Aviation Policy Letter 95-1-1
The proponent for this form is HQ USACE Aviation

1. MISSION INFORMATION

a. Was the plan executed in accordance with the EF 176? *(If not, then provide details of mission plan deviations in Block 2.)*	b. Was the mission accomplished? *(If no, then provide details in Block 2.)*	c. Is the data collection accessible for future projects? *(If no, then provide details in Block 2.)*	
☐ Yes ☑ No	☐ Yes ☑ No	☑ Yes ☐ No	
d. Are all SUAS components Fully Mission Capable (FMC)? *(If not, then provide details in Block 4.)*	e. Did a mishap or incident occur? *(If yes, then submit an EF 178 within 7 days.)*	f. Total number of flights	g. Cumulative flight time *(in minutes)*
☐ Yes ☑ No	☑ Yes ☐ No	7	78

2. DEBRIEF NOTES *(Continuation sheets and attachments authorized)*

The mission to increase crewmember proficiency and ensure each system was Fully Mission Capable (FMC) was not accomplished.

1) All crewmembers are now proficient with the Red Fox, Black-hawk, and Falcon Light, which are FMC.

2) Crewmembers are not proficient with the DeltaWing because it crashed shortly after takeoff and is Not Mission Capable (NMC). See Block 4 for further details.

3. FLIGHT LOG *(Enter component name, last five unique characters of the S/N, and flight information for UA(s), Payload(s) and Battery(ies) in columns below)*:

a. UA Total Minutes of Flight:					b. Payload Total Minutes of Flight:					c. Battery Total Minutes of Flight:				
1.	REDFOX	S/N	12345	Total 23	1.	EyeScan	S/N	26610	Total 23	1.	LiPo	S/N	89456	Total 12
2.	Blackhawk	S/N	20210	Total 26	2.	Raven	S/N	56789	Total 26	2.	LiPo	S/N	701C	Total 11
3.	DeltaWing	S/N	23874	Total 25	3.	Batvision	S/N	72113	Total 25	3.	LiPo	S/N	701D	Total 13
4.	FalconLight	S/N	27012	Total 4	4.	EyeScan	S/N	56214	Total 4	4.	LiPo	S/N	55541	Total 13
5.		S/N		Total	5.		S/N		Total	5.	LiPo	S/N	83234	Total 13
6.		S/N		Total	6.		S/N		Total	6.	LiPo	S/N	52879	Total 12
7.		S/N		Total	7.		S/N		Total	7.	LiPo	S/N	23864	Total 4
8.		S/N		Total	8.		S/N		Total	8.		S/N		Total
9.		S/N		Total	9.		S/N		Total	9.		S/N		Total

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Figure 15 – Sample of Completed EF 177 (DRAFT) (Page 1 of 3)

g. Block 4. Leave blank if the SUAS is fully mission capable or sustained fair-wear-and-tear damage.

h. Block 4a – 4h. Indicate the damaged, lost, or malfunctioning component by checking the appropriate box. Use the pull-down menu to select the appropriate availability code, which is either:

(1) FMC (Fully Mission Capable). Equipment operates as intended and without restrictions, reduced capability, or missing components.

(2) PMC (Partial Mission Capable). Equipment is operable, but unable to perform all functions because of damage, faults, or missing components. (NOTE: For example, a UA equipped with inoperable external lighting is PMC. The accompanying entry in Faults/Damage sub-section of Block 5 should read: “UA external lighting INOP, UA restricted to daytime flights only.”)

(3) NMC (Not Mission Capable). Equipment is inoperable due to damage, missing components, or system faults.

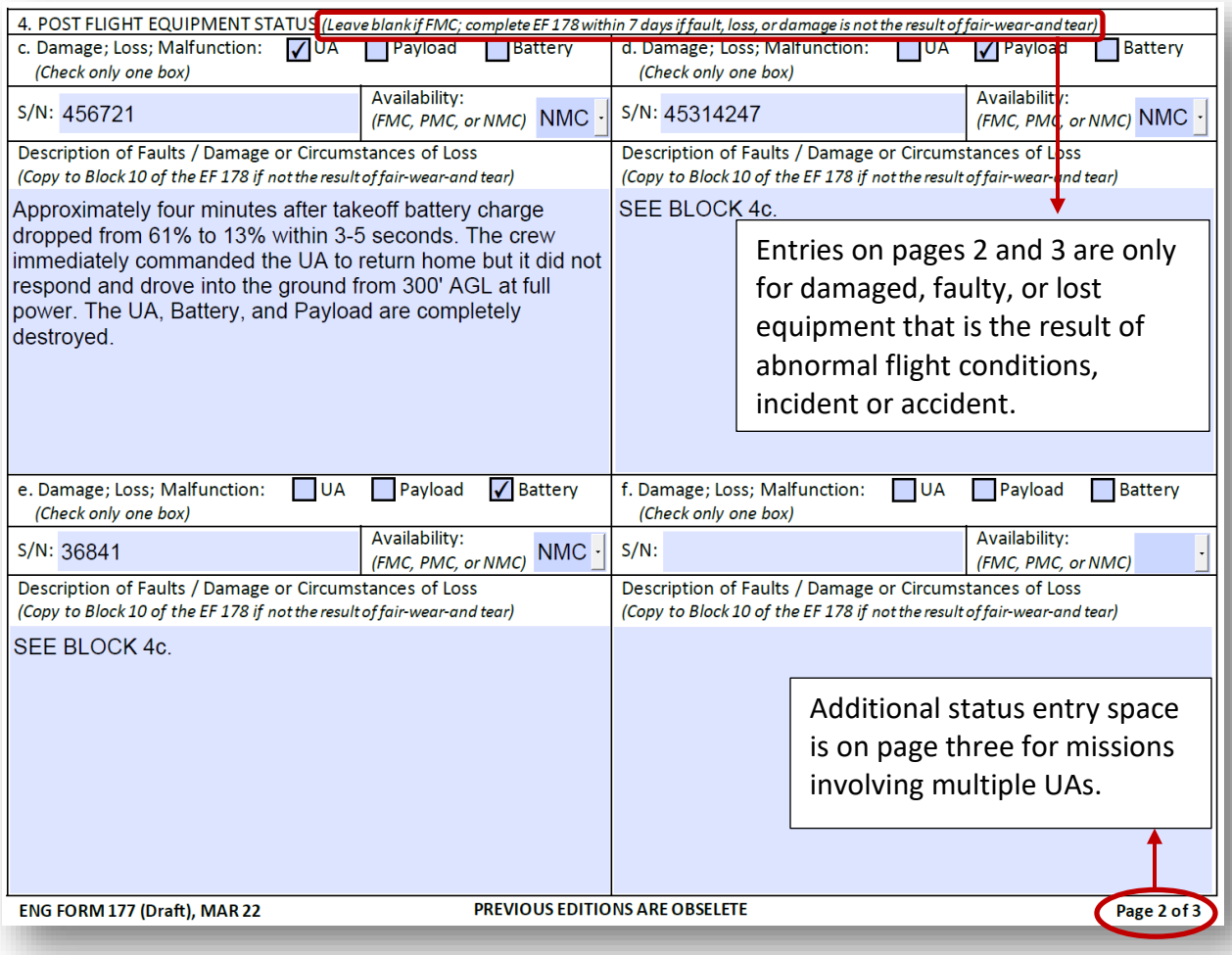


Figure 16 – Sample of Completed EF 177 (DRAFT) (Page 2 of 3)

NOTE: Post-flight equipment status entries are the primary means of updating inventory and availability rates. Timely entries are essential for accurate records.

6.3.5. EF 178 (DRAFT), *SUAS Flight Mishap & Incident Report* (Figure 17–Figure 19). The EF 178 is a stand-alone form that crewmembers submit within seven days of a mishap or incident. A mishap is an event which results in destruction or loss of the UA, property damage, or personal injury. An incident is an event which results in airspace violations, unauthorized use of land, prolonged flight over people not involved in the mission, and inadvertent collection of data not associated with the mission.

NOTE: Damage to the UA, payload, battery, and mission equipment because of routine SUAS operations are considered fair-wear-and-tear and reported as necessary for situational awareness of SUAS availability.

6.3.6. Instructions for Completing the Mishap and Incident Report EF 178 (DRAFT) (Figure 17–Figure 19).

a. MISSION ID. Enter the Mission ID as it appears on the associated EF 176 regardless of actual mission date(s).

b. Block 1. Enter administrative information as indicated.

c. Block 2a. Enter brief description of incident or mishap.

d. Block 2b. Copy the information from the EF 176, block 2g.

e. Block 2c – 2i. Check all boxes that apply.

f. Block 2j – 2k. Enter the date and time the incident or mishap occurred.

g. Block 3a – 3b. Enter the incident or mishap location or nearest landmark name and LAT/LON.

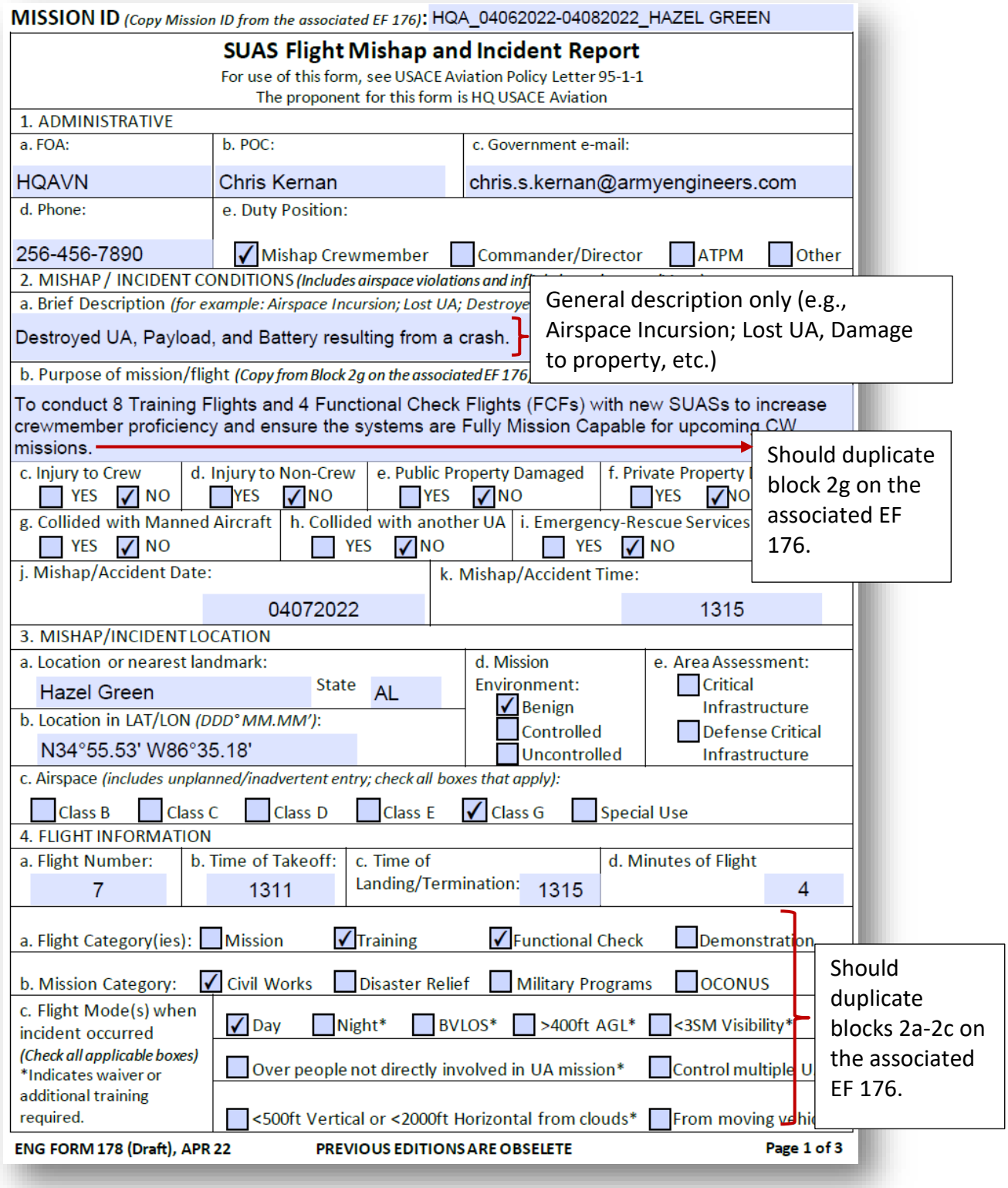
h. Block 3c. Check the block corresponding to the airspace in which the mishap or accident occurred.

i. Block 3d. Check the block corresponding to the mission environment in which the mishap or accident occurred.

NOTE: Refer to Section 10 for further details concerning Mission Environment and Area Assessment.

j. Block 3e. Check the corresponding box if the mishap or incident occurred within 5 nautical miles of Critical Infrastructure or Defense Critical Infrastructure.

k. Block 4. Enter the mishap or incident flight information as indicated.



MISSION ID *(Copy Mission ID from the associated EF 176)*: HQA_04062022-04082022_HAZEL GREEN

SUAS Flight Mishap and Incident Report

For use of this form, see USACE Aviation Policy Letter 95-1-1
The proponent for this form is HQ USACE Aviation

1. ADMINISTRATIVE

a. FOA:	b. POC:	c. Government e-mail:
HQAVN	Chris Kernan	chris.s.kernan@armyengineers.com

d. Phone: 256-456-7890

e. Duty Position: ☑ Mishap Crewmember ☐ Commander/Director ☐ ATPM ☐ Other

2. MISHAP / INCIDENT CONDITIONS *(Includes airspace violations and inf*

a. Brief Description *(for example: Airspace Incursion; Lost UA; Destroye*

Destroyed UA, Payload, and Battery resulting from a crash.

General description only (e.g., Airspace Incursion; Lost UA, Damage to property, etc.)

b. Purpose of mission/flight *(Copy from Block 2g on the associated EF 176*

To conduct 8 Training Flights and 4 Functional Check Flights (FCFs) with new SUASs to increase crewmember proficiency and ensure the systems are Fully Mission Capable for upcoming CW missions.

Should duplicate block 2g on the associated EF 176.

c. Injury to Crew	d. Injury to Non-Crew	e. Public Property Damaged	f. Private Property
☐ YES ☑ NO	☐ YES ☑ NO	☐ YES ☑ NO	☐ YES ☑ NO

g. Collided with Manned Aircraft	h. Collided with another UA	i. Emergency-Rescue Services
☐ YES ☑ NO	☐ YES ☑ NO	☐ YES ☑ NO

j. Mishap/Accident Date:	k. Mishap/Accident Time:
04072022	1315

3. MISHAP/INCIDENT LOCATION

a. Location or nearest landmark: Hazel Green State AL

b. Location in LAT/LON *(DDD° MM.MM')*: N34°55.53' W86°35.18'

d. Mission Environment: ☑ Benign ☐ Controlled ☐ Uncontrolled

e. Area Assessment: ☐ Critical Infrastructure ☐ Defense Critical Infrastructure

c. Airspace *(includes unplanned/inadvertent entry; check all boxes that apply)*:

☐ Class B ☐ Class C ☐ Class D ☐ Class E ☑ Class G ☐ Special Use

4. FLIGHT INFORMATION

a. Flight Number:	b. Time of Takeoff:	c. Time of Landing/Termination:	d. Minutes of Flight
7	1311	1315	4

a. Flight Category(ies): ☐ Mission ☑ Training ☑ Functional Check ☐ Demonstration

b. Mission Category: ☑ Civil Works ☐ Disaster Relief ☐ Military Programs ☐ OCONUS

c. Flight Mode(s) when incident occurred *(Check all applicable boxes)* *Indicates waiver or additional training required.

☑ Day ☐ Night* ☐ BVLOS* ☐ >400ft AGL* ☐ <3SM Visibility*

☐ Over people not directly involved in UA mission* ☐ Control multiple U

☐ <500ft Vertical or <2000ft Horizontal from clouds* ☐ From moving vehi

Should duplicate blocks 2a-2c on the associated EF 176.

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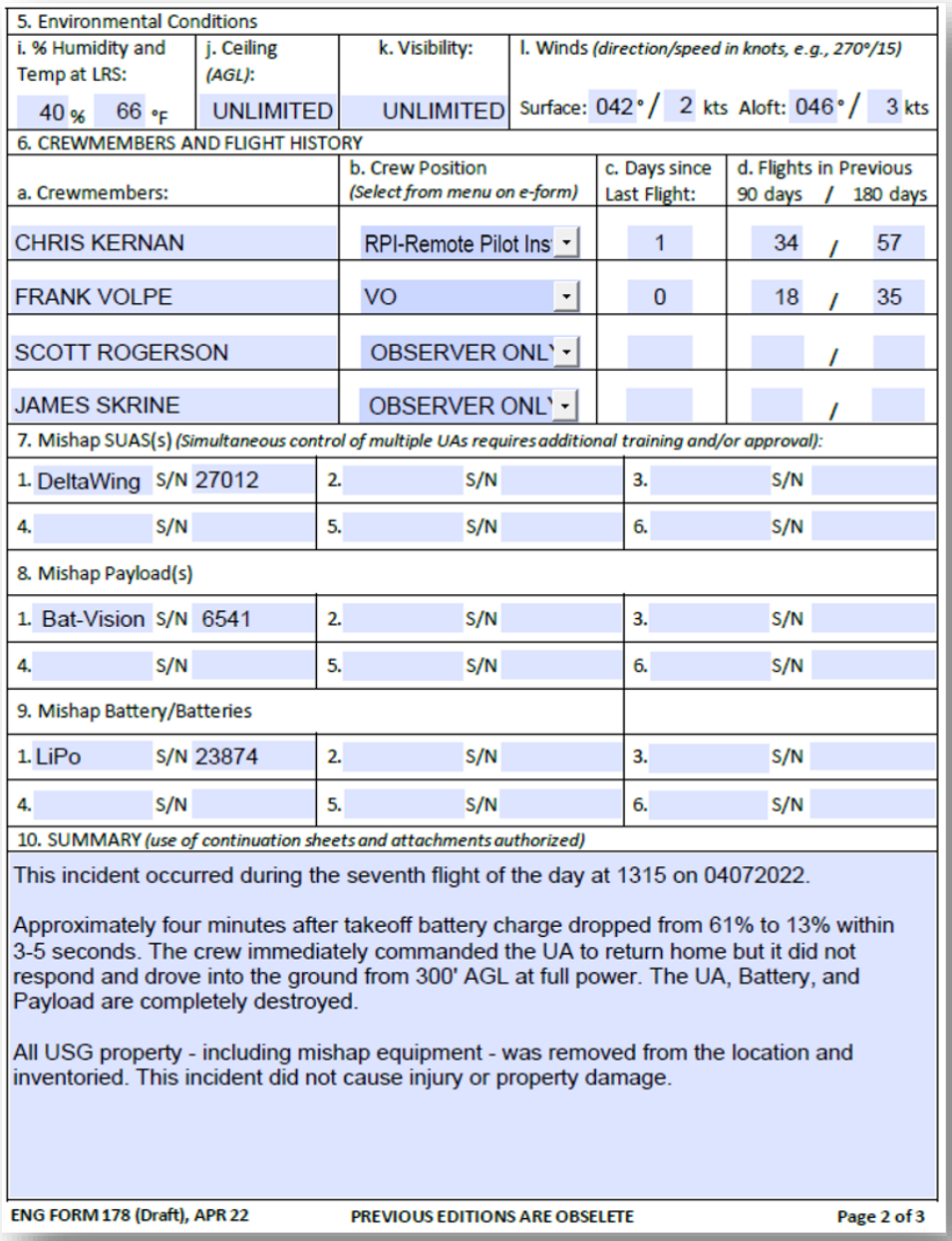
Figure 17 – Sample of Completed EF 178 (Draft)

l. Block 5. Enter the environmental conditions present when the mishap or incident occurred.

m. Block 6. Enter data for the mishap/incident crew as indicated.

n. Block 7 – 9. Enter the name and serial number of the mishap/incident UA(s), Payload(s), and Battery(ies).

o. Block 10. Provide a summary of events pertinent to the mishap or incident and include information from block 4 of the associated EF 177.



5. Environmental Conditions

i. % Humidity and Temp at LRS:	j. Ceiling *(AGL)*:	k. Visibility:	l. Winds *(direction/speed in knots, e.g., 270°/15)*
40 % 66 °F	UNLIMITED	UNLIMITED	Surface: 042° / 2 kts Aloft: 046° / 3 kts

6. CREWMEMBERS AND FLIGHT HISTORY

a. Crewmembers:	b. Crew Position *(Select from menu on e-form)*	c. Days since Last Flight:	d. Flights in Previous 90 days / 180 days
CHRIS KERNAN	RPI-Remote Pilot Ins	1	34 / 57
FRANK VOLPE	VO	0	18 / 35
SCOTT ROGERSON	OBSERVER ONL		/
JAMES SKRINE	OBSERVER ONL		/

7. Mishap SUAS(s) *(Simultaneous control of multiple UAs requires additional training and/or approval):*

1. DeltaWing S/N 27012	2. S/N	3. S/N
4. S/N	5. S/N	6. S/N

8. Mishap Payload(s)

1. Bat-Vision S/N 6541	2. S/N	3. S/N
4. S/N	5. S/N	6. S/N

9. Mishap Battery/Batteries

1. LiPo S/N 23874	2. S/N	3. S/N
4. S/N	5. S/N	6. S/N

10. SUMMARY *(use of continuation sheets and attachments authorized)*

This incident occurred during the seventh flight of the day at 1315 on 04072022.

Approximately four minutes after takeoff battery charge dropped from 61% to 13% within 3-5 seconds. The crew immediately commanded the UA to return home but it did not respond and drove into the ground from 300' AGL at full power. The UA, Battery, and Payload are completely destroyed.

All USG property - including mishap equipment - was removed from the location and inventoried. This incident did not cause injury or property damage.

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Figure 18 – Sample of Completed EF 178 (Draft) (Continued)

p. Block 11a – 11c. Enter preliminary dollar estimates for damage. Amounts entered here are not official until the APM confirms their accuracy and/or completes the post mishap/incident investigation, as necessary.

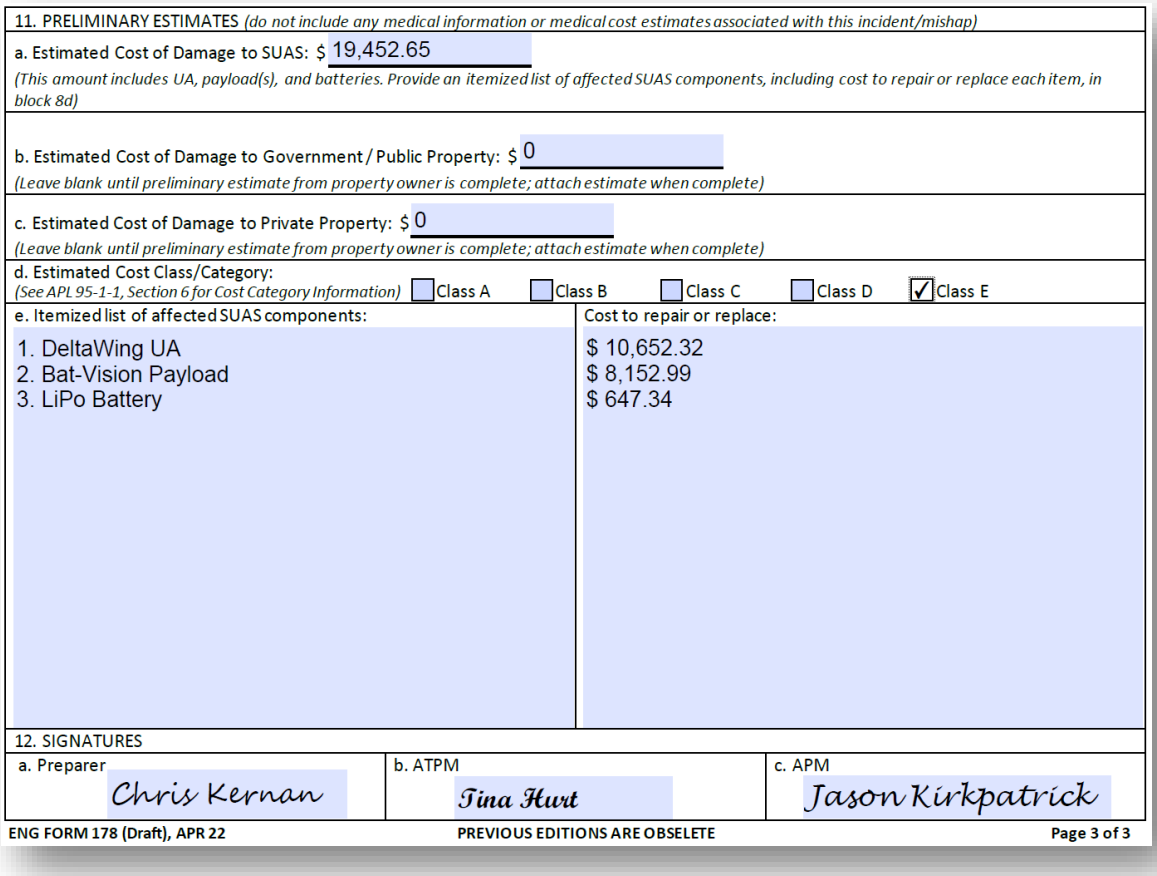
q. Block 11d. Check the block which most accurately describes the Cost Class/Category using the following criteria:

(1) Class A. Class A does not apply to SUAS unless the cost to repair or replace exceeds $2 million.

(2) Class B. Total cost of damage, including property, is $500,000 or more but less than $2 million; an injury and/or occupational illness results in permanent partial disability; three or more personnel are hospitalized as inpatients as the result of a single occurrence.

(3) Class C. Resulting total cost of property damage is $50,000 or more but less than $500,000; nonfatal injury or occupational illness that causes 1 or more days away from work or training beyond the day or shift on which it occurred; disability at any time.

(4) Class D. Resulting total cost of property damage is $20,000 or more but less than $50,000; a nonfatal injury or illness results in restricted work or medical treatment greater than first aid.



11. PRELIMINARY ESTIMATES *(do not include any medical information or medical cost estimates associated with this incident/mishap)*

a. Estimated Cost of Damage to SUAS: $ 19,452.65
(This amount includes UA, payload(s), and batteries. Provide an itemized list of affected SUAS components, including cost to repair or replace each item, in block 8d)

b. Estimated Cost of Damage to Government / Public Property: $ 0
(Leave blank until preliminary estimate from property owner is complete; attach estimate when complete)

c. Estimated Cost of Damage to Private Property: $ 0
(Leave blank until preliminary estimate from property owner is complete; attach estimate when complete)

d. Estimated Cost Class/Category:
(See APL 95-1-1, Section 6 for Cost Category Information) ☐ Class A ☐ Class B ☐ Class C ☐ Class D ☑ Class E

e. Itemized list of affected SUAS components:	Cost to repair or replace:
1. DeltaWing UA	$ 10,652.32
2. Bat-Vision Payload	$ 8,152.99
3. LiPo Battery	$ 647.34

12. SIGNATURES

a. Preparer	b. ATPM	c. APM
Chris Kernan	Tina Hurt	Jason Kirkpatrick

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Figure 19 – Sample of Completed EF 178 (Draft) (Continued)

(5) Class E. Resulting total cost of property damage is $5,000 or more but less than $20,000.

r. Block 11e. List the itemized cost of affected components.

NOTE: Estimated Cost of Damage and accompanying Accident Class/Category in Block 11a are preliminary estimates and should not be reported as actual costs until certified by the Investigating Official.

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Section 7: SUAS Data Safeguards

7. Policy. USACE Aviation safeguards data through a combination of DOD, Army, USACE, and National Institute of Standards and Technology (NIST) software, hardware, and procedural controls.

7.1. Procedures. USACE Small Unmanned Aircraft Systems are maintained in a Closed Restricted Network (CRN) and data transfer is restricted to approved Air-Gapped machines. As part of the CRN, Ground Control Stations (GCS) will not be:

a. connected to the Internet or any other network

b. used to download basemaps or any other data from the Internet

c. connected to any Army Corps of Engineers Information Technology Network

d. used for any purpose other than as the GCS of its associated SUAS.

7.2. UA Uplink/Downlink. Signals between the GCS and UA are protected through the telemetry modem and transmitter. Camera lens covers remain installed until immediately prior to launch, then reinstalled immediately after motor(s) stop to prevent inadvertent data transmission.

7.3. Data Transfers. Use a CIO/G6 approved Air-Gap Computer when transferring data to and from the USACE information system network. The Air-Gap Computer is a standalone Type II System used solely to screen for cyber threats prior to entering the USACE information system network and:

a. must not be connected to any other system or network such as Internet, ISP, DREN, NIPRNet or SIPRNet

b. must not transmit, receive, route, or interchange information outside of the system

c. may have removable or external media capability which includes but is not limited to, electrically erasable/programmable flash media (for example, USB drives, and compact flash), external magnetic media (for example, floppy disk, and external hard drive) and optical drives (for example CD, CD-R), or a single purpose printer

d. must operate in a single mode: sensitive but unclassified

e. may be designed to process any type of information.

7.4. Air-Gap Policy. Figure 20 describes the data flow process from SUAS collected data through a Type II Stand-Alone System to the USACE Network.

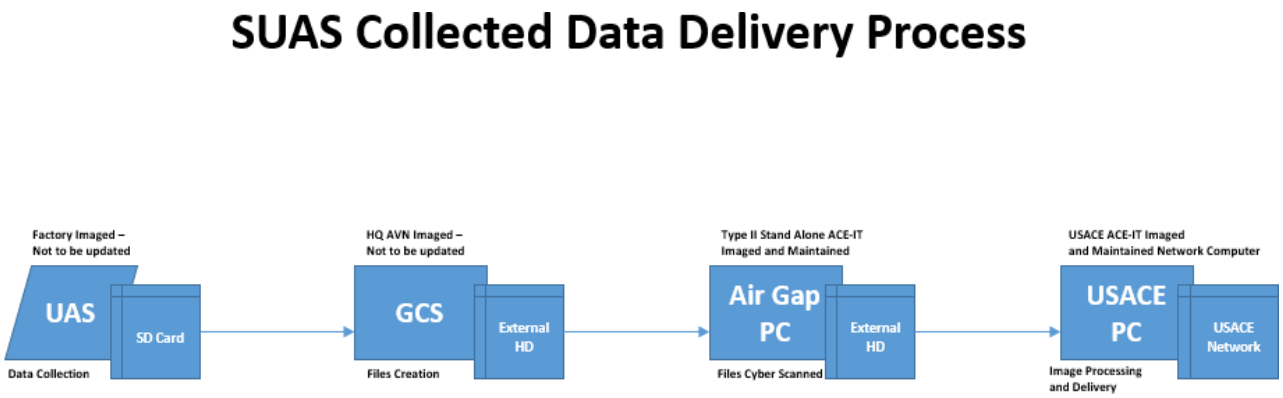


Figure 20 – SUAS Collected Data Delivery Process

NOTE: Data collected on UAS flash storage is transmitted/transferred to GCS and placed on a USB external hard disk drive. The USB external hard disk drive is then physically connected to the Type II Stand-Alone PC and scanned for cyber threats. After the USB external hard disk drive passes the cyber assessment, the USB external hard disk drive may be connected to a USACE network-connected computer.

7.5. CRN Mobile Map Server (MMS). The MMS is a standalone encrypted Wi-Fi Direct Server that provides basemap services within a Closed Restricted Network for mission planning with Ground Control Stations that do not support air-gapped basemaps. Regardless of GCS-type, the MMS is a best practice because it allows crewmembers to make real-time routing changes in the field.

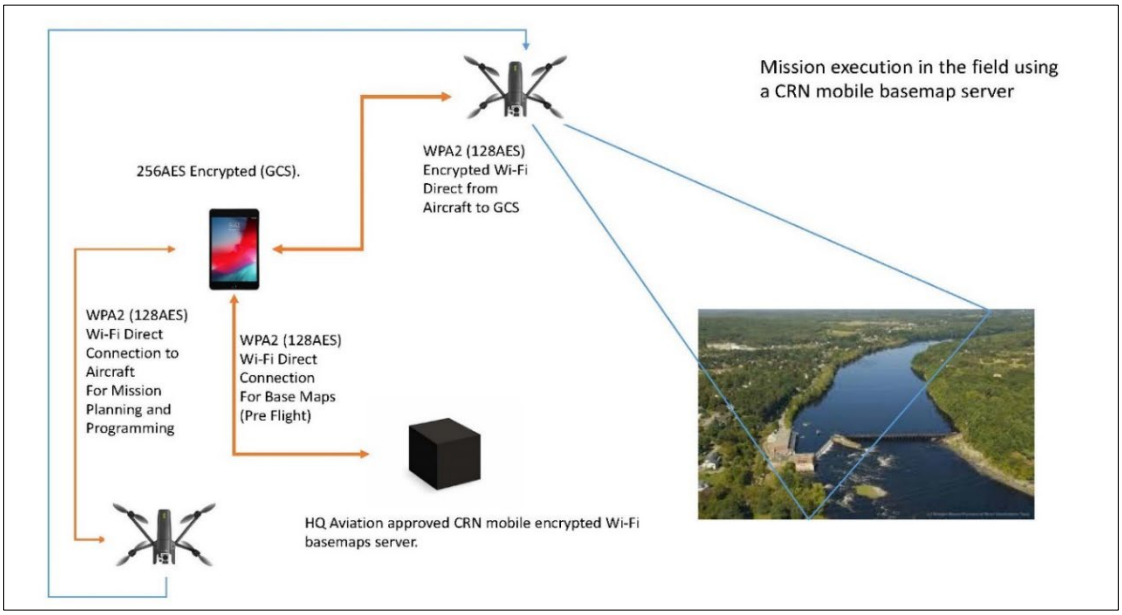


Figure 21 – Field Expedient CRN Mobile Map Server

7.6. ATPM Responsibilities. ATPMs are responsible for verifying SUASs and associated media storage are kept in a locked case or secure area. The ATPM also coordinates with HQ Aviation to:

a. receive and transfer new SUASs, including the ground controller/control station, software updates

b. receive and transfer MMS software updates

c. monitor proper use of the Air-Gap Computer

d. sanitize relevant data prior to transferring or destroying SUAS components

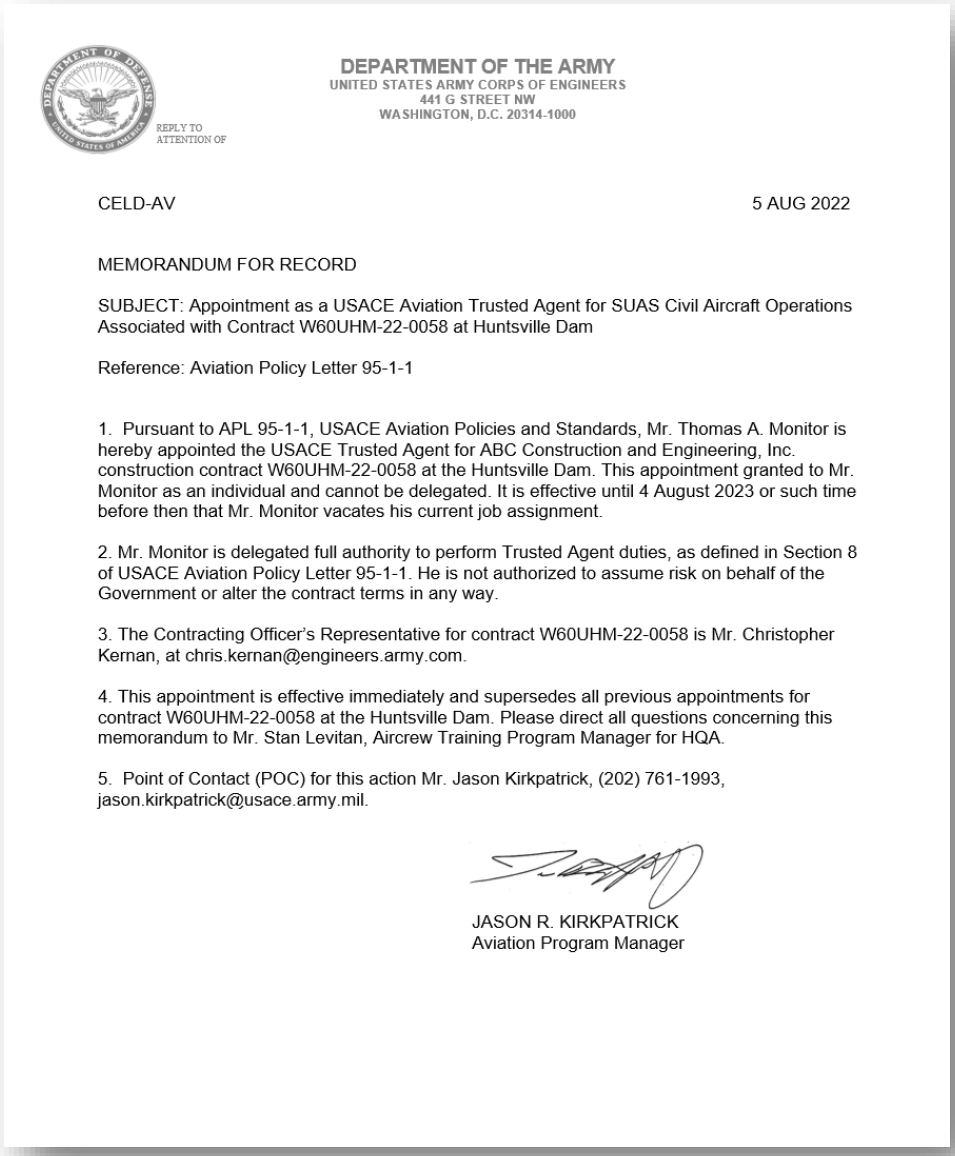
e. load necessary software/data sanitized by the transferring organization, as necessary, prior to operating the SUAS.

INTENTIONALLY LEFT BLANK

Section 8: SUAS Civil Aircraft Operations

8. Policy. A Civil Aircraft Operation (CAO) is a flight activity which does not meet the qualifications for public aircraft status in 49 USC 40125, Q*ualifications for Public Aircraft Status.* SUAS CAOs on USACE lands and projects are prohibited unless monitored by a USACE Trusted Agent (TA). TAs are selected by the ATPM and appointed in writing by the APM (see Figure 21), to validate the contractor's SUAS fleet and periodically monitor flight operations for compliance with the cybersecurity rules outlined in Section 7.

NOTE: A typical CAO is a contractor that requests to operate an HQ Aviation approved SUAS, not for a contractually specified SUAS data collection requirement, but as a component of its routine procedures.



DEPARTMENT OF THE ARMY
UNITED STATES ARMY CORPS OF ENGINEERS
441 G STREET NW
WASHINGTON, D.C. 20314-1000

REPLY TO ATTENTION OF

CELD-AV 5 AUG 2022

MEMORANDUM FOR RECORD

SUBJECT: Appointment as a USACE Aviation Trusted Agent for SUAS Civil Aircraft Operations Associated with Contract W60UHM-22-0058 at Huntsville Dam

Reference: Aviation Policy Letter 95-1-1

1. Pursuant to APL 95-1-1, USACE Aviation Policies and Standards, Mr. Thomas A. Monitor is hereby appointed the USACE Trusted Agent for ABC Construction and Engineering, Inc. construction contract W60UHM-22-0058 at the Huntsville Dam. This appointment granted to Mr. Monitor as an individual and cannot be delegated. It is effective until 4 August 2023 or such time before then that Mr. Monitor vacates his current job assignment.

2. Mr. Monitor is delegated full authority to perform Trusted Agent duties, as defined in Section 8 of USACE Aviation Policy Letter 95-1-1. He is not authorized to assume risk on behalf of the Government or alter the contract terms in any way.

3. The Contracting Officer's Representative for contract W60UHM-22-0058 is Mr. Christopher Kernan, at chris.kernan@engineers.army.com.

4. This appointment is effective immediately and supersedes all previous appointments for contract W60UHM-22-0058 at the Huntsville Dam. Please direct all questions concerning this memorandum to Mr. Stan Levitan, Aircrew Training Program Manager for HQA.

5. Point of Contact (POC) for this action Mr. Jason Kirkpatrick, (202) 761-1993, jason.kirkpatrick@usace.army.mil.

JASON R. KIRKPATRICK
Aviation Program Manager

Figure 22 – TA Appointment Memorandum

NOTE: This appointment does not grant authority to manage the contractor's day-to-day activities or alter contract terms.

8.1. Roles and Responsibilities for cybersecurity.

a. The contractor is solely responsible for liability and will:

(1) only operate SUASs approved by HQ Aviation

(2) follow cybersecurity policy in Section 7

(3) initialize the system on-site

(4) wipe media according to NIST Special Publication 800.88, *Guidelines for Media Sanitization*, before and after flight

(5) process data through air-gap process described in Section 7

(6) leave camera lens covers in place until just prior to starting motor(s) and reinstall them as soon as possible after landing

(7) never connect to a network.

b. The ATPM, or designated representative will:

(1) provide cyber-focused familiarization training on an SUAS and data transfer machine that most closely resembles the contractor's equipment. This does not include flight training.

(2) assist and monitor the TA, as necessary

(3) brief the TA on cyber and SUAS policy updates from HQ Aviation

(4) Coordinate with HQ Aviation for necessary contract modifications for the requirements in this document.

c. The TA will:

(1) brief the contractor on the cybersecurity requirements outlined in Section 7. If not specified in the contract, then the TA will inform the ATPM

(2) conduct an initial, then periodic hands-on assessments of the contractor's equipment to ensure compliance with Section 7

(3) report unsatisfactory or unauthorized performance to the ATPM and Contracting Officer's Representative (COR).

8.2. EF 3062 (Draft)*, Contractor SUAS Flight Request*. The contractor will not fly on USACE lands and projects without an approved EF 3062 (Draft). It may cover up to a 30-day period, must be approved by the TA, and include a statement of contractor cybersecurity and flight compliance to affirm that USACE does not accept risk or operational control of the contractor's flight activity. The EF 3062 (Draft) is the contractor's written confirmation to operate in accordance with this document and 14 CFR Part 107. It does not constitute operational control or assumption of risk by the Government [see Figure 23].

CONTRACTOR SUAS FLIGHT REQUEST

For use of this form, see USACE Aviation Policy Letter 95-1-1
The proponent for this form is HQ USACE Aviation

1. TO *(TA name and office address):*	2. FROM *(company name and address):*	3. CONTRACTOR POINT OF CONTACT
Thomas A. Monitor 4901 University Square Suite 16 Huntsville, Al 35806	ABC Construction and Engineering 7640 South Lake Drive Suite 85 Dunwoody, Ga 30350	a. NAME: Jeffrey Newlin b. E-MAIL: jeffnewlin@abcconstruction.com c. PHONE: 404-271-7890
4. NAME OF PROJECT:	5. PRIME CONTRACT NUMBER:	6. REQUEST SUBMITTED ON *(DDMMMYYYY):* 15 AUG 2022
Huntsville Dam	W60UHM-22-1325	
7. PERIOD OF REQUEST *(Multiple flights authorized; cannot exceed 30 days):* From (DDMMMYYYY): 30 AUG 2022 To (DDMMMYYYY): 29 SEP 2022		8. ANTICIPATED NUMBER OF FLIGHTS DURING THIS PERIOD: 12

9. PURPOSE *(e.g., To collect survey-grade mapping data of the Huntsville Dam for renovations.):*
To collect high resolution photos for the company website.

10. FLIGHT DETAILS *(Specify flight area and operating altitude(s); continuation sheets and attachments authorized):*
All flights will be conducted below 400' AGL during daylight hours and within the geographical area approved by the ATPM, Stan Levitan, in an email dated 1 August 2022.

10a. SUAS(s):	10b. Payload(s):
Falcon Heavy	Bateye 3000

Statement of Contractor Cybersecurity and Flight Compliance: By signing below you certify that the information contained on this form is accurate and in compliance with the contract, 14 CFR Part 107, and Aviation Policy Letter 95-1-1. Further, you acknowledge that submission of this form does not constitute the acceptance of risk or operational control by the U.S. Army Corps of Engineers for contractor SUAS flights at the project location.

11. CERTIFICATION

11a. Contractor Representative Signature: *Jeffrey Newlin* 11b. Date: 15 AUG 2022

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12. Contractor's Closeout *(Provide an explanation in block 13 for all boxes checked 'No' and send to the TA within 7 days of final flight.)*

a. Were all flights completed in accordance with the Statement of Contractor Cybersecurity and Flight Compliance?	☑ Yes	☐ No	e. Number of flights completed: 14
b. Were all flights conducted with equipment listed in blocks 10?	☑ Yes	☐ No	f. Number of inflight accidents resulting in damage or destruction of Government property: 0
c. Was purpose for SUAS flights entered in block 9 met?	☐ Yes	☑ No	

13. Remarks *(e.g., 12c: The purpose listed in block 9 was not met because all data was inadvertently erased.)*
12c: The purpose listed in block 9 was not met because all mission data was inadvertently erased. Additional flights are required.

14. TA's Closeout *(Provide an explanation in block 15 for all boxes checked 'No' and send to the ATPM within 5 days of receipt.)*

a. Did you assess the contractor's equipment and cyber procedures?	☑ Yes	☐ No	☐ n/a
b. Did you receive data collected by the contractor's SUAS, as required by the contract?	☐ Yes	☑ No	☐ n/a

15. Remarks
See remarks in block 13.

16. RECIEVED	*(Confirms receipt, not Government assumption of risk or operational control)* 16a. TA Signature: *Thomas A. Monitor*	16b. Date: 1 OCT 2022

17. ATPM's Closeout *(Provide an explanation in block 17 for all boxes checked 'No' and send to HQ Aviation within 5 days of receipt.)*

a. Did you coordinate with HQ Aviation for contract modifications for cyber and data security?	☑ Yes	☐ No	☐ n/a
b. Did you brief the TA on relevant policy changes from HQ Aviation?	☐ Yes	☑ No	☐ n/a

18. Remarks

19. RECIEVED	*(Confirms receipt, not Government assumption of risk or operational control)* 19a. ATPM Signature: *Allen T. Pittman*	19b. Date: 2 OCT 2022

ENG FORM 3062 (Draft), AUG 22 PREVIOUS EDITIONS ARE OBSELETE Page 2 of 2

Figure 23 – Sample of a Completed EF 3062 (DRAFT), *Contractor SUAS Flight Request*

8.3. Roles and Responsibilities for SUAS flight activities.

a. The contractor will:

(1) assume responsibility and liability for all SUAS activities, unless otherwise specified in the contract

(2) fly within the vicinity of the project location and in accordance with 14 CFR Part 107

(3) submit an EF 3062 (Draft), or amendments to a previously approved request, no later than three business day prior to the flight(s)

(4) not submit an EF 3062 (Draft) more than 30 days prior to the flight(s)

(5) complete Section 12, *Contractor's Closeout*, of the EF 3062 (Draft) within seven days after the last flight is complete.

b. The ATPM, or designated representative will:

(1) brief the TA on applicable airspace considerations and restrictions

(2) assist and monitor the TA, as necessary.

c. The TA will:

(1) conduct an initial, then periodic hands-on assessments of the contractor's equipment to ensure compliance with the current list of SUASs approved by HQ Aviation

(2) review, sign, and forward the EF 3062 (Draft) within 4 business days

(3) report unsatisfactory or unauthorized performance to the ATPM and Contracting Officer's Representative (COR)

(4) complete Section 14, *TA Closeout*, and forward the EF 3062 (Draft) to the ATPM and APM within five business.

NOTE: The TA's monitoring activity should not be construed as a requirement to be on-site for all contractor SUAS flights.

8.4. Contractor Liability. CAOs are excluded from the Government's assumption of risk and not covered by the Ground and Flight Risk Clause (DFARS 252.228-7001).

NOTE: Contracting Officers may specify the Government's exemption from liability and require the contractor to show proof of private insurance.

8.5. Third-Party Commercial and Private SUAS Operators. Third-party commercial and private operators must have District Commander/Lab Director approval in accordance with 36 CFR 327, *Rules and Regulations Governing Public Use of Water Resource Development Projects Administered by the Chief of Engineers*.

8.5.1. Commander's Guidelines for Third-Party SUAS Flights. This guidance applies to parties not associated with USACE that request to operate aircraft on projects and lands not classified as a controlled environment or critical infrastructure (see Section 10).

a. The request will clearly state that the third party is solely responsible for safety, liability, and adherence to required Federal, state, and local requirements for the SUAS flight.

b. The District Commander/Lab Director may direct the ATPM to select a Trusted Agent to observe the third-party operations. If personnel are available, the ATPM is encouraged to select a Trusted Agent.

c. If the District Commander/Lab Director authorizes the third-party operation, a copy of the authorization will be provided to the HQ USACE Aviation Office along with a Trusted Agent Close-Out Report (if available) at HQAviation@usace.army.mil.

NOTE: The Commander's/Director's approval for third-party flights does not constitute assumption of operational control or risk by the U.S. Government.

NOTE: See Section 9 for recreational SUAS flights on USACE property in benign environments and away from Critical Infrastructure.

Section 9: Aircraft Operation On or Over USACE Lands, Projects, and Facilities

9. Policy. Title 36, Chapter III, Section 327.4 of the Code of Federal Regulations prohibits flying aircraft, including Small Unmanned Aircraft (drones), over or on USACE projects and facilities without permission from the Command/Director. This restriction does not apply to Federal, state, and local government aircraft on official business, emergency rescue aircraft, or aircraft forced to land due to an emergency.

NOTE: Routine, approved air traffic is common on or over USACE projects, lands, and facilities in accordance with Federal Aviation Regulations. This does not violate Title 36, Chapter III, Section 327.4 of the Code of Federal Regulations.

9.1. Unauthorized Aircraft Operation. Unauthorized aircraft activity is characterized by prolonged orbiting flight and unsafe actions within proximity to USACE projects, lands, and facilities at very low altitude. USACE personnel who witness aircraft operating in an unauthorized or unsafe manner should:

a. attempt to take photos that clearly show the aircraft registration number (located on the empennage or tailboom)

b. contact HQ Aviation, at HQAviation@usace.army.mil for assistance

c. report the aircraft to the local FAA Flight Standards District Office (FSDO).

NOTE: Minimum altitudes for aircraft operations are defined in Federal Aviation Administration Regulation (FAR), Part 91.119.

9.2. SUAS (Drone) Activity. SUAS flights, conducted by individuals other than USACE employees and contractors, are not authorized without permission from the Commander/Director. FOAs should coordinate with HQ Aviation to identify local SUAS flight areas and airspace restrictions. Individuals who witness unauthorized SUAS activity should contact law enforcement for assistance.

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Section 10: Mission Environment Assessment

10. Policy. All data collection missions, regardless of location and aircraft type, require a documented terrain analysis of the area within 5 Nautical Miles of the intended flight path. Critical Infrastructure exposure risk is defined in a three-tiered criticality index based on Department of Homeland Security (DHS) and other Federal agency definitions.

10.1. SUAS Policy for USACE Employees and Contracted PAOs. The criticality of nearby infrastructure will be documented with a mandatory entry in the Deliberate Risk Assessment Worksheet (DD Form 2977) (Figure 24 through Figure 26) and approved at the appropriate levels based on risk exposure.

10.1.1. Contractor UA and Manned Aviation Policy. The method of mission environment assessment and risk analysis will be completed in accordance with AR 95-20, *Contractor Flight and Ground Operations*. If mission environment assessment is not a contract requirement, then the USACE Government Flight Representative (GFR) will coordinate with HQ Aviation for assistance.

10.2. DHS Sectors. The nation's critical infrastructure is the backbone of our nation's economy, security, and networks. Whether physical or virtual, critical infrastructure is vital to the United States and incapacitation or destruction of any sector would have major impacts on security, national public health, and/or safety. The 16 Critical Infrastructure Sectors are:

a. Chemical Sector

b. Commercial Facilities Sector

c. Communications Sector

d. Critical Manufacturing Sector

e. Dam Sector

f. Defense Industrial Base Sector

g. Emergency Services Sector

h. Energy Sector

i. Financial Services Sector

j. Food and Agriculture Sector

k. Government Facilities Sector

l. Healthcare and Public Health Sector

m. Information Technology Sector

n. Nuclear Reactors, Materials, and Waste Sector

o. Transportation Systems Sector

p. Water and Wastewater Systems Sector.

10.3. Mission Location Environments. Crewmembers for all aircraft types classify the mission environment using the following three definitions:

10.3.1. Benign Environment (i.e., non-DoD lands and waterways).

a. User event location is a public venue that will not expose sensitive facilities, equipment, or activities before, during, or after the event.

b. All information/data generated or collected is approved and appropriate for public release to include video, pictures, radio frequency (RF) signals, signatures, or any other event information.

c. DoD Facilities, Defense Industrial Base locations, or Defense Critical Infrastructure are presumed to not be benign environments. Unless the use case affirms to the Army Authorizing Official that the event location is sanitized, meets all the criteria of a benign environment, and appropriate controls are implemented to keep all event activities within the approved boundary, it may then be considered a benign environment.

d. In all Use Cases, the event should not expose Army Tactics, Techniques, and Procedures (TTPs) that are deemed sensitive.

e. The Mission Environment Assessment of Benign areas for SUAS PAOs shall be rated as Low and noted by the following entry in the DD Form 2977, *Mission Risk Assessment*: “Critical Infrastructure assessed as Benign.”

4. SUBTASK/SUBSTEP OF MISSION/TASK	5. HAZARD	6. INITIAL RISK LEVEL	7. CONTROL	8. HOW TO IMPLEMENT/ WHO WILL IMPLEMENT	9. RESIDUAL RISK LEVEL
Mission Environment Assessment	Critical Infrastructure assessed as Benign	L	N/A	How: Who:	L

Figure 24 – DD Form 2977, *Mission Environment Assessment* entry – Benign

10.3.2. Controlled Environment (i.e., Military Installations). These missions shall be coordinated through HQ USACE Aviation and require data safeguards through use of USACE-approved encryption. Controlled environment attributes include:

a. a DoD restricted-access installation for which the tenant activity must approve USACE SUAS data collection. Data links must be protected from detection/collection by unauthorized sensors, and the SUAS RF environment must be free of open wireless network access points

b. information regarding all facilities, equipment, personnel, and activities where the Commercial-off-the-Shelf (COTS) UAS is operating are not classified, but may be sensitive, and may not be publicly releasable

c. the identified Hazard for SUAS PAOs within Controlled Environments shall be recorded with the following entry in Block 5 of the DD Form 2977: “Critical Infrastructure assessed as Controlled.” The corresponding Initial Risk Level in Block 6 is rated as “M” (Medium), and Control method entry in Block 7 should read: “Will prior coordinate in writing with facility and protect data per DHS, DoD, and local SOP.” (Figure 25)

4. SUBTASK/SUBSTEP OF MISSION/TASK	5. HAZARD	6. INITIAL RISK LEVEL	7. CONTROL	8. HOW TO IMPLEMENT/ WHO WILL IMPLEMENT	9. RESIDUAL RISK LEVEL
Mission Environment Assessment	Critical Infrastructure assessed as Controlled.	M	Will prior coordinate in writing with facility and protect data per DHS, DoD, and local SOP.	How: Encryption and Air Gap Who: RPI	L

Figure 25 – DD Form 2977, *Mission Environment Assessment* entry – Controlled

10.3.3. Uncontrolled Environment. Uncontrolled environments, such as combat zones, require the highest level of data protection. Special permissions must be obtained through the relevant Chain of Command and data safeguarded through encryption and other methods. Uncontrolled Environments are defined as:

a. those environments that carry the potential to expose troop location, tactical or strategic information, TTPs, critical infrastructure, or sensitive equipment

b. all environments where there is a risk of losing the platform in an adversary location

c. all environments where the RF spectrum is unknown or cannot be controlled and there is risk of exposure of strategic, tactical, sensitive, or non-public information

d. the identified Hazard for SUAS PAOs within Uncontrolled Environments will be recorded with the following entry in Block 5 of the DD Form 2977: “Critical Infrastructure assessed as Uncontrolled.” The corresponding Initial Risk Level in Block 6 is rated as “H” (High), and Control method entry in Block 7 shall read: “Will prior coordinate in writing with the Command and gain mission approval from designated AMAA.” (Figure 26)

4. SUBTASK/SUBSTEP OF MISSION/TASK	5. HAZARD	6. INITIAL RISK LEVEL	7. CONTROL	8. HOW TO IMPLEMENT/ WHO WILL IMPLEMENT	9. RESIDUAL RISK LEVEL
Mission Environment Assessment	Critical Infrastructure assessed as Uncontrolled.	H	Will prior coordinate in writing with command and gain mission approval from designated AMAA.	How: I.D. appropriate risk-level AMAA. Who: MC/RPI	M

Figure 26 – DD Form 2977, *Mission Environment Assessment* entry – Uncontrolled

10.4. Environment Assessment Policy. In all cases, mission planners will make reasonable efforts to minimize any photography or other data collection on infrastructure not directly associated with the mission. Planners and crews are responsible for coordination of any data collection with the facility or activity security managers. When in doubt, coordinate prior to flight.

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Section 11: Safeguarding Privacy and Civil Liberties

11. Background. USACE Aviation is committed to protecting personal privacy and civil liberties. Aircraft operations, either conducted by USACE employees or contractors supporting USACE, are prohibited from purposefully collecting data that is not directly related to the mission. Due to the proliferation of USACE aviation activity and the nature of airborne data collection, crewmembers must remain vigilant against the inadvertent collection of non-mission data. Non-mission data cannot be stored, examined, or disseminated.

11.1. SUAS Policy. The APM is responsible for establishing a comprehensive approach to safeguard privacy during all phases of domestic flight operations.

11.2. Contractor UA and Manned Aviation Policy. The GFR will ensure that contracted crewmembers are familiar with this section and, if necessary, coordinate with HQ Aviation for additional contract language for safeguarding privacy and civil liberties.

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Section 12: Risk Management and Safety

12. Background. Safety is the key consideration for all aspects of USACE Aviation and any team member is authorized to cease flight operations if they believe an unsafe act is about to occur. The USACE Aviation Safety Program is based on AR 385-10, *The Army Safety Program*, and further developed in the Contractor's Procedures and FOA SOPs.

12.1. SUAS Safety Policy. The APM will implement and oversee the USACE SUAS Safety Program and foster an environment where goals and objectives are clearly defined. Through semi-annual reviews, the APM will identify and correct shortcomings, implement additional controls, as necessary, and seeks user input. ATPMs will implement local safety programs that promote risk management (RM) during all phases of aviation operations and Crewmembers will actively participate in the RM process.

12.2. SUAS Oversight Policy. The Aviation Program Manager (APM) is responsible for overseeing, tasking, and resourcing the USACE ARMS program to examine trends, standardize operations, and identify organizational risk. The ARMS is conducted by a team of SMEs to examine all aspects of FOA SUAS operations every 24 – 36 months, or as necessary, to assist Commanders/Directors in assessing their SUAS program.

12.3. SUAS Pre-Accident Plan. USACE Aviation pre-accident plans are based on guidance provided in DA PAM 385-90, *Army Aviation Accident Prevention Program*. They are incorporated into the Aircrew Reading File, and, at a minimum, cover:

a. duties and responsibilities of each Crewmember immediately following an incident
b. notification procedures
c. duties and responsibilities of the FOA ATPM, RP, and FOA Commander/Director
d. guidelines for collection of biological samples from Crewmembers following a mishap
e. preliminary data collection to aid in accident investigation
f. guidelines for coordinating with the tenant activity and external agencies, as necessary.

NOTE: A template pre-accident plan checklist in found in the MARS Reference Library.

12.4. Contractor UAS and Manned Aviation Policy. USACE GFRs are the APMs point of contact for contractor aviation safety and will make regular safety assessments in accordance with AR 95-20 and USACE APL 19-11, *Government Surveillance of Contractor Flight and Ground Operations*.

12.5. Operational Risks. Operational risks extend beyond flights and include data collection, storage, and dissemination. Responsibility for assuming operational risk rests with Commanders/Directors and Contractors, who:

a. manage risk, resource the safety program, and encourage an environment that values deliberate mission planning and execution above mission quantity

b. mandate regular safety meetings to discuss incidents, trends, causal analysis, and process development

c. generate SOPs/Contractor's Procedures that cover common risks and control measures, a pre-accident plan, data collection, and regular safety audits

d. delegate an AMAA to assess and mitigate common hazards.

Section 13: Incident and Mishap Reporting

13. Policy. This section standardizes reporting procedures across all USACE Aviation activities. It applies to GFRs, ATPMs, and USACE crewmembers. Incidents include airspace violations, unusual system malfunctions, and significant events which do not result in a mishap. Mishaps include events and accidents in which intent for flight exists and there is reportable damage to aircraft (of all types) and/or SUAS components. It also includes injury to personnel and property damage.

NOTE: Per DA PAM 385-40, *Army Accident Investigations and Reporting*, accidents are caused by adverse interactions of man, machine, and environment.

13.1. Roles and Responsibilities.

a. GFRs will ensure that timely and accurate reports are distributed to the APM and they will:

(1) review the Contractor's Procedures and Pre-Accident Plan

(2) liaise between the Contractor, Contracting Officer, and APM.

b. Crewmembers will follow the immediate report format in Appendix H, *Mishap Reporting Flight Checklist Information*, and perform other duties as assigned by the APM.

c. ATPMs will follow Pre-Accident Plan in Appendix H and perform other duties as assigned by the APM.

d. The APM will:

(1) confer with the ATPM and FOA Commander/Director to determine appropriate status of the mishap crew

(2) appoint an Accident Investigator, as required

(3) complete DA Form 2397-U, *Unmanned Aircraft Systems Accident Report*.

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Section 14: Contractor Public Aircraft Operations

14. Background. A Public Aircraft Operation (PAO) is a flight activity which meets the qualifications for public aircraft status in 49 USC 40125, Q*ualifications for Public Aircraft Status* and 40102, *Transportation*. Most manned aviation contractors supporting USACE are PAOs because they conduct inherently governmental functions with aircraft under purview of the Army Airworthiness Authority. FOAs will coordinate with HQ Aviation for all new aviation contracts to determine its status as a PAO.

14.1. Policy. Federal, DoD, and Army Regulations require the Corps to maintain surveillance of contractor-supported and contractor-pure PAOs. This section explains the varying methods and practices of oversight, how FOAs share information with HQ Aviation, and roles and responsibilities of key individuals. In the event of conflicting information between this section and AR 95-20, AR 95-20 takes precedence.

14.2. PAO Contractor Liability. PAOs may be covered by the *Ground and Flight Risk Clause* (GFRC) (DFARS 252.228-7001). If included in the contract, the GFRC takes the place of private insurance and indemnifies the contractor as long as they comply with the operating procedures in AR 95-20. The GFRC does not apply to a PAO when the Government has no vested interest in the ownership of the aircraft. Contracting officers should work closely with HQ Aviation for each new aviation contract to determine if the GFRC should be included.

14.2.1. Minimum Language for New PAO Contracts. For all PAOs, regardless of GFRC applicability, compliance with AR 95-20 is a requirement and should be identified with specific contract language. PAO contracts should include the required areas of oversight carried out by the GFR in the Performance Work Statement/Scope of Work (PWS/SOW), and the GFRC (if applicable) in the H clause of the contract. FOAs and contracting officers shall work closely with HQ Aviation for all new PAO contracts to determine GFRC applicability and oversight plan.

14.3. Determining the Appropriate Level of Surveillance. The nature of contractor flight activity drives oversight requirements. Most contracts involving SUAS data collection require minimal surveillance, but large UAS and manned aviation activities usually require dedicated oversight by a GFR. FOA leaders will work closely with HQ Aviation during pre-award surveys for all new aviation contracts to integrate Government oversight in accordance with APL 19-11, *Surveillance of Contractor Flight and Ground Operations*.

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Appendix A – Glossary

Abbreviation	Term
AGL	above ground level
AMAA	air mission approval authority
APM	aviation program manager
APMO	aviation program management office
ARMS	Aviation Resource Management Survey
ATC	air traffic control
ATP	aircrew training program
ATPM	aircrew training program manager
AWR	airworthiness release
BCA	business case analysis
BVLOS	beyond visual line of sight
CAO	Civil Aircraft Operation
CCIR	command critical information requirements
CELD	HQ, USACE Aviation
CL	checklist
COTS	commercial off-the-shelf
CRM	composite risk management
CRN	closed restricted network
DA	Department of the Army
DD	Department of Defense
DHS	Department of Homeland Security
DoD	U.S. Department of Defense
ECOD	estimated cost of damage
ESF	emergency support function
FAA	Federal Aviation Administration
FMC	fully mission capable
FOA	field operating activity
FTE	full-time employee

Abbreviation	Term
FTF	flight training folder
FTS	flight termination system
GCS	ground control station
GFR	government flight representative
GFRC	ground and flight risk clause
HQDA	Headquarters, Department of the Army
IAW	in accordance with
INOP	inoperable
IR	infrared
ISO/PM	information security officer/program manager
LAANC	low altitude authorization and notification capability
LiDAR	light detection and ranging
LRS	launch and recovery site
MARS	Management Information System (MIS) for Aviation and Remote Systems
MBO	mission briefing officer
MC	mission coordinator
MIS	management information system
MMS	mobile map server
NIST	National Institute of Standards and Technology
NMC	not mission capable
NOTAM	notice to airmen
ORM	operational risk management
PAO	public aircraft operations
PFE	proficiency flight evaluation
PMC	partial mission capable
PMFE	post-mishap flight evaluation
PPE	personal protective equipment
PWS	performance work statement
RF	radio frequency
RM	risk management

Abbreviation	Term
RP	remote pilot
RPI	remote pilot instructor
SITREP	situation report
SOP	standard operating procedure
SOW	scope of work
SUAS	small unmanned aircraft system
TTP	tactics, techniques, and procedures
UA	unmanned aircraft
UAC	unmanned aircraft Crewmember
UAS	unmanned aircraft system
UASAR	unmanned aircraft system accident report
USACE	U.S. Army Corps of Engineers
VFR	visual flight rules
VLOS	visual line of sight
VMC	visual meteorological conditions
VO	visual observer
WRDA	Water Resources Development Act

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Appendix B – SUAS Crewmember Evaluations

Contents:

B.1. The Annual Comprehensive Evaluation (ACE) consists of oral, written, and hands-on components. Crewmembers will compete the ACE each ATP Year at a time most convenient to the FOA. The minimum period between ACEs is three months and the maximum is 15 months.

B.1.1. The written portion for RPs consists of an open-book APL 95-1-1 exam and locally produced open-book SOP exam.

B.1.2. The oral and hands-on sections may be conducted concurrently as the evaluator presents a mission scenario. The evaluator uses the oral portion (Table B-1) to increase a crewmember's knowledge and the hands-on portion to increase proficiency with the tasks outlined in Table B-2.

Table B-1 – Suggested Crewmember Oral Topics

Mission Planning Steps	Airspace Types, Requirements, and Restrictions
SUAS Emergency Procedures and Malfunction Analysis	System and UA Capabilities (time aloft, range, 4-D mapping, light detection and ranging (LiDAR), infrared (IR), search & rescue, night flying, etc.)
Local SOP Topics	USACE ESF 3 Manual
Safeguarding Data	Navigational Chart Interpretation

Table B-2 – Crewmember Base-Task List

Pre-Mission Tasks*	
Task	**Description**
0901	**Title:** Perform Mission Analysis
	Condition: Given a clear requirement and intent.
	Standard 1: Gain full understanding of mission task(s), purpose, and end state. **Standard 2:** Conduct analysis of alternatives. **Standard 3:** Determine if mission is within the FOA Aircrew Training Program Scope. **Standard 4:** Determine if available equipment is appropriate for the mission. **Standard 5:** Select Crewmembers.

*__NOTE:__ VO denotes a VO-specific task

0902	**Title:** Plan and Submit an SUAS Mission
	Condition: Given access to MARS or USACE mission forms
	Standard 1: Determine airspace requirements. **Standard 2:** Gather location information. **Standard 3:** Identify critical infrastructure. **Standard 4:** Determine data protection requirements. **Standard 5:** Determine constraints and recommend mission changes, as necessary. **Standard 6:** Complete and submit required mission documents. **Standard 7:** Analyze weather. **Standard 8:** Complete external coordination measures.
1000	**Title:** Participate in a Crew Mission Brief
	Condition: Given the Combined Checklist.
	Standard 1: Conduct the brief per the Combined Checklist. **Standard 2:** Crewmembers gain a thorough understanding of the mission or flight. **Standard 3:** Time and location for debrief is established.
1001	**Title:** Prepare SUAS for Flight
	Condition: Given an SUAS, Operator's Manual, Operator's CL, and local SOP.
	Standard 1: Assemble SUAS and ancillary equipment. **Standard 2:** Perform system checks. **Standard 3:** Determine impact if all systems are not fully mission capable. **Standard 4:** Confirm sufficient batteries are on-hand for the mission. **Standard 5:** Program flight path.

1002	**Title:** Communicate with a radio or headset
	Condition: Given a radio and communications plan.
	Standard 1: Designate primary and alternate means of communications. **Standard 2:** Establish communication with the VO and/or Airspace Control Authority IAW local SOP and Crew Brief. **Standard 3:** Complete communication procedures with VO and/or Airspace Control Authority.
Conduct SUAS Flight Operations	
1003	**Title:** Operate UA in Autonomous Mode
	Condition: Given an SUAS, Operator's Manual, and local SOP.
	Standard 1: Program flight path as required by the mission, airspace restrictions, and coordination measures. **Standard 2:** Monitor UA flight path and altitude. **Standard 3:** Command ground-track and altitude changes, as required. **Standard 4:** Avoid traffic, obstacles, and hazards. **Standard 5:** Correctly navigate UA within pre-planned routes and mission area. **Standard 6:** Maintain airspace surveillance. **Standard 7:** Announce actions. **Standard 8:** Collect data in accordance with mission requirements. **Standard 9:** Use data and information protection measures. **Standard 10:** Monitor battery status.
1004	**Title:** Operate UA in Manual Mode
	Condition: Given an SUAS with manual control authority.
	Standard 1: Maintain flight path as required by the mission, airspace restrictions, and coordination measures.

	Standard 2: Maintain altitude within 50 feet. **Standard 3:** Maintain ground-track within 100 feet. **Standard 4:** Avoid traffic, obstacles, and hazards. **Standard 5:** Correctly navigate UA within pre-planned routes and mission area. **Standard 6:** Maintain airspace surveillance. **Standard 7:** Announce actions. **Standard 8:** Collect data in accordance with mission requirements. **Standard 9:** Use data and information protection measures. **Standard 10:** Monitor battery and systems status.
1005	**Title:** Respond to an Emergency
	Condition: Given an SUAS, Operator's CL, Crew Brief, and local SOP.
	Standard 1: Assess SUAS status. **Standard 2:** Announce and acknowledge actions. **Standard 3:** Correctly perform the appropriate emergency procedure. **Standard 4:** Determine if continued flight poses undue risk. **Standard 5:** Advise Crewmembers and Airspace Control Authority as necessary.
1006	**Title:** Complete Post-Flight Procedures
	Condition: Given a Post Flight CL, Coordination Measures, and local SOP.
	Standard 1: Complete Post Flight inspections. **Standard 2:** Complete data protection measures. **Standard 3:** Conduct battery maintenance as necessary. **Standard 4:** Disassemble and store SUAS. (camera cover secured) **Standard 5:** Clear LRS of equipment and trash. **Standard 6:** Complete and Submit Post-Mission paperwork.

1007	**Title:** Conduct Operator-Level Maintenance
	Condition: Given an SUAS, Operator's Manual, and local SOP.
	Standard 1: Assess SUAS status. **Standard 2:** Correctly identify faults, unserviceable items, repairable items, and grounding condition(s). **Standard 3:** Conduct operator-level maintenance IAW the Operator's Manual and local SOP. **Standard 4:** Complete system status updates in MARS.
1008	**Title:** Conduct Aerial Data Collection
	Condition: Given an SUAS.
	Standard 1: Determine Survey/Map grade of data to be collected. **Standard 2:** Select appropriate SUAS and payload. **Standard 3:** Select appropriate software. **Standard 4:** Select mode of flight (manual/automatic). **Standard 5:** Process and disseminate data as required by SOP and Mission requirements.
1009	**Title:** Process Mission Data
	Condition: Given an GCS, Air Gap Computer, and Data Processing Software.
	Standard 1: Save collected data for processing. **Standard 2:** Confirm collected data meets mission requirement. **Standard 3:** Use protection measures to transfer and disseminate data. **Standard 4:** Process and disseminate data as required by SOP and mission requirements.
Mission Tasks	
2000	**Title:** Conduct Blue Roof Operations
	Conditions: Given an SUAS and approved mission request.
	Standard 1: Coordinate with Emergency Response Team.

	Standard 2: Coordinate through HQ Aviation and Airspace Control Authority for permission to conduct SUAS flights. **Standard 3:** Deconflict SUAS flights with other Emergency Response aircraft. **Standard 4:** Collect data for 3D point cloud. **Standard 5:** Select mission software. **Standard 6:** Process and disseminate data as required by SOP and Mission requirements.
2001	**Title:** Operate from or over a Department of Defense installation or property.
	Conditions: Given an SUAS and approved mission request.
	Standard 1: Coordinate with HQ Aviation for airspace use. **Standard 2:** Coordinate with installation agencies for land use and aerial deconfliction. **Standard 3:** Conduct mission and environment assessments. **Standard 4:** Ensure cyber and information controls are sufficient. **Standard 5:** Process and disseminate data as required by SOP and Mission requirements.
2002	**Title:** Conduct a Bridge Inspection
	Conditions: Given an SUAS and approved mission request.
	Standard 1: Operate UA in manual mode, as necessary. **Standard 2:** Identify areas of structural degradation. **Standard 3:** Inspect concrete piers and abutments for erosion, cracks, and undue settling. **Standard 4:** Inspect bridge for areas of stress. **Standard 5:** Process and disseminate data as required by SOP and Mission requirements.
2003	**Title:** Conduct Vegetation/Hydrology Survey
	Conditions: Given an SUAS and approved mission request.
	Standard 1: Determine Survey/Map grade of data to be collected. **Standard 2:** Collect data for 3D Point Cloud.

	Standard 3: Process and disseminate data as required by SOP and Mission requirements.
Visual Observer Tasks	
4000	**Title:** Select a Vantage Point
	Condition: Given a local SOP, Crew Brief, and binoculars, etc., as required.
	Standard 1: Select a location suitable for maintaining visual contact with the UA. **Standard 2:** Select a location to observe the mission area, and flight routes as briefed by the RP. **Standard 3:** Conduct communications checks with other Crewmembers and ATC as required.
4001	**Title:** Maintain Airspace Surveillance
	Condition: Given a local SOP and binoculars, etc., as required.
	Standard 1: Maintain visual contact with UA. **Standard 2:** Correctly relay position, direction of travel, altitude, and proximity to hazards as directed by the RP. **Standard 3:** Warn RP of inbound traffic location, bearing, and distance. **Standard 4:** Direct flight path changes to avoid traffic and obstacles using correct directional cues and crew coordination techniques.
Remote Pilot Instructor Tasks	
5000	**Title:** Provide Academic Instruction or New Equipment Training
	Condition: Given a Program of Instruction or training requirement.
	Standard 1: Prepare teaching material. **Standard 2:** Present material with the teach, demonstrate, evaluate method of instruction. **Standard 3:** Assess student performance. **Standard 4:** Schedule additional training, as required.

5001	**Title:** Conduct an Evaluation
	Condition: Given a crewmember and an SUAS.
	Standard 1: Determine which evaluation is required. **Standard 2:** Conduct the evaluation using a real-world scenario, if possible. **Standard 3:** Evaluate the crewmember(s) per the crew task list, SOP, local requirements and APL 95-1-1. **Standard 4:** Assess and debrief.
5002	**Title:** Provide Flight Training
	Condition: Given a crewmember or student-crewmember and SUAS.
	Standard 1: Conduct crew brief. **Standard 2:** Teach and demonstrate the tasks to be performed. **Standard 3:** Review lesson tasks. **Standard 4:** Supervise performance of lesson tasks. **Standard 5:** Assess and debrief.

B.2. The Proficiency Flight Evaluation (PFE) is administered as a no-notice or pre-planned event to determine proficiency and/or regain currency. Evaluation topics will be determined by the ATPM based on:

a. Duration since last flight. If Crewmember duties have not been performed within the previous 180 days, then the PFE will cover all crew tasks in Table B-2.

b. ACE Requirement. The PFE may be treated as an Annual Comprehensive to meet both requirements with a single event.

c. Proficiency. If the Crewmember's currency has not lapsed, but proficiency is in doubt, then the PFE will cover those areas that the ATPM wishes to evaluate.

B.3. The Post-Mishap Flight Evaluation (PMFE) – The PMFE is administered as a pre-planned event to determine incident or mishap root cause(s). The ATPM may elect to return crewmembers to aviation duties without a PMFE for mishaps and incidents not resulting in injury or property damage.

Appendix C – SUAS Crew Brief

1. Mission overview.
   a. Crew introduction.
   b. Task, purpose, end-state, duration.
   c. SUAS Type.
   d. Flight conditions (Day, Night, VLOS, BVLOS).
   e. Mission area boundaries.
   f. Airspace classification, requirements, restrictions.
   g. LRS location.
   h. VO location.
   i. MC location.
   j. Flight routes, altitudes.
   k. Communication requirements (ATC, VO, MC), frequencies.
   l. Known hazards and highest associated risk.
   m. Weather.
2. Required items, mission equipment, and personnel.
   a. Radios.
   b. Binoculars.
   c. Sunglasses.
   d. Personal Protective Equipment (PPE).
   e. Water.
   f. Power.
   g. Verify mission is approved.
   h. Verify currency and medical qualifications.

3. Analysis of the aircraft and ancillary equipment.
   a. Preflight deficiencies.
   b. Mission deviations based on system analysis.
   c. Expected battery life.
4. Crew actions, duties, and responsibilities.
   a. Aircrew coordination – terminology, distance and direction cues.
   b. Airspace surveillance procedures. (Briefed by VO).
   c. Visual contact with UA. (Briefed by VO)
   d. Communication requirements (launch, enroute turns, mission area entry, return to LRS, after landing)
   e. Brief emergency actions (Minimum brief one).
      (1) Lost link.
      (2) Lost visual contact with UA.
      (3) Lost communications with crewmembers, ATC.
      (4) Airspace INTRUSION by manned aircraft.
      (5) Unintended airspace INTRUSION by UA.
      (6) Uncommanded deviations.
      (7) "**KNOCK IT OFF"** – from any crewmember indicates that the UA must immediately land.

5. General Crew Duties
   a. RP –
      (1) Fly the aircraft – Primary focus is visual contact with UA (manual control) or GCS interface (automatic flight mode).
      (2) Cross-check systems, UA position and flight path.
      (3) Monitor and transmit on assigned radio.
      (4) Maintain obstacle and hazard clearance.
      (5) Read and complete CL items.
   b. VO –
      (1) Maintain visual contact with UA.
      (2) Cross-check UA position and flight path with mission plan.
      (3) Monitor and transmit on assigned radio.
      (4) Assist RP with obstacle and hazard clearance.
      (5) Read and complete CL items as required.
   c. MC –
      (1) Perform duties as assigned by RP.
6. Time and place for crew-level AAR.
7. Crewmembers' questions, comments, and acknowledgement of mission briefing.

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Appendix D – SUAS Operator's Checklist Template

ANAFI SUAS CREWMEMBER'S CHECKLIST

Headquarters Aviation

1 June 2022
Version 2.0

DISTRIBUTION RESTRICTIONS HAVE NOT YET BEEN DETERMINED BY USACE.

Checklist Symbols. Symbols preceding numbered steps:
★ **–** Indicates additional performance steps have been added by the Field Operating Activity that appear in the Additional Procedures portion of the checklist.

(N) – Indicates performance of step is mandatory for night flights.

(B) – Indicates performance step is mandatory for BVLOS flights.

(SC) – Indicates performance step is mandatory for simultaneous control of multiple SUAs.

(VO) – Indicates VO duties.

Underlined Emergency Procedure Steps – Indicates an immediate emergency action step.

Checklist Sections. This checklist is divided into two sections by the following symbols preceding page numbers:

(N) – Normal Procedures

(E) – Emergency Procedures

(A) – Additional Procedures

User Comments. HQ Aviation needs your feedback. Please help us improve this document by reporting errors and needed changes to HQAviation@usace.army.mil.

Policy. Use of this Operator's Checklist is mandatory for all USACE SUAS flights. Added user notes must be legible and cannot obscure original text. FOAs may add Additional Procedures to address critical system or local requirements by placing a black star symbol ★ in front of its corresponding Normal Procedure. Special Procedures shall begin on page A-2 to address all system-specific requirements.

PREFLIGHT

ASSEMBLY

1. Controller – Off; check condition and terminal cable secure.
2. UA – Off and check condition.
3. Gimbal – Check condition.
4. Arms – Unfolded and locked.
5. Arms Mechanical Lash – Removed.
6. Lens Cap – Removed.
7. Propellers – Check condition and verify unlocked.
8. Controller – Check condition, 100% charge, and Terminal Cable secured.
9. UA Battery – Check condition, temperature, and 100% charge (All LEDs off indicates 100%).
10. MicroSD Card – Inserted and secure.
11. UA Battery – Installed, 3 hooks engaged and locked.

SYSTEM CHECKS

1. Controller – On and LED alternating light to dark blue.
2. UA – On, Gimbal Calibration OK.
3. Controller – LED is dark blue, L/H trigger moves gimbal.

N-1

4. Controller Link – FreeFlight 6 launched, image feed and telemetry OK.

5. Flight Mode – MANUAL.

6. RTH Height – Set as required.

7. Max Altitude – Set as required.

8. Max Distance – Set as required.

9. Geofence – Activate as required.

10. Image Settings – Adjust as required.

11. Preferences – controls set to default mode.

12. Map Data – Verify correct and/or transfer from MMS, as required.

13. MicroSD Card – Formatted.

14. Battery Levels – Check; annotate if below 100%

15. Global Reactivity, Camera Tilt Speed, Inclination, Vertical Speed, and Rotation Speed – Set.

BEFORE TAKEOFF

1. UA and Controller GPS Signal – Check.

2. FreeFlight 6 – Review Flight Plan and confirm final waypoint is the intended landing spot, as required.

3. Flight Path – Clear.

N-2

4. Flight Mode – MANUAL.
5. Weather – Check.
6. Takeoff Area - Clear.
7. Communications – Check.
8. Airspace – Verify Clear / Receive ATC Clearance.
9. Take-off/Land Command – Takeoff.

AFTER TAKEOFF

1. Precise Home Set – Confirm (if within parameters).
2. Control Inputs – Verify correlation.
3. Gimbal Commands – Verify correlation.
4. Video – Check Quality and Latency.
5. System Indicators – Check.

BEFORE LANDING

1. Flight Mode – MANUAL.
2. Landing Area – Clear.
3. Takeoff/Land Command – Land.

N-3

AFTER LANDING

1. ATC Communication – as required.
2. Motors – Off.
3. UA Battery – Off.
4. Controller – Off and closed.
5. Lens Cap – Install.
6. UA, Gimbal, Propellers – Check condition and security.
7. UA Battery – Remove.
8. MicroSD Card – Remove.
9. Motor Arms – Fold.
10. UA Battery – Stowed and secured.
11. MicroSD Card – Stowed and secured.
12. UA – Stowed and secured.
13. Controller – Stowed and secured.
14. Cables – Stowed and secured.

N-4

EMERGENCY PROCEDURES

The procedures outlined in this section are intended as base-line responses to typical system malfunctions and operational emergencies. Unforeseen circumstances may occur which require immediate and instinctive crewmember actions to mitigate further risks. The primary consideration is to maintain UA control.

SINGLE-MOTOR FAILURE

1. VO – Maintain visual contact with UA.
2. RP – Verify UA location.

If continued flight is possible:

3. LAND AS SOON AS PRACTICABLE.

If continued flight is not possible:

4. RP – Steer UA toward a suitable landing location.
5. VO – Determine landing location.

E-1

LOST LINK

1. RP – Attempt to re-establish link.

2. VO – Maintain visual contact with UA.

If re-establishing link is possible:

3. LAND AS SOON AS PRACTICABLE.

If re-establishing link is not possible:

4. VO – Note UA direction of travel and altitude.

5. RP – Advise airspace control authority and other aircraft, as necessary.

BATTERY LOW

1. RP – Return UA to landing site.

If battery level is critical:

2. RP – Position payload as necessary.

3. RP – Fly UA to nearest suitable landing area.

E-2

AIRSPACE INTRUSION

If manned aircraft are not in the vicinity:

1. RP – Tap STOP box on Controller (if not in MANUAL Mode).
2. RP – Command UA to lowest possible altitude and exit the airspace as soon as possible.
3. VO – Maintain visual contact and scan for other aircraft.
4. RP – Advise airspace control authority, as necessary.

If manned aircraft are in the vicinity:

1. RP – Land as soon as possible.
2. VO – Maintain visual contact and warn RP if collision with manned aircraft is likely.
3. RP – Advise airspace control authority, as necessary.

LOST COMMUNICATIONS

If communication with VO is lost:

1. RP – Command UA return to LRS.
2. RP - Maintain visual contact.

If communication with Airspace Control Authority is lost:

1. RP – Command UA return to LRS.
2. Cease operations until communication is re-established.

E-3

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ADDITIONAL PROCEDURES

The procedures outlined in this section are intended as a crewmember reference for flight-related activities and data collection standards. If unforeseen circumstances occur, crewmembers must exercise good judgement to maintain safety and quality standards.

USACE SUAS INITIAL MISHAP REPORT

1. Owning unit:
2. Date and time of incident:
3. Location of incident:
4. Mishap Crewmembers:
5. Mishap SUAS/SUAS Condition:
6. Brief description of mission:
7. Brief description of incident:
8. UA Location (or last known heading, airspeed, and altitude):
9. Have you notified appropriate agencies? (Airspace Authority, Emergency Services, FAA for collision with manned aircraft or airspace violation – dial 1-800-WX-BRIEF.):
10. Did the incident cause injury to Crewmembers or bystanders? *(if yes, provide a brief description of injuries)*:
11. Was property damaged? (if yes, provide a brief description of the damage and POC information of land owner and/or witnesses):

A-1

12. Has the incident created conflict with a third party/property owner, etc.? (if yes, provide details):

13. Have you recovered the UA? (for incidents not involving fatality, injury and/or mid-air collision, otherwise identify UA location and secure incident site):

14. Have you saved all relevant flight data?

15. Additional information:

A-2

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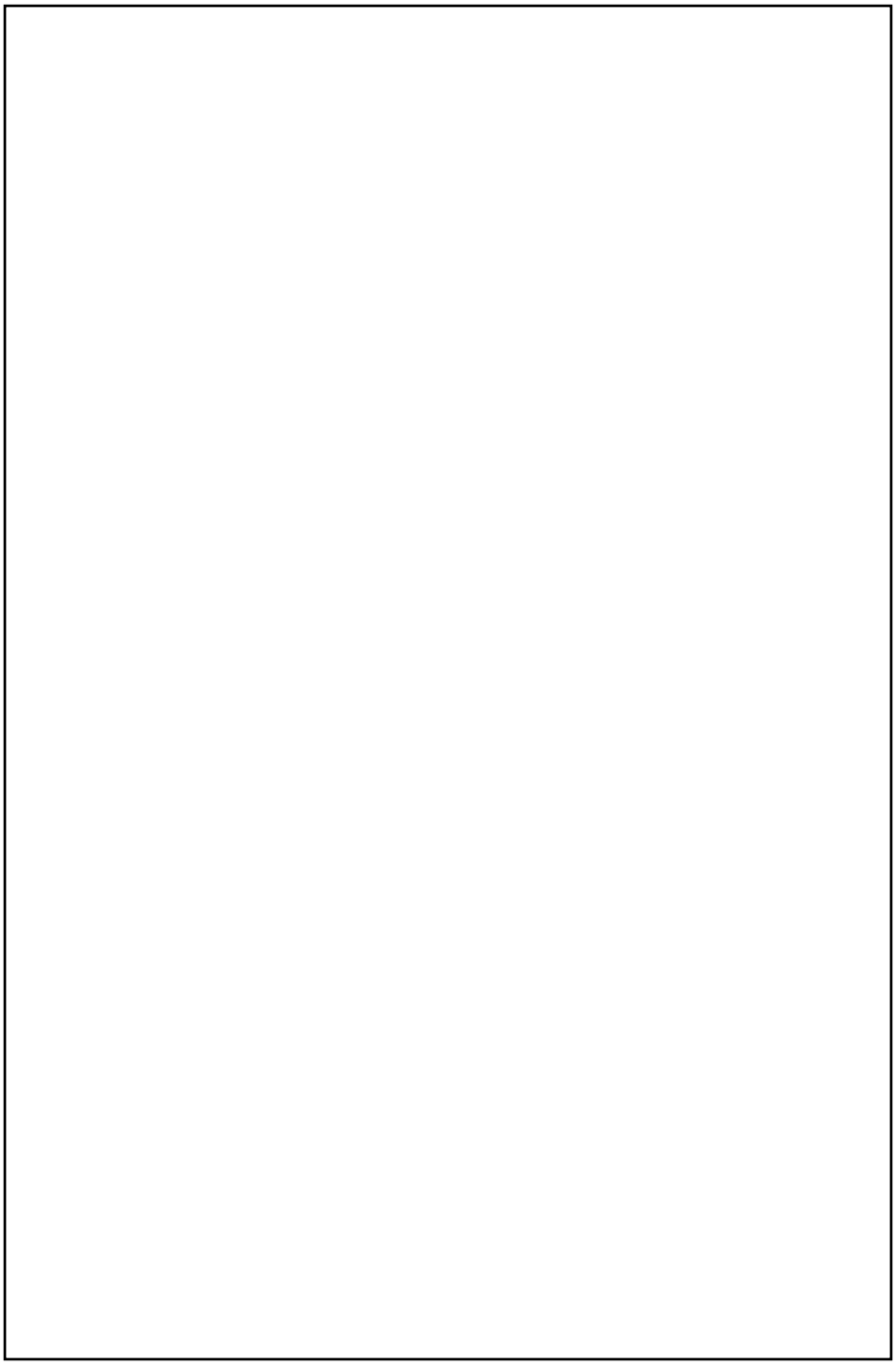

Appendix E – Mission Planner Workflow

Contents:

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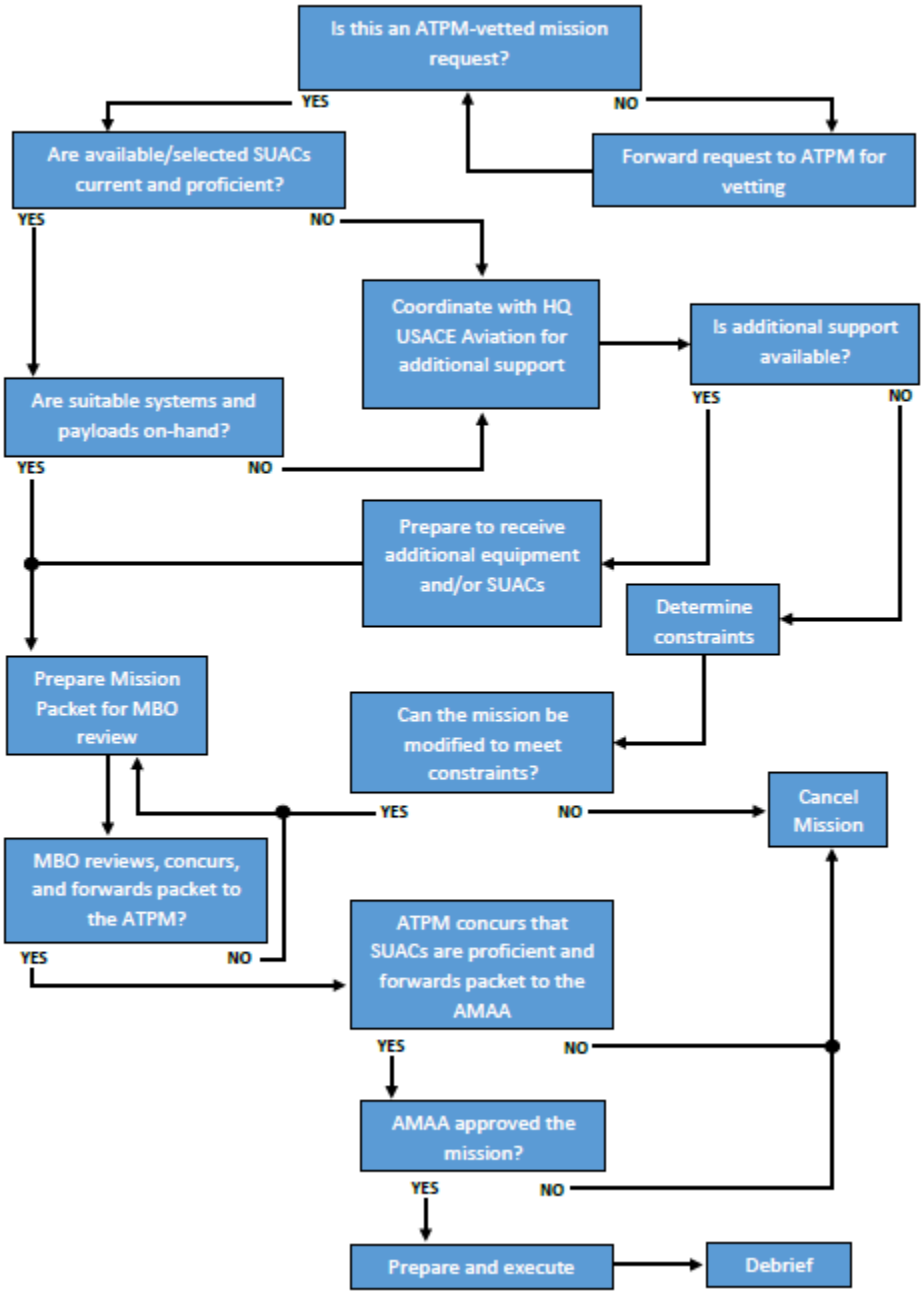
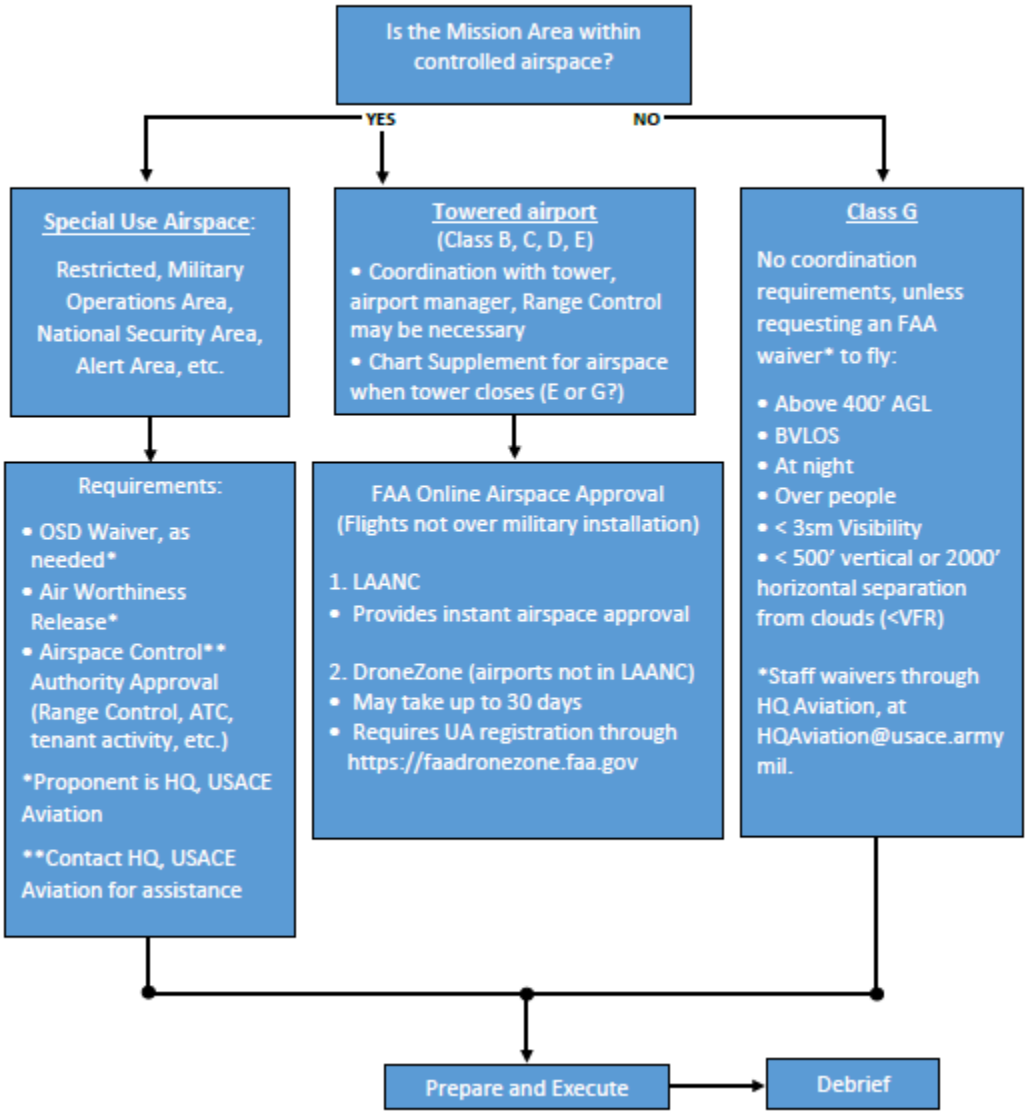
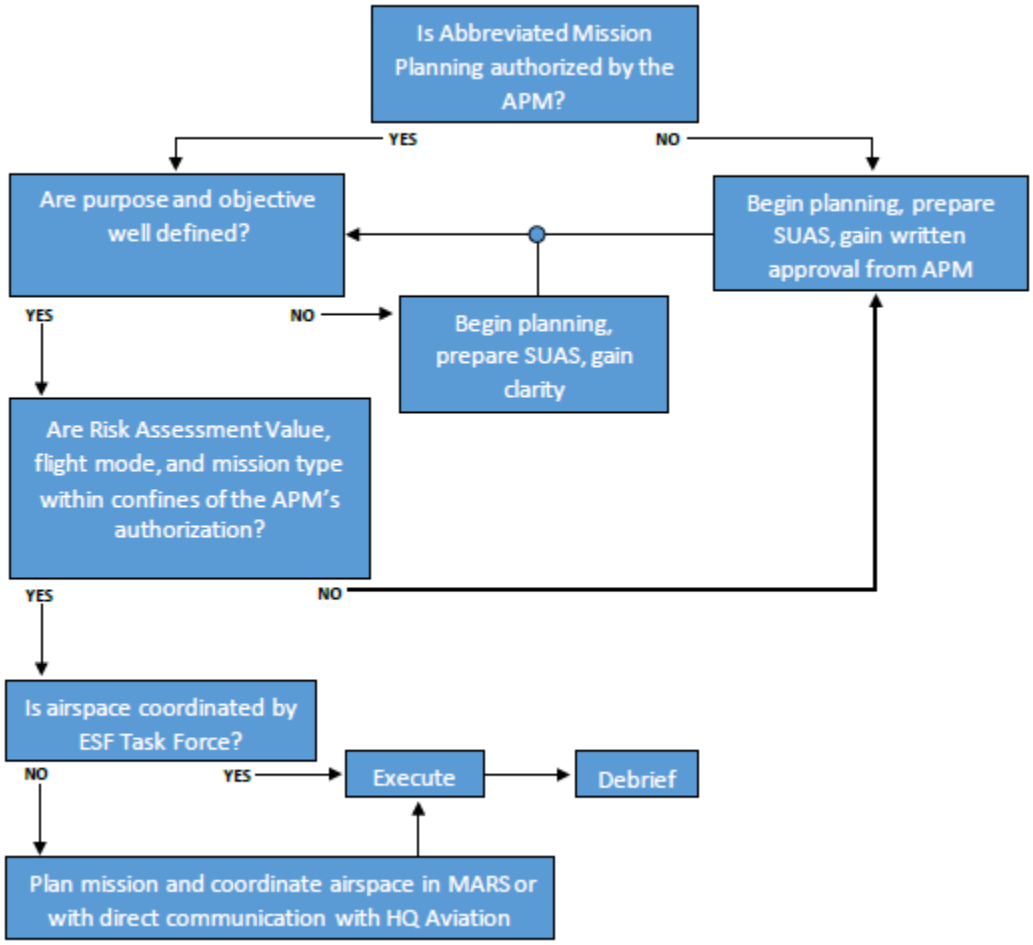
Standard Mission Planning Workflow



Airspace Planning Considerations



Abbreviated Mission Planning Worklflow



SUAS Mission Packing List

Mission ID:

MISSION CRITICAL	ANCILLARY	WEATHER, PPE, COMFORT
☐ Operator's Checklist (Binder or Wrist Strap)	☐ Mobile Phones w/charger	☐ Canopy Tent/Shelter
☐ Payload	☐ Zip Ties	☐ Umbrella
☐ SUAS	☐ Digital Camera	☐ Fans
☐ Mobile Map Server (MMS)	☐ Range Finder	☐ Anemometer
☐ Additional UA(s)	☐ Binoculars	☐ Water
☐ Additional Controller(s)	☐ Handheld/Headset radios	☐ Cooler
☐ OEM Spares Kit w/tools	☐ Extra radio batteries	☐ Food
☐ Additional Batteries	☐ GPS	☐ Bug Spray
☐ Battery Chargers	☐ Lens Wipes	☐ First Aid Kit
☐ Fire Extinguisher	☐ Pens/Pencils	☐ Reflective Safety Vest
☐ GCS Charging cables	☐ Paper	☐ Hard Hats
☐ Mission Paperwork	☐ External Hard Drive	☐ Safety Cones
☐ Misc. Power Source(s)	☐ Landing Pad	☐ Sunglasses
☐ Generator	☐ Rope	☐ Hats
☐ Gas	☐ Extension Cords	☐ Wet Weather Gear
☐ Power Strip(s)	☐ Vehicle(s), Polaris, etc.	☐ Space Heater
☐ Targets		
☐ Calibration Panel		

Additional Items:

Signature:

JAN 21

Appendix F – Flight Training Folder Forms and Records

Contents:

EF 7120 (DRAFT), *Aircrew Training Program Manager's SUAC Task List*

EF 7122 (DRAFT), SUAS *Crewmember Training Record*

EF 4507 (DRAFT), SUAS *Crewmember Grade Slip*

EF 6150, *Small Unmanned Aerial Systems Operator – Health Self-Assessment Tool*

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AIRCREW TRAINING PROGRAM MANAGER'S SUAC TASK LIST

For use of this form see USACE Aviation Policy Letter 95-1-1
The proponent agency is HQ AVIATION

PART I. BIOGRAPHICAL

NAME: | FOA:

MONTH ATP YEAR BEGINS *(Crewmember's birth month or one designated by ATPM)*:

PART II. AUTHORIZED DUTIES

(Check all applicable boxes)

☐ RP ☐ RPI ☐ SRP

PART III. AUTHORIZED FLIGHT MODES

(Check all applicable boxes)

☐ DAY ☐ NIGHT ☐ BVLOS ☐ SINGLE CREW *(Authorized by APM)*

PART IV. CURRENCY REQUIREMENTS

	1st Semi-Annual Period *(Select from menu on e-form)*	2nd Semi-Annual Period *(Select from menu on e-form)*	Adjustments *(Select from menu on e-form)*
ATP Year: ____ to ____ *(YY to YY)*			
Flights – Required*	*minimum unless adjusted IAW APL 95-1-1	*minimum unless adjusted IAW APL 95-1-1	
Flights – Actual*	*if < required annotate in adjustments column and with EF 7122 Event Entry	*if < required annotate in adjustments column and with EF 7122 Event Entry	

PART V. EVALUATION REQUIREMENTS

Evaluation	Date Completed
Aviation Policy Letter 95-1-1 written knowledge test *(open book)*	
Locally produced written knowledge test *(use of reference material authorized)*	
In-flight evaluation *(Includes oral topics)*	

PART VI. CERTIFICATION

This form and its enclosures establish your Aircrew Training Program Requirements.

ATPM: | Signature: | Effective Date: *(DD-MMM-YY)*

I certify that I have read and understand my ATP requirements contained on this form and its enclosures.

REMARKS: *(Enter remarks in space below and make corresponding event entries, as necessary, in crewmember's EF 7122.)*

SUAC Signature:

EF 7120 (DRAFT), JAN 2022 PREVIOUS EDITIONS ARE OBSOLETE

INSTRUCTIONS

(See USACE Aviation Policy Letter 95-1-1 for further guidance)

1. Reproduction of this form is authorized
2. This form is a permanent record of the small unmanned aircraft crew member's (SUAC) operational and training history. It is also a tool for Aircrew Training Program Managers (ATPMs) to record and track specific events.
3. ATPMs may increase or prorate the baseline currency requirement of two flights per semi-annual period in accordance with Aviation Policy Letter 95-1-1. The ATPM certifies the action by selecting the appropriate entry from the pull-down menu in the Adjustments column and then selects the corresponding event entry from the pull-down menu on the SUAC's EF 7122.
4. Crewmember evaluations may be waived by the APM in accordance with Aviation Policy Letter 95-1-1. The ATPM certifies the action by selecting the appropriate entry from the pull-down menu in the Date Completed column and then selects the corresponding event entry from the pull-down menu on the SUAC's EF 7122.
5. ATPMs shall maintain an up to date electronic copy of this form.
6. ATPMs will ensure milestone and annual ATP events are recorded on this form and initialed by the ATPM and SUAC within seven days.

Instructions for completing EF 7120 (DRAFT)

PART I. BIOGRAPHICAL DATA	
NAME:	Enter SUAC'S name in the following format: Last, First, MI.
FOA:	Enter SUAC's assigned District, Lab, or other organizational entity.
MONTH ATP YEAR BEGINS:	Enter the first month of the crewmember's ATP Year. It may be the crewmember's birth month, or another designated by the ATPM.
PART II. AUTHORIZED DUTIES	
Check box to indicate which flight duties(s) SUAC is authorized to perform.	
PART III. AUTHORIZED FLIGHT MODES	
Check box to indicate which flight mode(s) SUAC is authorized to perform crew duties.	
PART IV. CURRENCY REQUIREMENTS FOR ATP YEAR BASED ON BIRTH MONTH	
ATP Year: Enter as YY-YY	Begins on the first day of a month designated by the ATPM and ends on the final day of the previous month in the following year.
1st Semi-Annual Period	Begins on the first day of the ATP Year and ends on the final day of the 6th month.
2nd Semi-Annual Period	Begins on the first day of the 6th month of the ATP Year and ends on the final day of the 12th month.
Flights - Required	Enter number of flights required during each Semi-Annual Period. The minimum number is two unless otherwise specified by the ATPM.
Flights - Actual	Enter the number of flights flown during each Semi-Annual Period. This number cannot be less than the required number of flights for that Period.

INSTRUCTIONS

(See USACE Aviation Policy Letter 95-1-1 for further guidance)

PART V. EVALUATION REQUIREMENTS	
Aviation Policy Letter 95-1-1 written knowledge test *(open book)*	Must be completed each ATP Year. Minimum time between evaluations is 3 months and maximum time to next evaluation is 15 months, so long as that does not extend beyond the next ATP Year.
Locally produced written knowledge test (*use of reference material authorized)*	
In-flight evaluation	
PART VI. CERTIFICATION	
ATPM Signature: may be ink or electronic	
Effective Date: Enter date that SUAC may begin to perform crewmember duties.	
Remarks: Enter data relevant or overflow from other portions of the form.	
SUAC Signature: may be ink or electronic	

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SMALL UNMANNED AIRCRAFT SYSTEM CREW MEMBER TRAINING RECORD

For use of this form see USACE Aviation Policy Letter 95-1-1
The proponent agency is HQ AVIATION

Sheet No: 1

AUTHORITY: 33 USC § 576c, Corps of Engineers Operation of Unmanned Aircraft Systems; AR 95-1, Flight Regulations; APL 95-1-1, SUAS Policies and Procedures
PRINCIPAL PURPOSE: To record Small Unmanned Aircraft System Crewmember (SUAC) performance during evaluation and training events.
ROUTINE USES: This form is controlled by the FOA ATPM and stored electronically in the MIS for Aviation and Remote Systems (MARS) as part of each crewmember's Flight Training Folder. ATPMs may also retain hard copies of this and all FTF forms.
DISCLOSURE: Voluntary, however, this form is not intended for use in personnel actions outside of SUAS crewmember assignments and designations.

Name:	First Month of ATP Year:

Date *(DD-MMM-YY)*	Event *(See Section 6 of APL 95-1-1; select appropriate event entry from pull-down menu or type free-text entry on e-form)*	ATPM Signature *(Use pen or CAC)*	SUAC Signature *(Use pen or CAC)*

EF 7122 (DRAFT), JAN 2022 PREVIOUS EDITIONS ARE OBSOLETE Page 1 of 2

INSTRUCTIONS

(See USACE Aviation Policy Letter 95-1-1 for further guidance

1. Reproduction of this form is authorized
2. This form is a permanent record of the small unmanned aircraft crew member's (SUAC) operational and training history. It is also a tool for Aircrew Training Program Managers (ATPMs) to record and track specific events.
3. ATPMs will ensure that, at a minimum, mandatory entries for the beginning and end of each crewmember's ATP Year are recorded by selecting appropriate text from the pull-down menu that is available in each row of the event column. Additional events may be entered by free-text or selected from the pull-down menu available in each row of the Event column.
4. ATPMs shall maintain an up to date electronic copy of this form in each crewmember's FTF file.

Instructions for completing EF 7122

Biographical Data (both sides)	
Sheet No.	Pages 1 and 2 provided; additional pages may be added as necessary
Name	Enter Crewmember's name (Last, First, middle initial)
First Month of ATP Year	Enter month crewmember's ATP Year begins
Date	
Date	Enter date the Event occurred
Event ***(selectable from pull-down menu or typed as free-text)***	
Mandatory entries at the beginning of each crewmember's ATP Year	New EF 7120 signed and posted to FTF
	New EF 6150 signed and posted to FTF
Additional entry for new crewmembers	SUAS qualification complete
Mandatory entry at the end of each crewmember's ATP Year *(Choose 1)*	ATP annual requirements met
	ATP annual requirements not met
Additional entries as required	BVLOS flight authorized IAW USACE Aviation Policy Letter 95-1-1
	Night flight authorized IAW USACE Aviation Policy Letter 95-1-1
	FOA-specific mission training complete
	Currency Requirement prorated IAW APL 95-1-1
	Number of required flights in semi-annual period increased IAW APL 95-1-1
	30-day extension for -ENTER ATP REQUIREMENT- approved by ATPM
	45-day extension for -ENTER ATP REQUIREMENT- approved by APM
	Proficiency Flight Exam completed to regain currency
	Crewmember involved in accident or incident; EF 178 posted
	Post Mishap Flight Evaluation completed; return to flight duty authorized
	Crewmember removed from ATP
	Crewmember designated as Remote Pilot Instructor for –ENTER FOA-
	Crewmember designated as Mission Briefing for –ENTER FOA-
	Crewmember transferred from –ENTER FOA-
	-ENTER FREE TEXT HERE-
Initials	
ATPM Initials	ATPM enters initials to validate the event.
SUAC Initials	Crewmember enters initials to validate the event.

MISSION ID:

SMALL UNMANNED AIRCRAFT SYSTEM CREWMEMBER GRADE SLIP

For use of this form, see USACE Aviation Policy Letter 95-1-1
The proponent for this form is HQ Aviation

Sheet No: 1

AUTHORITY: 33 USC § 576c, Corps of Engineers Operation of Small Unmanned Aircraft Systems; AR 95-1, Flight Regulations; USACE Aviation Policy Letter 95-1-1
PRINCIPAL PURPOSE: To record Small Unmanned Aircraft System Crewmember performance during evaluation and training events.
ROUTINE USES: This form will controlled by the FOA ATPM and stored electronically in the MIS for Aviation and Remote Systems (MARS) as part of each crewmember's Flight Training Folder. ATPMs may also retain hard copies of this and all FTF forms.
DISCLOSURE: Voluntary; this form is not intended for use in personnel actions outside of SUAS Crewmember assignments and designations.

Name:	Organization:	Event *(Select event from pull-down menu on e-form)*:

Date *(DD-MMM-YY)*	Evaluated Task(s) *(Select from pull-down menus or type free-text entry on e-form)*	Grade *(SAT, UNSAT, or N/A)*	Flight Mode *(Select from pull-down menu on e-form)*

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Sheet No: 2

Name:	FOA:	Event *(Select event from pull-down menu on e-form)*:

Date *(DD-MMM-YY)*	Evaluated Task(s) *(Select from pull-down menus or type free-text entry on e-form)*	Grade *(SAT, UNSAT, or N/A)*	Flight Mode *(Select from pull-down menu on e-form):*

Overall Grade: ☐ **Satisfactory** ☐ **Unsatisfactory** ☐ **N/A** *(Make corresponding entry(ies) on EF 7122)*	**SUAC Debrief Complete:** ☐ **Yes** ☐ **No**
SUAC requires additional training or re-evaluation of tasks listed above: ☐ **YES** ☐ **NO**	**Evaluator's Signature:**

EF 4507 (DRAFT), JAN 2022 **PREVIOUS EDITIONS ARE OBSOLETE** **Page 2 of 2**

Print Form | Save As | E-mail

U.S. Army Corps of Engineers (USACE)

SMALL UNMANNED AERIAL SYSTEMS (sUAS) OPERATOR - HEALTH SELF-ASSESSMENT TOOL

The proponent agency is CESO-MED/USACE Command Surgeon.

DATA REQUIRED BY THE PRIVACY ACT OF 1974

Authority	14 CFR Part 107, Federal Aviation Administration (FAA), Army Regulation (AR) 40-8, AR 95-1, and Title 14 U.S.C.
Principal Purpose	The purpose of this form is to clearly document the self-assessment of functional and physiological health to operate a USACE sUAS, while serving as a USACE sUAS Operator or Visual Observer.
Routine Uses	Information will be retained for one year inside the local individual training aircrew folder controlled by the MSC/FOA/Lab Aircrew Training Program Manager. This form will be destroyed in compliance with Army Records Retention Schedule.
Disclosure	Voluntary. However, failure to complete the form could result in the employee not being able to operate a USACE sUAS.

Applicability: This is applicable to all USACE federal employees and active duty service members who are assigned through additional duty orders as a USACE sUAS Operator or Visual Observer IAW FAA Part 107.

Purpose: The purpose of this self-assessment tool is for a sUAS Operator or Visual Observer to self-assess their health for sUAS operations and reinforce their awareness of the health factors that might affect the performance for safe sUAS flight operations

Instructions: This health self-assessment should be performed annually or as needed when a sUAS Operator or Visual Observer requires reinforcement of the health factors for the performance of safe flight operations.

SECTION I - FUNCTIONAL Federal Aviation Administration REQUIREMENTS FOR sUAS OPERATORS (*FAA Part 107*)
A sUAS Operator must be able to

- Able to operate sUAS weighing up to 55 pounds to an absolute maximum speed of 100 miles per hour
- Able to operate sUAS to 400 feet above the ground or within 100 feet of an object higher than 400 feet
- Able to avoid all manned aircraft in a controlled manner by keeping the sUAS within visual line of sight
- Able to operate from the hours of daylight to twilight (30 minutes before/after official sunrise/sunset)
- Able to communicate clearly with speech to a visual observer who is assisting with watching the sUAS
- Able to hear the visual observer, respond appropriately to their commands, and fly only in designated areas
- Able to operate a sUAS outside unprotected from the elements such as heat, cold, rain, snow, and/or wind.
- Able to operate the sUAS within the proper airspace distant from all aerial and ground hazards.

SECTION II - Physiological Factors Affecting Pilot Performance (*FAA AC 107-2, dated 6/21/16*)

- **Physical / Mental Condition:** I have no physical or mental incapacitation that could render myself incapable of performing sUAS duties (e.g., migraine headache, moderate / severe body ache(s) or pain(s), or seizures) (5.6.1, 5.6.4)
- **Communication:** I have the ability to speak, hear, and see a visual observer over typical mission distances (5.6.5.)
- **Situational Awareness:** I have the ability to maintain proper situational awareness of all sUAS operations and have no illness and/or medication(s), that interfere with my ability to maintain proper situational awareness (5.6.3)
- **Hand/Finger dexterity:** I have the dexterity ability to successfully operate the controls, buttons, and switches in a controlled and timely manner for the safe operation of the sUAS control station (5.6.1)
- **Vision:** I have sufficient distant vision corrected to be able to view the sUAS at distance, maintain visual line of sight, "see and avoid" obstacles, and maintain a continuous scan for obstacles (5.6.2, 5.7)

SECTION III - Federal Aviation Administration "IMSAFE" CHECKLIST (*Human Factors Risk Assessment*)

- **Illness** -I do not know (or have reason to know) of any medical condition that would make me unable to meet the requirement for safe and controlled sUAS operations (Title 14 CFR) (5.15)
- **Medication/Drug** -I will not take medication(s)/drugs or receive other treatment for a medical condition that is in any way contrary to safety. I understand virtually all medications (over-the-counter and prescribed), herbal, dietary supplements, sports/energy boosters and "natural" products have the potential for adverse side effects; I have reviewed the warnings for the products I use and there is no chance for sedation or the lowering of physical/mental performance. Any new product should have a 48-hour test period before flying to determine any adverse effects. (14 CFR Part 107 and 14 CFR Part 91, Sections 91.17 and 91.19), (FAA AC 107-2, 5.15) (FAA-G-8082-22, 49)

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Print Form | Save As | E-mail

Stress -I will take measures to control stress and reduce or eliminate distractions during sUAS operations. (FAA-G-8082-22, 46)

Alcohol consumption -I will not consume alcohol within 8-hours of flight operations (FAA AC 107-2, 5.15). I understand that it is unlawful for me to use any form of marijuana or other Federally identified illegal substance while designated as a sUAS operator (14 CFR Part 107).
NOTE: (While operating on a military installation Army Regulation 40-8 is more restrictive and requires no alcohol consumed within the last 12-hours of flight operations). (AR 40-8, 6c)

Fatigue -I will have sufficient sleep, will not over-exercise, will not feel physically or mentally exhausted, or have a degradation of attention, concentration, impaired coordination, or decreased communication prior to flight operations. (FAA-G-8082-22, 46, 47)

Eating -I will be well hydrated with water and well fed with healthy well-balanced foods to ensure that I will not become distracted by dehydration or hunger. (FAA-G-8082-22, 47-48)

SECTION IV - USACE sUAS Operator's Self-Assessment: I voluntarily self-assess by selecting one box below that

1) ☐ **I MEET all Health Self-Assessment requirements/factors for a USACE sUAS Operator / Visual Observer.**

2) ☐ **I DO NOT FULLY MEET all Health Self-Assessment requirements/factors for a USACE sUAS Operator / Visual Observer.** All requests for waivers will be submitted through the USACE Medical Authority by encrypted email to hqmedical@usace.army.mil.

Waiver submitted on:	Date Waiver was Submitted
Approved Waiver received on:	Date Waiver Response By USACE Medical Authority

3) ☐ **I DO NOT FULLY MEET all requirements and factors for USACE sUAS Operations due to a permanent condition and will voluntarily not perform flight operations.**

SECTION V - USACE sUAS CERTIFICATION (*required*)

☐ **I ACKNOWLEDGE by the signature below:** That I am obligated to perform a self-assessment of my fitness for duty before ***each mission*** and recognize the importance of voluntarily declining duties as the remote pilot or visual observer when I am unable to reasonably maintain safe operations. I understand that in the event of an aircraft accident (Class A through Class C), all crewmembers and any other personnel who may have contributed to the accident will be quickly evacuated to medical facilities for physical examinations and blood and urine testing according to AR 40 -8, AR 40 -21, AR 40 -501, AR 600 -105, and DA Pam 385 -40. I understand that AR 40-8 restricts flying duty for 12 hours after an immunization or a local or regional anesthesia, 24 hours after a plasma donation, 48 hours after general, spinal, or epidural anesthesia, and 72 hours after blood donation greater than 200 mL.

Name	MSC/FOA/LAB	
Signature	Date	Time

PROVIDE THIS FORM TO YOUR AVIATION TRAINING PROGRAM MANAGER (APTM)

ATPM Name	Date	Time
Signature	**Signature Acknowledges form is placed in local individual aircrew training file.**	

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Page 2 of 2

Appendix G – Mission Packet Forms

Contents:

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MISSION ID *(ex: HQA_09212022-09302022_LAKE HALE)*:

SUAS Air Mission Plan

For use of this form, see USACE Aviation Policy Letter 95-1-1
The proponent for this form is HQ USACE Aviation

1. REQUESTING ORGANIZATION

a. FOA:	B. POC:	c. Phone:

d. Government e-mail:

2. MISSION DETAILS

a. Flight Modes *(Check all applicable boxes)* *Indicates waiver or additional training required.

☐ Day ☐ Night* ☐ BVLOS* ☐ >400ft AGL* ☐ <3SM Visibility*

☐ Simultaneous control of multiple UAs* ☐ Prolonged flight over people*

☐ <500ft Vertical -or- <2000ft Horizontal from clouds* ☐ From a moving vehicle*

b. Flight Category: ☐ Training ☐ Mission ☐ Demonstration ☐ Functional Check

c. Support Category: ☐ Civil Works ☐ Disaster Relief ☐ Military Programs ☐ OCONUS

d. Dates *(MM/DD/YYYY) to (MM/DD/YYYY)*: _____ to _____

e. Location
Initial/Primary LRS *(DDD°MM.MM')*: _____

Location name or nearest landmark: _____ , State: _____

f. Airspace: ☐ Class B ☐ Class C ☐ Class D ☐ Class E ☐ Class G ☐ Special Use

g. Purpose: *(e.g. To inspect the Huntsville Bridge for upcoming renovations.)*

3. MISSION RISK FACTORS

a. Initial Risk Assessment *(per DD FM 2977)*: ☐ Low ☐ Medium ☐ High

b. Mission Environment:

☐ Benign (i.e., Waterways; non-DoD land) – User even location is a public venue that will not expose sensitive information.

☐ Controlled (i.e., Military Installations) – User event location could expose sensitive information, infrastructure or techniques relating to national security. Data safeguards, per Aviation Policy Letter 95-1-1, are mandatory.

c. Area Assessment:

☐ Critical Infrastructure or Defense Critical Infrastructure is not within 5NM of the mission area.

☐ Critical Infrastructure is located within 5 NM of mission area.

☐ Defense Critical Infrastructure is located within 5 NM of mission area.

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4. MAPS/IMAGES or FLIGHT PLAN VIEW *(Continuation sheets and attachments are authorized)*

5. CREWMEMBERS	a. CREW POSITION
1.	*(Select from menu on e-form)*
2.	*(Select from menu on e-form)*
3.	*(Select from menu on e-form)*
4.	*(Select from menu on e-form)*
5.	*(Select from menu on e-form)*
6.	*(Select from menu on e-form)*

6. MISSION UA(s) *(Enter last five unique characters of S/N; simultaneous control of multiple UAs requires approval):*		
1. S/N	4. S/N	7. S/N
2. S/N	5. S/N	8. S/N
3. S/N	6. S/N	9. S/N

7. MISSION PAYLOAD(s) *(Enter last five unique characters of S/N)*		
1. S/N	4. S/N	7. S/N
2. S/N	5. S/N	8. S/N
3. S/N	6. S/N	9. S/N

8. BATTERY/BATTERIES *(Enter last five unique characters of S/N)*		
1. S/N	4. S/N	7. S/N
2. S/N	5. S/N	8. S/N
3. S/N	6. S/N	9. S/N

9. CERTIFICATION	
a. Preparer *(Date)*	b. MBO *(Date)*
c. ATPM *(Date)*	d. AMAA *(Date)*

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MISSION ID *(Copy Mission ID from the associated EF 176)*:

Mission Debrief and SUAS Status Log

For use of this form, see USACE Aviation Policy Letter 95-1-1
The proponent for this form is HQ USACE Aviation

1. MISSION INFORMATION

a. Was the plan executed in accordance with the EF 176? *(If not, then provide details of mission plan deviations in Block 2.)* ☐ Yes ☐ No	b. Was the mission accomplished? *(If no, then provide details in Block 2.)* ☐ Yes ☐ No	c. Is the data collection accessible for future projects? *(If no, then provide details in Block 2.)* ☐ Yes ☐ No	
d. Are all SUAS components Fully Mission Capable (FMC)? *(If not, then provide details in Block 4.)* ☐ Yes ☐ No	e. Did a mishap or incident occur? *(If yes, then submit an EF 178 within 7 days.)* ☐ Yes ☐ No	f. Total number of flights	g. Cumulative flight time *(in minutes)*

2. DEBRIEF NOTES *(Continuation sheets and attachments authorized)*

3. FLIGHT LOG *(Enter component name, last five unique characters of the S/N, and flight information for UA(s), Payload(s) and Battery(ies) in columns below)*:

a. UA Total Minutes of Flight:		a. Payload Total Minutes of Flight:		a. Battery Total Minutes of Flight:	
1. S/N	Total	1. S/N	Total	1. S/N	Total
2. S/N	Total	2. S/N	Total	2. S/N	Total
3. S/N	Total	3. S/N	Total	3. S/N	Total
4. S/N	Total	4. S/N	Total	4. S/N	Total
5. S/N	Total	5. S/N	Total	5. S/N	Total
6. S/N	Total	6. S/N	Total	6. S/N	Total
7. S/N	Total	7. S/N	Total	7. S/N	Total
8. S/N	Total	8. S/N	Total	8. S/N	Total
9. S/N	Total	9. S/N	Total	9. S/N	Total

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4. POST FLIGHT EQUIPMENT STATUS *(Leave blank if FMC; complete EF 178 within 7 days if fault, loss, or damage is not the result of fair-wear-and tear)*			
a. Damage; Loss; Malfunction: ☐ UA ☐ Payload ☐ Battery *(Check only one box)*		b. Damage; Loss; Malfunction: ☐ UA ☐ Payload ☐ Battery *(Check only one box)*	
S/N:	Availability: *(FMC, PMC, or NMC)*	S/N:	Availability: *(FMC, PMC, or NMC)*
Description of Faults / Damage or Circumstances of Loss *(Copy to Block 10 of the EF 178 if not the result of fair-wear-and tear)*		Description of Faults / Damage or Circumstances of Loss *(Copy to Block 10 of the EF 178 if not the result of fair-wear-and tear)*	
c. Damage; Loss; Malfunction: ☐ UA ☐ Payload ☐ Battery *(Check only one box)*		d. Damage; Loss; Malfunction: ☐ UA ☐ Payload ☐ Battery *(Check only one box)*	
S/N:	Availability: *(FMC, PMC, or NMC)*	S/N:	Availability: *(FMC, PMC, or NMC)*
Description of Faults / Damage or Circumstances of Loss *(Copy to Block 10 of the EF 178 if not the result of fair-wear-and tear)*		Description of Faults / Damage or Circumstances of Loss *(Copy to Block 10 of the EF 178 if not the result of fair-wear-and tear)*	

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e. Damage; Loss; Malfunction: ☐ UA ☐ Payload ☐ Battery *(Check only one box)*		f. Damage; Loss; Malfunction: ☐ UA ☐ Payload ☐ Battery *(Check only one box)*	
S/N:	Availability: *(FMC, PMC, or NMC)*	S/N:	Availability: *(FMC, PMC, or NMC)*
Description of Faults / Damage or Circumstances of Loss *(Copy to Block 10 of the EF 178 if not the result of fair-wear-and tear)*		Description of Faults / Damage or Circumstances of Loss *(Copy to Block 10 of the EF 178 if not the result of fair-wear-and tear)*	
g. Damage; Loss; Malfunction: ☐ UA ☐ Payload ☐ Battery *(Check only one box)*		h. Damage; Loss; Malfunction: ☐ UA ☐ Payload ☐ Battery *(Check only one box)*	
S/N:	Availability: *(FMC, PMC, or NMC)*	S/N:	Availability: *(FMC, PMC, or NMC)*
Description of Faults / Damage or Circumstances of Loss *(Copy to Block 10 of the EF 178 if not the result of fair-wear-and tear)*		Description of Faults / Damage or Circumstances of Loss *(Copy to Block 10 of the EF 178 if not the result of fair-wear-and tear)*	

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MISSION ID *(Copy Mission ID from the associated EF 176)*:

SUAS Flight Mishap and Incident Report

For use of this form, see USACE Aviation Policy Letter 95-1-1
The proponent for this form is HQ USACE Aviation

1. ADMINISTRATIVE

a. FOA:	b. POC:	c. Government e-mail:

d. Phone:	e. Duty Position:
	☐ Mishap Crewmember ☐ Commander/Director ☐ ATPM ☐ Other

2. MISHAP / INCIDENT CONDITIONS *(Includes airspace violations and inflight hazardous conditions.)*

a. Brief Description *(for example: Airspace Incursion; Lost UA; Destroyed UA; Damage to Property, etc.):*

b. Purpose of mission/flight *(Copy from Block 2g on the associated EF 176):*

c. Injury to Crew	d. Injury to Non-Crew	e. Public Property Damaged	f. Private Property Damaged
☐ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO

g. Collided with Manned Aircraft	h. Collided with another UA	i. Emergency-Rescue Services Involved
☐ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO

j. Mishap/Accident Date:	k. Mishap/Accident Time:

4. MISHAP/INCIDENT LOCATION

a. Location or nearest landmark: State	d. Mission Environment:	e. Area Assessment:
b. Location in LAT/LON *(DDD° MM.MM')*:	☐ Benign ☐ Controlled ☐ Uncontrolled	☐ Critical Infrastructure ☐ Defense Critical Infrastructure

c. Airspace *(includes unplanned/inadvertent entry; check all boxes that apply):*

☐ Class B ☐ Class C ☐ Class D ☐ Class E ☐ Class G ☐ Special Use

4. FLIGHT INFORMATION

a. Flight Number:	b. Time of Takeoff:	c. Time of Landing/Termination:	d. Minutes of Flight

a. Flight Category(ies): ☐ Mission ☐ Training ☐ Functional Check ☐ Demonstration

b. Mission Category: ☐ Civil Works ☐ Disaster Relief ☐ Military Programs ☐ OCONUS

c. Flight Mode(s) when incident occurred *(Check all applicable boxes)* *Indicates waiver or additional training required.

☐ Day ☐ Night* ☐ BVLOS* ☐ >400ft AGL* ☐ <3SM Visibility*

☐ Over people not directly involved in UA mission* ☐ Control multiple UAs*

☐ <500ft Vertical or <2000ft Horizontal from clouds* ☐ From moving vehicle*

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5. Environmental Conditions			
i. % Humidity and Temp at LRS: % °F	j. Ceiling *(AGL)*:	k. Visibility:	l. Winds *(direction/speed in knots, e.g., 270°/15)* Surface: ° / kts Aloft: ° / kts

6. CREWMEMBERS AND FLIGHT HISTORY			
a. Crewmembers:	b. Crew Position *(Select from menu on e-form)*	c. Days since Last Flight:	d. Flights in Previous 90 days / 180 days
			/
			/
			/
			/

7. Mishap SUAS(s) *(Enter last five unique characters of S/N; simultaneous control of multiple UAs requires approval):*		
1. S/N	2. S/N	3. S/N
4. S/N	5. S/N	6. S/N

8. Mishap Payload(s) *(Enter last five unique characters of S/N)*		
1. S/N	2. S/N	3. S/N
4. S/N	5. S/N	6. S/N

9. Mishap Battery/Batteries *(Enter last five unique characters of S/N)*		
1. S/N	2. S/N	3. S/N
4. S/N	5. S/N	6. S/N

10. SUMMARY *(use of continuation sheets and attachments authorized)*

11. PRELIMINARY ESTIMATES *(do not include any medical information or medical cost estimates associated with this incident/mishap)*		
a. Estimated Cost of Damage to SUAS: $ _____ *(This amount includes UA, payload(s), and batteries. Provide an itemized list of affected SUAS components, including cost to repair or replace each item, in block 11e)*		
b. Estimated Cost of Damage to Government / Public Property: $ _____ *(Leave blank until preliminary estimate from property owner is complete; attach estimate when complete)*		
c. Estimated Cost of Damage to Private Property: $ _____ *(Leave blank until preliminary estimate from property owner is complete; attach estimate when complete)*		
d. Estimated Cost Class/Category: *(See APL 95-1-1, Section 6 for Cost Category Information)* ☐ Class A ☐ Class B ☐ Class C ☐ Class D ☐ Class E		
e. Itemized list of affected SUAS components:	Cost to repair or replace:	
12. SIGNATURES		
a. Preparer	b. ATPM	c. APM

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DELIBERATE RISK ASSESSMENT WORKSHEET

1. MISSION/TASK DESCRIPTION		2. DATE *(DD/MM/YYYY)*

3. PREPARED BY

a. Name *(Last, First, Middle Initial)*	b. Rank/Grade	c. Duty Title/Position

d. Unit	e. Work Email	f. Telephone *(DSN/Commercial (Include Area Code))*

g. UIC/CIN *(as required)*	h. Training Support/Lesson Plan or OPORD *(as required)*	i. Signature of Preparer

Five steps of Risk Management: (1) Identify the hazards (2) Assess the hazards (3) Develop controls & make decisions (4) Implement controls (5) Supervise and evaluate *(Step numbers not equal to numbered items on form)*

4. SUBTASK/SUBSTEP OF MISSION/TASK	5. HAZARD	6. INITIAL RISK LEVEL	7. CONTROL	8. HOW TO IMPLEMENT/ WHO WILL IMPLEMENT	9. RESIDUAL RISK LEVEL
				How: Who:	
				How: Who:	
				How: Who:	
				How: Who:	
				How: Who:	

Additional entries for items 5 through 9 are provided on page 2.

10. OVERALL RESIDUAL RISK LEVEL *(All controls implemented)*:

☐ EXTREMELY HIGH ☐ HIGH ☐ MEDIUM ☒ LOW

11. OVERALL SUPERVISION PLAN AND RECOMMENDED COURSE OF ACTION

12. APPROVAL OR DISAPPROVAL OF MISSION OR TASK ☐ APPROVE ☐ DISAPPROVE

a. Name *(Last, First, Middle Initial)*	b. Rank/Grade	c. Duty Title/Position	d. Signature of Approval Authority

e. Additional Guidance:

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Adobe Professional X

DELIBERATE RISK ASSESSMENT WORKSHEET

4. SUBTASK/SUBSTEP OF MISSION/TASK	5. HAZARD	6. INITIAL RISK LEVEL	7. CONTROL	8. HOW TO IMPLEMENT/ WHO WILL IMPLEMENT	9. RESIDUAL RISK LEVEL
				How: Who:	
				How: Who:	
				How: Who:	
				How: Who:	
				How: Who:	
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				How: Who:	

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DELIBERATE RISK ASSESSMENT WORKSHEET

Risk Assessment Matrix		Probability *(expected frequency)*				
		Frequent: Continuous, regular, or inevitable occurrences	**Likely:** Several or numerous occurrences	**Occasional:** Sporadic or intermittent occurrences	**Seldom:** Infrequent occurrences	**Unlikely:** Possible occurrences but improbable
Severity *(expected consequence)*		**A**	**B**	**C**	**D**	**E**
Catastrophic: *Death, unacceptable loss or damage, mission failure, or unit readiness eliminated*	**I**	**EH**	**EH**	**H**	**H**	**M**
Critical: *Severe injury, illness, loss, or damage; significantly degraded unit readiness or mission capability*	**II**	**EH**	**H**	**H**	**M**	**L**
Moderate: *Minor injury, illness, loss, or damage; somewhat degraded unit readiness or mission capability*	**III**	**H**	**M**	**M**	**L**	**L**
Negligible: *Minimal injury, loss, or damage; little or no impact to unit readiness or mission capability*	**IV**	**M**	**L**	**L**	**L**	**L**

Legend:
EH – extremely high risk **H** – high risk **M** – medium risk **L** – low risk

13. RISK ASSESSMENT REVIEW *(Required when assessment applies to ongoing operations or activities)*

a. Date	b. Last Name	c. Rank/Grade	d. Duty Title/Position	e. Signature of Reviewer

14. FEEDBACK AND LESSONS LEARNED

15. ADDITIONAL COMMENTS OR REMARKS

DD FORM 2977, JAN 2014 Page ____ of 2 Pages

Instructions for Completing DD Form 2977, "Deliberate Risk Assessment Worksheet"

1. **Mission/Task Description:** Briefly describe the overall Mission or Task for which the deliberate risk assessment is being conducted.

2. **Date** *(DD/MM/YYYY)*: Self Explanatory.

3. **Prepared By:** Information provided by the individual conducting the deliberate risk assessment for the operation or training .
   Legend: UIC = Unit Identification Code; **CIN** = Course ID Number; **OPORD** = operation order; **DSN** = defense switched network; **COMM** = commercial

4. **Sub-task/Sub-Step of Mission/Task:** Briefly describe all subtasks or substeps that warrant risk management.

5. **Hazard:** Specify hazards related to the subtask in block 4.

6. **Initial Risk Level:** Determine probability and severity. Using the risk assessment matrix (page 3), determine level of risk for each hazard specified. probability, severity and associated Risk Level; enter level into column.

7. **Control:** Enter risk mitigation resources/controls identified to abate or reduce risk relevant to the hazard identified in block 5.

8. **How to Implement / Who Will Implement:** Briefly describe the means of employment for each control (i.e., OPORD, briefing, rehearsal) and the name of the individual unit or office that has primary responsibility for control implementation.

9. **Residual Risk Level:** After controls are implemented, determine resulting probability, severity, and residual risk level.

10. **Overall Risk After Controls are Implemented:** Assign an overall residual risk level. This is the highest residual risk level (from block 9).

11. **Supervision Plan and Recommended Course of Action:** Completed by preparer. Identify specific tasks and levels of responsibility for supervisory personnel and provide the decision authority with a recommend course of action for approval or disapproval based upon the overall risk assessment.

12. **Approval/Disapproval of Mission/Task:** Risk approval authority approves or disapproves the mission or task based on the overall risk assessment, including controls, residual risk level, and supervision plan. Space provided for authority to provide additional guidance; use continuation page if needed.

13. **Risk Assessment Review:** Should be conducted on a regular basis. Reviewers should have sufficient oversight of the mission or activity and controls to provide valid input on changes or adjustments needed. If the residual risk rises above the level already approved, operations should cease until the appropriate approval authority is contacted and approves continued operations.

14. **Feedback and Lessons Learned:** Provide specific input on the effectiveness of risk controls and their contribution to mission success or failure. Include recommendations for new or revised controls, practicable solutions, or alternate actions. Submit and brief valid lessons learned as necessary to persons affected.

15. **Additional Comments or Remarks:** Preparer provides additional comments, remarks, or information to support the risk assessment. If block 15 is used as a continuation of block 14, strike through the block number and title.

Additional Guidance: Block 4-9 continuance page may be reproduced as necessary for processing of all subtasks/ substeps of the mission/task. If a complete page is not utilized, write "NOTHING FOLLOWS" on the first unused row, immediately after the final item assessed.

DD FORM 2977 INSTRUCTIONS, JAN 2014

Mission ID *(copy from associated EF 176)* :

SUAS Daily Risk Assessment

NOTE: Enter risk value numbers in space provided.

1. Mission *(enter only highest value of all that apply)*		
Routine	1	
Qualification/New Equipment Training	2	
Emergency Support *(Blue Roof, etc.)*	3	
Structure Inspection	3	
Bridge inspection	4	

2. Additional Factors *(add all that apply)*		
New equipment or software training	+2	
>5 Repetitive or repeating flights	+2	
During Civil Twighlight	+2	
Ambient temps >95°F or <45°F	+2	
From a moving vehicle or boat	+2	
LRS is < 150 feet from water	+2	
LRS is < 150 feet from obstructions	+3	
Self-Briefed	+3	
< 1/4 mi from a highway	+4	
< 1/4 mi from a populated area	+4	
< 1/4 mi from surfaced-based controlled airspace	+7	
Prolonged flight over people	+10	
Beyond Visual Line of Sight (BVLOS)	+10	
2.1. Mission Totals		0
Crewmember Risk Assessment Value (RAV)		
CM #1:	0	
CM #2:	0	
CM #3:	0	
CM #4:	0	
CM #5:	0	
CM #6:	0	
Separate CMs with high RAVs if possible		
*Must be under instruction of an RPI		

4. Days since last flight		CM #1	CM #2	CM #3	CM #4	CM #5	CM #6
> 90*	4						
60 - 90	3						
45 - 59	2						
31 - 44	1						
0 - 30	0						

5. Crew Rest		CM #1	CM #2	CM #3	CM #4	CM #5	CM #6
< 5 Hours	NO-GO						
5 - 7 Hours	2						
> 7 - 8 Hours	1						
> 8 Hours	0						

6. Duty Day		CM #1	CM #2	CM #3	CM #4	CM #5	CM #6
> 16 Hours	NO-GO						
> 12 - 16 Hours	4						
> 8 - 12 Hours	3						
> 5 - 8 Hours	1						
0 - 5 Hours	0						
6.1. Crewmember Totals		0	0	0	0	0	0

7. Planning Time		
< 1 Hour	NO-GO	
1 - 4 Hours	3	
> 4 - 8 Hours	2	
> 8 Hours	0	
7.1. Planning Total		0

8. Weather *(forecast +/- 1 hour of planned takeoff and landing; Enter GO or NO-GO)*					
Ceiling & Visibility	< 1000ft or < 3 Miles	NO-GO	≥ 1000ft & ≥ 3Miles	GO	
Winds	> UA Limit	NO-GO	< UA Limit	GO	

9. Overall Risk Assessment Value (RAV) relative to the number of CMs				
0 - 2 CMs	LOW = 0 - 21	Medium = 21 - 29	HIGH = > 29	FALSE
3 - 4 CMs	LOW = 0 - 29	Medium = 29 - 37	HIGH = > 37	FALSE
5 - 6 CMs	LOW = 0 - 37	Medium = 37 - 45	HIGH = > 45	FALSE

HQ AVN, APR 22

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CONTRACTOR SUAS FLIGHT REQUEST

For use of this form, see USACE Aviation Policy Letter 95-1-1
The proponent for this form is HQ USACE Aviation

1. TO *(TA name and office address):*	2. FROM *(company name and address):*	3. CONTRACTOR POINT OF CONTACT a. NAME: b. E-MAIL: c. PHONE:
4. NAME OF PROJECT:	5. PRIME CONTRACT NUMBER:	6. REQUEST SUBMITTED ON *(DDMMMYYYY):*
7. PERIOD OF REQUEST *(Multiple flights authorized; cannot exceed 30 days):* From (DDMMMYYYY): To (DDMMMYYYY):		8. ANTICIPATED NUMBER OF FLIGHTS DURING THIS PERIOD:

9. PURPOSE *(e.g., To collect survey-grade mapping data of the Huntsville Dam for renovations.):*

10. FLIGHT DETAILS *(Specify flight area and operating altitude(s); continuation sheets and attachments authorized):*

Statement of Cybersecurity and Flight Operations Compliance: By signing this document you affirm the information contained on this form is accurate and in compliance with the contract, 14 CFR Part 107, and Aviation Policy Letter 95-1-1. You further affirm that the contractor will only operate SUASs approved by HQ Aviation and, if applicable, that flight areas within 5 nautical miles of a controlled environment (i.e., military installation) or critical infrastructure not associated with the project location are approved by HQ Aviation.

11. CERTIFICATION

a. Preparer *(Date)*	b. TA *(Date)*
c. ATPM *(Date)*	d. APM *(only required for contractor flights conducted over people or BVLOS)* *(Date)*

12. Contractor Debrief *(Provide an explanation in block 13 for all boxes checked 'No' and send to the TA within 7 days of final flight.)*

a. Were all flights conducted within the ATPM approved flight area?	☐ Yes	☐ No	e. Number of flights completed:
b. Were all flights conducted with an HQ Aviation approved SUAS?	☐ Yes	☐ No	f. Number of inflight accidents resulting in damage or destruction of Government property:
c. Were cyber and data security measures in Section 7 followed?	☐ Yes	☐ No	
d. Was purpose for SUAS flights entered in block 9 met?	☐ Yes	☐ No	

13. Remarks *(e.g., 12d: The purpose listed in block 9 was not met because all data was inadvertently erased.)*

14. TA Debrief *(Provide an explanation in block 15 for all boxes checked 'No' and send to the ATPM within 5 days of receipt.)*

a. Did you complete a hands-on assessment of the contractor's equipment and cyber procedures?	☐ Yes	☐ No	☐ n/a
b. Did you complete follow-on assessments of the contractor's equipment and cyber practices?	☐ Yes	☐ No	☐ n/a
c. Did you report unsatisfactory contractor performance to the ATPM and COR?	☐ Yes	☐ No	☐ n/a
d. Did you brief the ATPM-approved flight area and altitudes to the contractor?	☐ Yes	☐ No	☐ n/a

15. Remarks

16. ATPM Debrief *(Provide an explanation in block 17 for all boxes checked 'No' and send to HQ Aviation within 5 days of receipt.)*

a. Did you provide cyber-focused SUAS familiarization training to the TA with relevant equipment?	☐ Yes	☐ No	☐ n/a
b. Did you coordinate with HQ Aviation for contract modifications for cyber and data security?	☐ Yes	☐ No	☐ n/a
c. Did you brief the TA on relevant policy changes from HQ Aviation?	☐ Yes	☐ No	☐ n/a
d. Did you assist and monitor the TA, as necessary?	☐ Yes	☐ No	☐ n/a

17. Remarks

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Appendix H – Mishap Reporting Flight Checklist Information

Contents:

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USACE SUAS INITIAL MISHAP REPORT

1. Owning unit:

2. Date and time of incident:

3. Location of incident:

4. CREWMEMBERs involved:

5. SUAS involved:

6. Brief description of mission:

7. Brief description of incident:

8. UA Location (or last known heading, airspeed, and altitude):

9. Have you notified appropriate external agencies involved? (Airspace Authority, Emergency Services if needed – dial 911, FAA for collision with manned aircraft or airspace violation – dial 1-800-WX-BRIEF.):

10. Did the incident cause injury to Crewmembers or bystanders? *(if yes, provide a brief description of injuries)*: _____

11. Was property damaged? (if yes, provide a brief description of the damage):

12. Has this incident created conflict with a third party/property owner, etc.?

13. Have you recovered the UA? (for incidents not involving fatality, injury and/or mid-air collision, otherwise identify UA location and secure incident site):

14. Have you saved all relevant flight data.

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PRE-ACCIDENT PLAN TEMPLATE

1. Designate Primary and Alternate action officers to complete the following steps:

2. Record USACE SUAS Initial Mishap Report details:

3. Direct CREWMEMBERs to take pictures of the crash site, LRS, and all SUAS hardware *(if possible).*

4. Activate the Notification Roster as necessary (includes e-mail, office phone, and mobile phone when possible):

MBO

ATPM

FOA RPI

APM

PAO (as required)

CCIR Reports *(as required)*

5. Contact and coordinate with appropriate external agencies *(as required)*:

911

ATC

FAA

LAND OWNER

TENANT ACTIVITY

6. Maintain communication with CREWMEMBERs.

7. Coordinate with APM for recovery of UA, system equipment, and LRS departure.

6. Direct CREWMEMBERs to a lab for blood and urine samples (for incidents involving injury or fatality, or cost of property damage is greater than $50,000).

7. Gather additional information and report:

8. Commander/Director designates an investigating officer:

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Appendix I – Leader's Guide

Contents:

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SUAS

COMMANDER'S/DIRECTOR'S

CHECKLIST

Headquarters

USACE Aviation

1 June 2022

Version 2.0

JASON R. KIRKPATRICK

Aviation Program Manager

PROGRAM OVERVIEW

1. UAS are a key enabler of remote data collection.

✓ 90% less cost and 86% less time vs. traditional methods.

✓ UAS missions can be executed in 1-2 days (opposed to 8-26 WEEKS without an Enterprise program).

✓ Does not completely replace any existing method.

2. Bill for the Enterprise program is:

$ _____

✓ Much less than the full full-time employee (FTE) a District would spend to meet FAA, DoD, and Army requirements.

✓ HQ Aviation does the paperwork while FOAs do the flying

- 90% reduction in paperwork from 2017.

3. My ATPM (Aircrew Training Program Manager) is:

_____

✓ Day-to-Day Management and Oversight

✓ Selected for Maturity, Judgment, and Aviation Discipline

✓ Key Liaison to HQ Aviation

1

- ✓ Can have two ATPMs if it makes sense (when the program matures)

OPERATIONAL OVERVIEW

1. Key Points:

- ✓ Automated and Deliberate Mission Planning.
- ✓ Deliberate Risk Assessment.
- ✓ 3-Layer Peer Review.
- ✓ Approval by Commander's/Director's Delegate.

2. Key Training Points:

- ✓ USACE Aviation Standards, Policies and Procedures.
- ✓ USACE Small Unmanned Systems Qualification Course (SQC).
- ✓ Safety Ingrained in all phases.
- ✓ Aviation Resource Management Survey every 2 – 3 Years.

2

COMMANDER'S/DIRECTOR'S POST MISHAP

CHECKLIST

1. DO NOT attempt to draw conclusions:
   - ✓ USACE Aviation and/or FAA will investigate.
   - ✓ Deliberation will reveal cause/fault.
   - ✓ HQ Aviation will assist.

2. Collect Information:
   - ✓ Who
   - ✓ What
   - ✓ When
   - ✓ Where (Not Why or How)

3. Injuries and Severity:
   - ✓ Treatment Provided?
   - ✓ Next info when?

4. Property Damage:

5. Notifications:
   - ✓ Emergency Responders
     - Medical
     - Fire/Rescue
   - ✓ CCIR Notification Triggers:
     - Injury or death
     - Property damage
   - ✓ FAA Notification Triggers:
     - Airspace Incursion
     - Collision with Manned Aircraft
   - ✓ Aviation Program Manager
   - ✓ Others: _____

     _____
6. Secure scene, flight data, and Flight Training Folders (FTFs):
7. BIO Samples Collection Triggers:
   - Collision with Manned Aircraft
   - Severe injury or death
8. Investigator Appointment Triggers:
   - Collision with Manned Aircraft
   - Severe injury or death
   - Airspace incursion
   - Near-miss with Manned Aircraft

SUAS REPORTING

1. Commander's/Director's Monthly View

- ✓ Number and location of air missions flown:

- ✓ Missions by type:
  - Associated Cost Savings/Avoidance
  - New work since SUAS ops began
  - Recurring Work

- ✓ Reported to uCOP?
- ✓ In SITREP
- ✓ Customer requests outside current capability
  - Coordination with HQ Aviation?
  - Plans for integration/tech upgrade?
  - BCA (Rough Plan, then Refined Plan)
  - Assign POC

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SUAS MISSION PACKING LIST

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Appendix J – References

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Figures List

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