



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE SPECIAL OPERATIONS COMMAND

12 Jan 10

MEMORANDUM FOR HQ AFSOC/A3OUI

FROM: A3OU

SUBJECT: Airworthiness Safety Release, Qualification Level 3, for Operation of USSOCOM owned, sponsored or leased ScanEagle Unmanned Aircraft Systems (UAS), at/or near Savannah, TN.

1. Scope: This memorandum constitutes an Airworthiness Safety Release (ASR), Qualification Level 3, authorizing operation of USSOCOM owned, sponsored or leased ScanEagle UAS for operations at/or near Savannah, TN. This ASR is intended to support the issuance of a Certificate of Waiver or Authorization (COA) from the Federal Aviation Administration (FAA).

2. Validity: This ASR is valid for the period of performance of the approved COA and subsequent renewals. This ASR is terminated upon changes in configuration of the subject equipment beyond authorized payload changes, or upon issuance of a later Airworthiness Safety Release, whichever occurs first. This ASR is valid only for operations specified within the approved Federal Aviation Administration (FAA) Certificate of Waiver or Authorization (COA) area, in accordance with (IAW) Reference D-1, at/or near Savannah, TN.

3. List of Appendices:

- Appendix A – Restrictions and Operating Information
- Appendix B – Configuration and Installation Detail
- Appendix C – Inspections, Maintenance, and Logbook Instructions
- Appendix D – References List

4. Point of contacts (POC) are (b) (6)

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Unmanned Systems Branch

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Appendix A - Restrictions and Operating Information

WARNING

The air vehicle is susceptible to radiated emissions. Loss of link, loss of GPS, loss of video, and possible loss of vehicle control are likely in proximity to emitters. Operators shall avoid known high intensity Electromagnetic Interference (EMI) areas.

WARNING

Accidental operation of the ScanEagle UAS outside of approved airspace shall be immediately reported to Air Traffic Control (ATC). The operator shall make immediate actions to correct the flight path and/or follow ATC direction.

WARNING

The ScanEagle UAS does not have a sense and avoid system. Mid-air collision is a risk. All flight operations shall be conducted to ensure that manned and unmanned aircraft shall maintain proper separation. Airspace deconfliction shall be accomplished using local ATC procedures and procedures identified in the FAA COA.

WARNING

The ScanEagle UAS has not completed full airworthiness qualification. All flight operations shall be conducted in a manner to minimize exposure to manned aircraft and populated ground areas.

WARNING

The ScanEagle UAS has not undergone SOF Explosive Atmosphere testing. A serious fire or explosion may result if the aircraft is powered while flammable vapors are present during ground or flight operations. Do not operate the system in the presence of flammable vapors.

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WARNING

The operator must coordinate frequencies with any other UAS operators in the area in accordance with (IAW) the operator's manual and Local Spectrum Manager procedures. Failure to coordinate frequencies with other users could result in loss of vehicle control and possible loss of the air vehicle.

WARNING

In order to maintain containment of the vehicle within the flight operations boundaries and established hazard pattern, mission planning shall ensure that planned flight routes approach no closer than 700 meters to the boundary in order to accommodate failures of the vehicle control system.

WARNING

Personnel should remain a minimum of 50 meters away from the Skyhook retrieval system during recovery operations until the vehicle has successfully captured or otherwise comes to rest. Personnel should remain a minimum of 100 meters away from the Skyhook along the approach axis of the vehicle. If the vehicle fails to capture the arrestment rope properly, it can become uncontrolled. Failure to comply could result in injury to personnel.

WARNING

When concurrently operating multiple air vehicles with multiple GCS units (i.e., one air vehicle per GCS), ensure that adequate physical and/or frequency separation exists between the GCS units and the air vehicles they are controlling. Failure to do so could result in inadvertent control of an air vehicle by the incorrect GCS possibly resulting in loss of air vehicle and subsequent injury and/or collateral damage.

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CAUTION

Operation of the ScanEagle GPS shall be verified prior to each flight. The GPS shall be free of degrading interference (i.e. interference that would result in a loss of GPS) prior to flight.

CAUTION

Extreme caution should be used during the raising and lowering of the Skyhook retrieval system assembly.

CAUTION

Regular inspection of the Skyhook retrieval system joints, base plate, cylinders, and seals should be performed after every use. Any signs of corrosion, or defect should prevent further use.

CAUTION

An observer external to the GCS shelter and in constant communication with the vehicle operator should maintain line of sight contact with the air vehicle during all phases of the recovery operation. The observer should assess the vehicle flight path for excessive errors arising from the vehicle tracking or navigation and if the errors appear to be unreasonably large or growing quickly, call for a wave-off. The vehicle operator must be prepared to receive a wave-off call from any and all external observers and initiate a wave-off in a minimal amount of time. Those involved in this process must understand that minimizing time delay is essential for a successful wave-off.

CAUTION

Noise characterization testing has not been completed on this system. Prolonged exposure to engine noise at close proximity may contribute to hearing loss. It is recommended that ear protection be worn while launching the UA.

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1. Operate the ScanEagle UAS IAW references D-2, except as modified by this ASR.
 - a. Flights shall be conducted by operators trained, qualified, and current in the operation of the ScanEagle UAS. Operator training, qualification, and currency shall be documented.
 - b. Flights shall be conducted IAW local regulations, the provisions of the DoD/FAA MOA, Operation of DoD UAS in the National Airspace System, or as specified within an approved Federal Aviation Administration (FAA) Certificate of Waiver or Authorization (COA).
 - c. Flights shall avoid other ScanEagle transmitters by at least 200 meters. Ground control stations shall be located at least 400 meters apart.
 - d. Flight over populated areas, buildings, or an open-air assembly of people shall be avoided.
 - e. The observer's responsibility is to aid in visual airspace deconfliction. Both the observer and operator shall be instructed on proper procedures, responsibilities, and voice commands for visual airspace deconfliction.
2. Functional checks of the ScanEagle UAS and associated payload shall be accomplished IAW References D-2 before each flight. Launch of the UA with any known system failures, discrepancies, or degraded performance characteristics is prohibited.
 - a. Upon any failure during flight, vehicle operators must fly the UA back to the recovery location or utilize built in fail-safe features to recover the UA. Temporary loss of GPS satellites is not considered a failure condition.
3. If a systematic failure occurs, resulting in the departure of the UA from the flight areas defined in Appendix D-1, flight operations under this ASR are to be terminated. All test results, analyses, and safety assessments shall be documented, reviewed, and configuration managed as part of the aircraft and test configuration.
4. All site deconfliction activities (air and ground) shall be completed before flight (such as, but not limited to, frequency/channel usage, airspace management, air vehicle separation, FAA coordination, emergency responsibilities, etc).
5. Flight is restricted to day Visual Meteorological Conditions within the areas defined in Reference D-1 and the approved FAA COA. The UA must remain within clear visual range of the operator and/or ground observers at all times.
6. The observer's responsibility is to aid in visual airspace deconfliction. Both the observer and operator shall be instructed on proper procedures, responsibilities, and voice commands for visual airspace deconfliction.

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7. Emergency procedures: The emergency procedures for the UAS are outlined in reference D-2 (operator's manual).

8. Summary Highlights:

a. The ScanEagle UAS has not completed full airworthiness qualification. An ASR has been granted through a Level 3 airworthiness evaluation. A Level 3 ASR establishes a minimum level of safety for UAS operations. Strict adherence to the operator's manual, local Standard Operating Procedure for UAS, and this ASR is required to reduce risk loss of the aircraft, property damage and personal injury.

b. Coordination of channel selection with other systems operating in the area is critical to reducing accident rates.

c. This ASR process review was limited to the specific system configuration listed in Appendix B. Engineering assessment has been conducted primarily to ensure safety of flight in the immediate environment of all personnel involved in the flight operations of the UAS. Major air vehicle or system modifications invalidate the ASR. For the purposes of this ASR, a major modification is defined as any configuration change/alteration to an item(s) that implements a capability change and/or expanded mission/usage or would result in a hazard associated with departure of the air vehicle from the flight boundaries defined in Appendix A.

d. The probability of loss of the ScanEagle air vehicle is accepted by the user's command. Any air vehicle loss experienced during flight operations conducted under this ASR must be reported to Higher Headquarters IAW paragraph 3-5 of USSOCOM DIRECTIVE 350-9 and the user's individual component's SOP; which can be found on the SUASMAN (<https://webapps.hurlburt.af.mil/suasmgr/default.aspx>) web application.

e. Range and airspace clearance is the responsibility of the operators. Compliance with airspace coordination and de-confliction requirements identified in the FAA COA supporting these flight operations is **MANDATORY**.

f. Procedures to establish a reasonable level of physical security for the flight operations areas prior to and during all flights must be developed and implemented during each flight to preclude inadvertent access to the area by non-authorized personnel.

g. Determination of the requirements for operator qualification, maintainer qualification, configuration management, established flight practices, and other associated procedures is beyond the scope of this ASR, but must be addressed by an appropriate authority to ensure an acceptable level of safety for the UAS and to minimize the risk to ground personnel and property.

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h. Data collected as part of these flight operations should be made available to assist in the effort to address future airworthiness assessment of this UAS. This data includes, but is not limited to, dates of flights, flight durations, and any discrepancies noted during flights. It is the responsibility of the operator to record this data in the SUASMAN web application, which has been designated as the single point data repository for post flight data collection and incident reporting.

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Appendix B – Configuration and Installation Detail

1 Configuration details, other specific equipment, and drawings:

The ScanEagle UAS is defined in reference D-2.

2 Special installation instructions:

None

3. Installation verification and quality checks:

None

Appendix C – Inspections, Maintenance, and Logbook Instructions

1. Conduct inspections and maintenance as specified in reference D-2.

Appendix D – References List

1. Range Standard Operating Procedure (SOP) for ScanEagle Unmanned Aircraft System (UAS) for ISR Range Services area at/or near Savannah, TN.
2. ScanEagle Operator's Handbook ver 2.1-06-EX, dated November 2006, with latest updates.
3. ScanEagle Data Sheet