AIR COMMAND SOLUTIONS

VETERAN OWNED & OPERATED

Unmanned Aircraft System (UAS) Standard Operating Guide

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I. Purpose and Scope

A. This guide establishes the authorized use and operational guidelines for Unmanned Aircraft Systems (UAS) within the Air Command Solutions Company (ACS). The UAS program is a function of the individual RPIC who are responsible for maintaining, manning, operating and storing UAS.

B. This guide is designed to minimize risk to people, property, and aircraft during the operation of the UAS while continuing to safeguard the right to privacy of all persons. It is further designed to keep the RPIC and his/her personnel from being subject to the civil and criminal penalties for misuse of UAS and remain in compliance with the strict legislative reporting requirements.

C. This policy is created to ensure that ACS employees who operate and deploy UAS are Remote Pilots in Command (RPIC) as defined in the Federal Aviation Administration (FAA) and have received training on the proper and safe operation of UAS.

D. This policy will define the training and certifications necessary to operate and deploy unmanned aircraft and will establish guidelines and best practices for RPICs to follow in order to safely deploy UAS assets.

E. At all times the ACS personnel shall comply with 14 CFR Parts 107 and/or Certificate of Authorization, plus applicable portions of CFR 14 Parts 61 and 91; as well as New York Government Codes..

F. If conflicts exist between FAA regulations, New York Government Code, New York Administrative Code and any part of this policy, the most restrictive will apply.

II. Definitions

A. **Aircraft**. A device that is used or intended to be used for flight in the air. This includes UAS.

B. **Airworthiness Statement**. The Airworthiness of the UAS is self-certified by the Remote Pilot in Command through a preflight inspection prior to flight.

C. **Certificate of Authorization (COA)**. COA is an authorization issued by the Federal Aviation Administration (FAA) to a public operator for a UAS. After a complete application is submitted, the FAA conducts an operational and technical review. If necessary, provisions or limitations may be imposed as part of the approval to ensure the UAS can operate safely with other airspace users.

D. **Crewmember**. A person assigned to perform duty while an aircraft is operating.

E. **Crew Resource Management (CRM)**. The effective use of all available resources including human, hardware, and information resources and coordination in the use of those resources by the RPIC, Remote Pilot and Visual Observer.

F. **First Person View (FPV)**. The Remote Pilot is observing the flight solely through the UAS camera.

G. **Flight time**. Remote piloting flight time commences when an aircraft moves under its own power for the purpose of flight and ends when the aircraft comes to rest after landing.

H. **Image**. Means any capturing of sound waves, thermal, infrared, ultraviolet, visible light, or other electromagnetic waves, odor, or other conditions existing on or about real property in this state or an individual located on that property. Imagery may include data about people, organizations, events, incidents, or objects as well as metadata.

I. **Visual Line of Sight (VLOS)**. The Remote Pilot and/or the Visual Observer can see, unaided, the UAS under their control during flight.

J. **National Airspace System (NAS).** Airspace inside the continental United States. It is further defined through air navigation facilities, equipment and services, airports or landing areas, aeronautical rules, regulations and procedures. There are two types of airspace within the NAS, controlled and uncontrolled. Operation of a UAS in controlled airspace adds another layer of responsibilities and requirements that must be met to operate the UAS.

K. **Night Flight**. Flight of a UAS that occurs between the hours of one half hour after sunset and one half hour before sunrise. The time of sunset and sunrise are determined by the National Oceanic and Atmospheric Administration (NOAA), but 14 CFR Part 107 will allow small UAS operations to be conducted during civil twilight if the small unmanned aircraft has lighted anti-collision lighting visible for at least 3 statute miles. The night time-operations prohibition in this rule is waivable through the FAA for Part 107 or as an addendum to approved certificate of waiver to the COA.

. **Mission Area of Operations (AOR)**. Defined perimeter/parameters to be determined based on the scope and type of the operation and a defined operational ceiling at or below 400 feet above the ground. The altitude of the small unmanned aircraft cannot be higher than 400 feet above the ground, unless the small unmanned aircraft is flown within a 400 foot radius of a structure and does not fly higher than 400 feet above the structure's immediate uppermost limit.

M. **Unmanned Aircraft System (UAS)**. UAS is the unmanned aircraft system and all of the associated support equipment, control station, data links, telemetry, communications, and navigation equipment, etc., necessary to operate the unmanned aircraft. The aircraft's flight is controlled either autonomously by hardware within the UAS or under the remote control of a Remote Pilot on the ground or in another ground vehicle. For purposes of this program, the 14 CFR Part 107 compliant UAS shall weigh less than 55 pounds fully loaded. Maximum groundspeed is limited to 100 mph (87 knots).

N. **Visual Flight Rules (VFR).** All flights with the UAS shall be conducted under VFR conditions and at an altitude below 400' AGL. VFR is established as a 3 mile visibility and a cloud ceiling of 1,000 feet for day operations and 5 mile visibility with a cloud ceiling of 2,000 feet for night operations.

. **Aircraft Registration.** All UAS operated by ACS personnel must be registered in accordance with current FAA 14 CFR Part 107 regulations. Registration requirements apply to UAS owned and operated by this agency as well as UAS on loan or UAS owned by outside agencies when operated by an agency RPIC.

III. Organizational Definitions - Chain of Command Relationships and Flight Team Members

A. **ACS Chief Pilot will:**

1. Establish protocols to prevent violations of policy, law, and public privacy;

2. Be responsible for the RPIC UAS reporting requirements under New York Government Codes.

3. Review and approve a training curriculum to assess the knowledge, skills and abilities of RPICs and Visual Observers.

B. **Company Program Coordinator (CPC) will:**

1. Be responsible for assisting in the tactical and administrative functions related to the UAS program within his/her section;

2. Maintaining a current list of all certified crew members to include Remote Pilots and Visual Observers;

3. Maintaining the training records for crew members and compliance with New York Government Code reporting requirements;

4. Be responsible for the condition, maintenance, and flight records of the UAS and its associated equipment within the data reporting software; and

5. Be responsible for registration and markings of all UAS owned and operated by the RPIC in accordance with current FAA 14 CFR Part 107 regulations.

C. **Flight team.** Any combination of the RPIC, Remote Pilot or Visual Observer(s). ONLY the RPIC meets the FAA definition of *crewmember*.

D. **Remote Pilot**. The individual exercising *pilot at the controls* over the UAS during flight. The Remote Pilot need not be 14 CFR 107 certified if the pilot is under the supervision of a RPIC who is in direct communication and in a position to take over control of the UAS, regardless of certification. Undesignated remote pilots may be student pilots at the controls.

E. **Remote Pilot in Command (RPIC)**. The mission commander with on-site authority for the UAS. The individual solely responsible for the overall flight operations for a specific mission. He/She may also act as either Remote Pilot or Visual Observer. Regardless, He/She may not delegate his/her responsibility. An RPIC may only operate one UAS at a time. Each UAS in use shall have its own RPIC assigned.

F. **Observer**. The individuals trained to maintain the line-of-sight and 360 degree hazard awareness around the UAS at all times and assist the RPIC in carrying out all duties required for the safe operation of the UAS. Under 14 CFR Part 107, *Visual Observers* are not *crewmembers* and have no responsibility or authority over the UAS operation. Visual Observers may be formally trained and *certified for special operations (formal training is required for night operations)*, or they may be chosen *ad hoc* and properly briefed by the RPIC (day operations only).

IV. Missions

A. All missions will be flown in accordance with FAA regulations, 14 CFR Parts 107 and/or Certificate of Authorization, applicable portions of 14 CFR Parts 61 and 91, current FAA National Policy regarding UAS Operational Approval, New York Government Code and the Aircraft Operations Manual relating to the operation of UAS.

B. Approved Uses/Missions: All UAS mission requests shall be authorized by the RPIC, or his/her designee(s). The RPIC will coordinate with the Aircraft Operations Chief Pilot to build a list of missions that will be considered for approval, such as but not limited to: *aiding in search and rescue operations, major disaster scenes, storm damage, fire scenes, tactical situations, special border operations, communications tower inspections, solar inspections, wind turbine inspections, thermo imaging, agriculture vegetation management, wildlife management, cinewhoop, public affairs events, maintenance and training.* Other case by case missions may be approved by the RPIC or his/her designee if those missions are immediately necessary to preserve the health, safety, and welfare of people or property within New York State.

C. Weather Brief: Weather shall be obtained by the RPIC for the local area of operation to include Meteorological Aerodrome Reports (METAR) and Terminal Area Forecasts (TAF) from the closest airport reporting weather conditions. 1-800-WX BRIEF will provide a live briefer with access to this data. Review of NOTAMs and Temporary Flight Restrictions (TFRs) are required prior to launch. Additional weather information should be obtained from the National Oceanic Atmospheric Administration (NOAA) (http://www.aviationweather.gov/adds/), or another site or cell phone application to review the following: weather radar, ceiling/visibility, wind/temperatures, turbulence, Significant Meteorological Information (SIGMET), NOTAMs, TFRs and icing.

D. Pre-Flight Briefing: RPIC, Remote Pilot and Visual Observer and any other flight team members must participate in the pre-flight briefing, led by the RPIC prior to aircraft launch, which includes, but is not limited to (Appendix E):

1. Review of the mission's goals and expected outcomes.

2. Review of current and fore-casted weather conditions.

3. Review of current Notice to Airmen (NOTAMs) and Temporary Flight Restrictions (TFRs) that have been issued for the proposed flight area

4. Identification of mission limitations and safety issues such as; battery charge, GPS strength, and potential for radio interference

5. Review of proposed Mission AOR - flight area, including maximum ceiling and floor

6. Review of communication procedures between RPIC, Visual Observer, and other personnel used to support the mission. Including verifying phone numbers used to communicate with Air Traffic Control in the event of a fly-away or other flight emergency

7. Review of emergency/contingency procedures including aircraft system failure, flight termination, divert, and lost link procedures.

8. Execution of a pre-flight check utilizing the approved checklist (Appendix A) and Risk Assessment utilizing the approved form (Appendix B).

1 . The RPIC shall declare to crew members the type of authorization the flight is being conducted under, Part 107, Blanket COA, Jurisdictional COA, or SGI COA.

The RPIC will be responsible to ensure that the above steps have been accomplished prior to flight.

E. **Mission Debrief**: After changeover or landing, the RPIC shall debrief all missions.

F. **Pilot at the controls**: A person operating a small UAS must either hold a remote pilot airman certificate and be acting as RPIC or be under the direct supervision of the RPIC who is in a position to take immediate control of the aircraft.

G. **Line of Sight**: With vision that is unaided by any device other than corrective lenses, the Remote Pilot in Command, the Visual Observer (if one is used), or the person manipulating the flight controller of the UAS must be able to see the unmanned aircraft throughout the entire flight. Visual line of sight is required in order to know the unmanned aircraft's location and flight status (attitude, altitude, and direction of flight), observe the airspace for other air traffic or hazards, and to determine that the unmanned aircraft does not endanger the life or property of another. All flight team members essential to the operation of the unmanned aircraft shall be able to verbally communicate at all times. For operational necessity including site safety, the RPIC or person manipulating the controls may intentionally maneuver the UAS so that he/she loses sight of the UAS for brief periods of time, however he/she must regain VLOS as soon as practicable.

H. **Preflight and Post-flight Documentation**: UAS Preflight checks will be documented by the RPIC prior to all UAS operations. Within 5 days after each flight, the RPIC will complete a flight log documenting the UAS's operations in accordance with New York Code through approved and standardized software (Appendix D).

I. **Maintenance**: Maintenance must be up to date prior to launch. Accurate UAS maintenance reporting is the responsibility of the CPC in accordance with the manufacturer recommendations. When maintenance is performed, a test flight shall be conducted and documented in accordance with the manufactures instructions. The RPIC will not fly any aircraft that he/she suspects does not meet airworthiness requirements following the preflight inspection. Timely maintenance and accurate reporting is required to enhance mission availability and safety (Appendix C).

J. **Payloads**: Any payload used on a UAS shall be approved by the CPC. Weapons will not be used.

K. **Use of Force**:

1. Operating a UAS that has a dangerous weapon attached to it is a violation of Section 363 of the 2018 FAA Reauthorization Act enacted Oct. 5, 2018. "Dangerous Weapon" means any item that is used for, or is readily capable of, causing death or serious bodily injury.
2. UAS shall not be utilized for use of force unless the action is to safe guard human life or serious bodily injury.

V. Emergency Procedures:

A. Emergency Procedures stated in the manufacturer's operations manual shall be complied for all UAS operations. In the event of an emergency involving the safety of persons or property, the RPIC may deviate from the procedures of this directive relating to aircraft, equipment, and weather minimums to the extent required to meet the emergency.

B. No member of ACS, regardless of involvement in an emergency situation, shall make any statements to the general public or to news-gathering agencies without the knowledge and approval of the CPC.

C. Lost Link – A loss of command-and-control link contact with the UAS such that the remote pilot can no longer manage the aircraft's flight and as a result of the control loss the UA is not operating in a predicable or planned manner.

1. LOSS OF UAS FLIGHT CONTROL (Lost link):

i. The UAS lost link procedures shall be initiated which shall automatically cause the UAS to climb to its ceiling altitude and return to and land at the launch site. If positive control of the UAS cannot be maintained and the UAS is leaving the operation area or the UAS poses a risk to life and/or property the RPIC will continue to attempt to reestablish the link and notify the flight crew and ATC. In the event of a lost link during flight the RPIC will documents the lost link in their flight-log (Appendix D).

ii. LOSS OF GPS SIGNAL Should the UAS lose GPS signal during autonomous operations, the RPIC must command the UAS into manual mode until GPS signal can be reacquired. If GPS signal cannot be reacquired the RPIC will land as soon as practical. If positive control of the UAS cannot be maintained and the UAS departs the operation area or the UAS poses a risk to life and/or property the RPIC will issue an Engine Kill command.

D. Loss Of Visual Contact. If visual contact with the UAS is lost, Unless special circumstances dictate, the RPIC shall command the aircraft into a hover mode and the RPIC and/or Visual Observer shall try to re-establish visual contact. If visual contact cannot be re-established within a reasonable amount of time determined by the RPIC, then lost link procedures shall be executed.

E. Loss of UAS Power (Engine Failure)/UAS Crash. In case of an equipment failure, the UAS will not be able to maintain flight. Flight Team Members will immediately attempt to locate the UAS, assess the scene for injuries, and render first aid if necessary.

F. Flight Termination. The intentional and deliberate process of performing controlled flight into terrain (CFIT). Flight termination must be executed in the event that all other contingencies have been exhausted, and further flight of the aircraft cannot be safely achieved, or other potential hazards exist that require immediate discontinuation of flight.

G. Accident Notification and Investigation: All in flight accidents and incidents involving fatalities, injuries, property damage, and lost link shall be reported to CPC immediately for appropriate assistance with guidance. In the event of an accident the RPIC is responsible for reporting the accident to the appropriate agency. The NTSB, FAA Part 107 and PAO COA all have different time frames and criteria for UAS incident reporting. In addition to the steps below RPICs need to create an incident report..

1. IAW 49 CFR § 830.5, the RPIC shall immediately contact the NTSB's 24 hour Response Operations Center (ROC) at 844-373-9922 when an aircraft accident or any of the following listed serious incidents

occur, flight control system malfunction or failure, in-flight fire, aircraft collision in flight, damage to property, other than the aircraft, estimated to exceed $25,000 for repair (including materials and labor) or fair market value in the event of total loss, whichever is less.

2. If the flight occurred under FAA 14 CFR § 107 the RPIC, within 10 days, must report to the FAA in which any of the following conditions apply, serious injury to any person or any loss of consciousness; or damage to any property, other than the small unmanned aircraft, unless one of the following conditions is satisfied: the cost of repair (including materials and labor) does not exceed $500; or the fair market value of the property does not exceed $500 in the event of total loss.

3. If the flight occurred under FAA 14 CFR § 91 PAO COA the RPIC, within 24 hours, must provide initial notification to the FAA via email at 9-AJV-115-UASOrganization@faa.gov and via the CAPS forms (Incident/Accident) if the accident meets the following criteria:

i. Fatal injury, where the operation of a UAS results in a death occurring within 30 days of the accident/mishap

ii. Serious injury, where the operation of a UAS results in: hospitalization for more than 48 hours, commencing within 7 days from the date of the injury was received, a fracture of any bone (except simple fractures of fingers, toes, or nose), severe hemorrhages, nerve, muscle, or tendon damage, Involving any internal organ; or involves second- or third-degree burns, or any burns affecting more than 5 percent of the body surface.

iii. Total unmanned aircraft loss

iv. Substantial damage to the unmanned aircraft system where there is damage to the airframe, power plant, or onboard systems that must be repaired prior to further flight

v. Damage to property, other than the unmanned aircraft.

vi. Any incident/mishap that results in an unsafe/abnormal operation including but not limited to a malfunction or failure of the unmanned aircraft's on-board flight control system (including navigation), a malfunction or failure of ground control station flight control hardware or software (other than loss of control link), a power plant failure or malfunction, an in-flight fire, an aircraft collision involving another aircraft, any in-flight failure of the unmanned aircraft's electrical system requiring use of alternate or emergency power to complete the flight, a deviation from any provision contained in the COA, a deviation from an ATC clearance and/or Letter(s) of Agreement/Procedures, a lost control link event resulting in fly-away, or execution of a pre-planned/unplanned lost link procedure.

VI. Training and Standardization

A. The ACS Chief Pilot shall review and approve a training curriculum to assess the knowledge, skills and abilities of RPICs and Visual Observers requiring additional training certifications ensuring satisfactory compliance with this policy.

B. Remote Pilot in Command (RPIC) training requirements:

1. A RPIC may be authorized to operate more than one type of UAS as long as he/she is trained and current in each individual model. The RPIC may only operate one UAS at a time.

2. The RPIC shall show proficiency in basic aeronautical knowledge as it relates to the use and operation of UAS assets. The RPIC shall pass an initial aeronautical knowledge test at an FAA-approved knowledge testing center or comply the 14 CFR Part 107 protocols for a licensed.

The basic aeronautical knowledge training, at a minimum shall include:
i. FAA rules pertaining to UAS flight operational limitations;
ii. All aspects of 14 CFR Part 107;
iii. Knowledge of the rules and responsibilities described in 14 CFR 91;
iv. All aspects of New York Code;
v. Crew Resource Management;
vi. Mission planning requirements for establishing the Mission AOR and Perimeter;
vii. Mission/briefing requirements to include RPIC approved checklists and Manufacturer's recommendations (Appendix E);
viii. Mission debriefing requirements; and
ix. Any other specific responsibilities required by the RPIC to accomplish the mission.

3. The RPIC shall show proficiency operating the specific UAS model in flight including emergency procedures. The RPIC's proficiency shall be evaluated by the CPC or his/her designee who has mastered aeronautical knowledge and training as it pertains to the use of an unmanned aircraft.

4. The RPIC shall show proficiency communicating and *crew resource management* with the flight team members (Visual Observer and Remote Pilot) demonstrating satisfactory communications between team members. The RPIC's communications will be evaluated at all stages of the flight continuum: pre-flight inspection, flight operations, and post flight procedures.

5. The RPIC shall demonstrate proficiency in all the technology and support equipment associated with any assigned mission to take advantage of the full capabilities of the UAS. The RPIC's proficiency shall be evaluated by the ACS Chief Pilot..

6. Upon RPIC approval, the CPC shall prepare an Inter-Office Memorandum indicating that:

i. The RPIC has demonstrated proficiency operating unmanned aircraft.
ii. The RPIC has met all training requirements to operate unmanned aircraft.

iii. The RPIC is authorized to operate UAS assets while carrying out his/her duties in an official capacity.

7. The memorandum shall be submitted to the employee and the ACS Chief Pilot for final approval. Copies of the memorandum shall be sent to ACS to place in the employees electronic personnel file and a copy shall be retained by the CPC.

C. RPIC Recurrence and Proficiency

1. In order for an RPIC to maintain their active flight status, every 90 days, the RPIC shall conduct a minimum of 1 flight for a duration of no less than 30 minutes which shall consist of a 2 take offs, 2 landings and 1 battery change. The RPIC shall conduct and document a preflight inspection and complete their flight log (Appendix D) .

D. Annual RPIC Recertification (Day/Night)

1. Within one calendar year, no later than 30 days from the RPIC's certification anniversary date, the CPC or UAS CFI shall re-evaluate the RPIC's proficiency. The CPC shall document the results in a memorandum. At a minimum the memorandum will indicate that:

i. The employee has demonstrated proficiency operating unmanned aircraft.

ii. Has successfully completed annual recertification in the subjects listed in paragraph B. (2) of this section.

iii. Notate that the CPC is authorizing the employee to operate unmanned aircraft while carrying out his/her duties in an official capacity.

2. The memorandum shall be submitted to the Training Coordinator for approval and then to the CPC for final approval. Copies of the memorandum shall be sent to ACSS to place in the employees' training file.

E. UAS Observer Training requirements:

1. Visual Observers are not required under Part 107 (except during night operations); however, it is highly encouraged for a UAS Visual Observer to assist the RPIC during all missions for risk mitigation purposes.

2. When operating under the COA a trained Visual Observer is required.

3. Visual Observers may be both formally trained and designated, or can be chosen for a specific mission under Part 107.*Visual Observers* are selected on a case by case basis and no memoranda or documentation retention on their training is required. This is allowed for daytime operations only. *Visual Observers* need not be members of ACS.

4. Designated Visual Observer's training is applicable to all UAS models.

5. Designated UAS Visual Observers shall have completed sufficient training to efficiently communicate pertinent in-flight observations with the RPIC so that the UAS aircraft remains clear of conflicting air traffic and obstructions.

6. This training, at a minimum, includes:

i. Knowledge of the supporting tasks described 14 CFR 107 with respect to maintaining Line of Sight, and effective communication.

ii. Knowledge of the supporting tasks described in 14 CFR 91: Operating Near Other Aircraft; Right-of-Way Rules; and Basic VFR Weather Minimums.

7. If formal training is not available for UAS Visual Observers, the RPIC is responsible for briefing the *ad hoc* observer and ensuring the understanding of the role and the supporting tasks in C (5.) of this section to the observer.

8. Night operations require that the RPIC and Visual Observer are trained to recognize and overcome visual illusions caused by darkness, and understand physiological conditions which may degrade night vision. According to the waiver, the training must be recorded and presented to the FAA Administrator's designee. ACS will have a RPIC/VO document that the required training was performed.

VII. Position Responsibility and Duties:

A. Remote Pilot-in-Command (RPIC)

1. The RPIC is solely responsible for everything the flight team does or fails to do.

2. The RPIC is authorized to refuse any flight request based on current meteorological conditions, physiological conditions, or for any other reason that RPIC believes will affect the safety of the flight. Should the RPIC refuse a flight for any reason, they shall inform the CPC as soon as possible of such refusal and the reason for refusal.

3. While the UAS is in flight, the RPIC is authorized and responsible for making all decisions regarding use of the UAS including, but not limited to, direction of UAS, duration of flight time, capabilities of the UAS, and use of affixed certified equipment.

4. The RPIC is responsible for the safe conduct of all flights, including, but not limited to:

i. Flight planning and preparation, including pre-flight inspections of UAS and equipment;

ii. Contacting communications via email or phone with pertinent mission information;

iii. Weather briefing;

iv. Flight operations, including course, air speed, altitude, and duration;

v. Landing zone selection;

vi. Go/no-go and landing judgments with regard to weather minimum or other criteria;

vii. All Very High Frequency (VHF) air-to-air, air-to-ground, Air Traffic Control (ATC) communications, and any other radio communications;

viii. Timely reporting of new or previously unknown hazards to safe flight encountered;

ix. Post-flight inspection, to include assuring batteries are recharged and to ensure the duty aircraft is ready for the next mission;

x. After each deployment, maintaining and making appropriate entries to checklists.

xi. Conduct a Mission/Site Safety Brief (Appendix E).

5. Flight Operations – Operational Control – Remote Pilot-in-Command Authority:

i. The RPIC shall initiate the flight only when confident the flight can be conducted safely.

ii. If required by FAA, the RPIC shall ensure a FAA Notice to Airmen (NOTAM) is released for every flight involving the UAS in the national airspace when operating under the COA – unless exempted by addendum to approved certificate of waiver.

iii. If required by FAA, the RPIC shall ensure there is a Certificate of Authorization (COA) from the FAA to conduct flights in the national airspace.

iv.If an emergency COA is required by the FAA for a particular flight, the RPIC shall forward the requested documents to the CPC, and ACS Chief Pilot for review and assessment before forwarding to the FAA.

B. UAS Visual Observer: Assistance shall include, but not be limited to:

1. Performing assignments assigned by a RPIC;

2. Assisting the RPIC in the safe conduct of all flights, including but not limited to:

i. The Observer shall assist in see-and-avoid operations of the UAS. The Visual Observer shall remain in contact with the RPIC and communicate any obstacles the aircraft might encounter.

ii. If the flight becomes a hazard to ground personnel or other aircraft, the Visual Observer shall immediately notify the RPIC.

iii. During any phase of flight, if the Visual Observer notices a malfunction with the aircraft, he should immediately notify the RPIC.

C. UAS Inspections:

1. Before every flight, the RPIC is responsible for pre-flight inspections of the UAS according to the pre-flight checklist, and manufacturer's recommendations.

2. Any anomalies found by the RPIC shall be fixed before any flight is conducted.

3. After every flight, a post-flight inspection shall be conducted by the RPIC according to the post-flight checklist and any manufacturer's recommendations.

D. UAS Checklist:

1. There shall be a checklist generated for each phase of flight: Pre-flight, Run-up, Take-off, Emergency Landing, and Post-flight.

2. The RPIC shall not deviate from a checklist.

3. The CPC is responsible for making sure all checklists are up-to-date and current for each aircraft make and model.

Appendix

AIR COMMAND SOLUTIONS

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PREFLIGHT CHECKLIST

Mission_____

Date_____ UAS_____

ENVIRONMENTAL

- ☐ Check for people, animals, property in the flight vicinity.
- ☐ Visibly caution any bystanders of operations (UAS floor signs and Vehicle safety lightning).
- ☐ If flying FPV, discuss flight plan with your check-pilot.
- ☐ If flying in controlled airspace, notify airspace authority of your intentions (COA).
- ☐ Verify environmental conditions are acceptable for operations (UAV Forecast app).

HARDWARE / EQUIPMENT

VISUALLY INSPECT THE AIRFRAME

- ☐ Cracks (especially in high stress areas like joints).
- ☐ Loose or damaged screws / fasteners / bands / straps / ties
- ☐ Loose or damaged wiring.
- ☐ Loose or damaged connections (solder, plugs, etc).
- ☐ Inspect prop mounts & screws & apply slight counter pressure on arms to check for loosened construction.
- ☐ For FPV, inspect/clean FPV and/or Gopro camera lens and ensure that cameras are secured.
- ☐ Battery/batteries fully charged, properly seated & secured.
- ☐ Remove props and test fail-safe behavior (if applicable).
- ☐ Props are smooth and free of damage/defect (check blade, surface, & hub).
- ☐ Tighten prop adapters (careful not to over tighten which may damage prop).
- ☐ Ensure voltage alarm is connected.
- ☐ Ensure arming/idle timeout is properly configured (6-15 seconds is generally acceptable).
- ☐ Check whether the right model is selected in the transmitter (if applicable).
- ☐ Check your RC transmitter shows the right range and centering for all sticks.
- ☐ If desired, perform range test.

PRE-FLIGHT

POWER UP

- ☐ Batteries charged & secured.
- ☐ Position quad in a level, safe location for takeoff.
- ☐ For FPV, power up ground station, video receiver, goggles,
- ☐ etc. If using on board video recorder, turn on camera. All
- ☐ transmitter controls move freely in all directions.
- ☐ All transmitter trims in its neutral position.
- ☐ All transmitter switches in correct position (typically away).
- ☐ Transmitter throttle to zero.
- ☐ Radio transmitter on.
- ☐ Connect/power on battery to airframe.
- ☐ Ensure led indicators & audible tones are all correct.
- ☐ Timer on (if applicable).
- ☐ For FPV, check video in goggles.
- ☐ Scan for nearby people or animals.
- ☐ Stand clear - audibly, loudly announce the word "CLEAR!"
- ☐ Arm flight controller.

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PROJECT MANAGEMENT RISK ASSESSMENT

PROJECT NAME							RPIC			
			PRE-MITIGATION				POST-MITIGATION			
DATE	**ACTIVITY**	**RISK**	**RISK SEVERITY**	**RISK LIKELIHOOD**	**RISK LEVEL**	**MITIGATIONS / WARNINGS / REMEDIES**	**RISK SEVERITY**	**RISK LIKELIHOOD**	**RISK LEVEL**	**ACCEPTABLE TO PROCEED?**
			– ACCEPTABLE – TOLERABLE – UNDESIRABLE – INTOLERABLE	– IMPROBABLE – POSSIBLE – PROBABLE	– LOW – MEDIUM – HIGH – EXTREME		– ACCEPTABLE – TOLERABLE – UNDESIRABLE – INTOLERABLE	– IMPROBABLE – POSSIBLE – PROBABLE	– LOW – MEDIUM – HIGH – EXTREME	YES / NO

RISK RATING KEY

LOW	MEDIUM	HIGH	EXTREME
ACCEPTABLE	ALARP (as low as reasonably practicable)	GENERALLY UNACCEPTABLE	INTOLERABLE
OK TO PROCEED	TAKE MITIGATION EFFORTS	SEEK SUPPORT	PLACE ON HOLD

LIKELIHOOD	SEVERITY: ACCEPTABLE — LITTLE TO NO EFFECT	SEVERITY: TOLERABLE — EFFECTS ARE FELT, BUT NOT CRITICAL TO OUTCOME	SEVERITY: UNDESIRABLE — SERIOUS IMPACT TO THE COURSE OF ACTION AND OUTCOME	SEVERITY: INTOLERABLE — COULD RESULT IN DISASTER
IMPROBABLE — RISK IS UNLIKELY TO OCCUR	LOW	MEDIUM	MEDIUM	HIGH
POSSIBLE — RISK WILL LIKELY OCCUR	LOW	MEDIUM	HIGH	EXTREME
PROBABLE — RISK WILL OCCUR	MEDIUM	HIGH	HIGH	EXTREME

AIR COMMAND SOLUTIONS

VETERAN OWNED & OPERATED

MAINTENANCE LOGBOOK

PILOT: _____ Page: _____ of _____

					FAILURE TESTS				
DATE	AIRCRAFT TYPE	EQUIPMENT	MAINTENANCE PERFORMED	TOTAL TIME IN SERVICE	MOTOR?	ESC?	FLIGHT CONTROLLER?	COMPLETION DATE	STATUS OF LLP

AIR COMMAND SOLUTIONS

VETERAN OWNED & OPERATED

FLIGHT LOGBOOK

PILOT: _____ Page: _____ of _____

					PRE-FLIGHT		FIXED WING		ROTORY WING	
DATE	**EQUIPMENT**	**LOS/FPV**	**# BATTS USED**	**CUMULATIVE PROP TIME**	**Y/N?**	**RESULT**	**# TO**	**TIME**	**# TO**	**TIME**
TOTAL THIS PAGE										
TOTAL ALL PAGES										

AIR COMMAND SOLUTIONS

VETERAN OWNED & OPERATED

Mission Safety Brief

The following site safety brief and mission plan will be briefed to all site personnel before the start of UAS operations.

1. _____ is the Remote Pilot in Command (RPIC) and is directly responsible for all UAS operations and reporting to the Incident Commander IC for safety recommendations on site.

2. There are _____ qualified RPIC personnel on-site _____, _____, _____, _____

3. The Emergency Response agency is _____ located at _____

4. Communication information:
    - Radio VHF/UHF (Channels) _____ Downrange _____
    - Cell Phone _____
    - Satellites: Visible _____ Locked _____
    - LAANC _____ Class _____ Max Height _____

5. Weather monitoring (UAV Forecast)
    - Expected air temp is _____
    - Sun Times _____ to _____
    - Wind _____ From _____ Gust _____
    - Visibility _____
    - Expected Operating Height (AGL) _____
    - NOTAMS _____ TFR _____

6. Communications

   Only RPIC and authorized IC personnel will transmit on the downrange frequency.

   The following hand and arm signals will be used in case of high noise levels:

   LOOK = gesture towards eyes with middle and index finger
   TAKEOFF = Open hand upward motion shoulder level to above head
   LANDING = Pat top of head motion
   GOOD TO GO/I UNDERSTAND = Thumbs Up
   NOT GOOD TO GO/I DON'T UNDERSTAND = Thumbs Down
   UNIVERSAL DISTRESS = Hands and Arms across your head

Report Criteria:

Reaching operational height
UAS Battery level at 30%
Potential adverse weather
Discovery or personnel on the ground

Abort Criteria:

RPIC becomes inoperable
Loss of communication with UAS
UAS Battery level at 20%
IC terminates mission

The Area of Safe Refuge is located _____

The time is now _____, what are your questions?