



Manufacturing Inspection District Office (MIDO-42)
12 New England Executive Park
Burlington, MA 01803

Operating Limitations for Unmanned Aircraft Systems: Experimental Certificate

Registered Owner Name: Lockheed Martin Mission Systems & Sensors	Aircraft Builder: Lockheed Martin Mission Systems & Sensors
Registered Owner Address: 1801 State Route 17C Owego, NY 13827	Year Manufactured: 2011
Aircraft Description: Desert Hawk III Unmanned Aircraft Fixed Wing, Electric Prop	Aircraft Serial Number: AV-0569
Aircraft Registration: N3001D	Aircraft Model Designation: Desert Hawk III
	Engine Model: Neu 1905-2.5Y
	Propeller Model: Aeronaut CAM 13x6.5

The following conditions and limitations apply to all unmanned aircraft system (UAS) flight operations for the Desert Hawk III while operating in the National Airspace System (NAS).

1. General Information.

a. Integrated System. For the purposes of this special airworthiness certificate and operating limitations, the Desert Hawk III UAS operated by Lockheed Martin Mission Systems and Sensors is considered to be an integrated system. The system is composed of the following:

- (1) Desert Hawk III, registration number: N3001D.
- (2) Serial number: AV-0569.
- (3) UAS control station, fixed or mobile, and ground-based.
- (4) Telemetry, launch, and recovery equipment.
- (5) Communications and navigation equipment, including ground and/or air equipment used for command and control of the Desert Hawk III.

(6) Equipment on the ground, and on the aircraft, used for communication with other members of the flight crew, observers, air traffic control (ATC), and other users of the NAS.

b. Compliance with 14 CFR part 61 (Certification – Pilots, Flight Instructors, and Ground Instructors) and part 91 (General Operating and Flight Rules). Unless otherwise specified in this document, the UA pilot-in-command (PIC) and Lockheed Martin Mission Systems and Sensors must comply with all applicable sections and parts of 14 CFR including, but not limited to, parts 61 and 91.

c. Operational Requirements.

(1) No person may operate this UAS for other than the purpose of research and development, market survey, and crew training to accomplish the flight operation outlined in Lockheed Martin Mission Systems and Sensor's program letter for an experimental certificate dated 11/17/2011, which describes compliance with 14 CFR 21.193, Experimental certificates: general. The program letter has been made available to the UA PIC.

(2) This UAS must be operated in accordance with applicable air traffic and general operating rules of part 91 and all additional limitations herein prescribed under the provisions of § 91.319, Aircraft having experimental certificates: Operating limitations.

d. UA Condition. The UA PIC must determine that the UA is in a condition for safe operation, and in a configuration appropriate for the purpose of the intended flight.

e. Multiple-Purpose Operations. When changing between operating purposes of a multiple purpose certificate, the operator must determine that the aircraft is in a condition for safe operation and appropriate for the purpose intended. A record entry will be made by an appropriately rated person (that is, an individual authorized by the applicant and acceptable to the FAA) to document that finding in the maintenance records.

f. Operation Exceptions. While operating under an experimental certificate, no person may operate this UA to carry property for compensation or hire (§ 91.319(a)(2)).

g. UA Markings.

(1) This UA must be marked with its U.S. registration number in accordance with 14 CFR part 45.

(2) This UA must display the word *Experimental*.

h. Required Documentation. Immediately after the certificate is issued, Lockheed Martin Mission Systems and Sensors must forward an electronic copy of the Desert Hawk III program letter, special airworthiness certificate, and operating limitations to:

(1) Peter Acevedo, Air Space Specialist, Eastern Service Center, Operations Support Group, AJV-E2, email: peter.k.acevedo@faa.gov, 404-305-5598.

(2) Tom Rampulla, AIR-240, email: thomas.rampulla@faa.gov, 202-385-6684.

i. Change in Registrant Address. 14 CFR 47.45, Change of address, requires that the FAA Aircraft Registry be notified within 30 days of any change in the aircraft

registrant's address. Such notification is to be made by providing AC Form 8050-1, Aircraft Registration Application, to the FAA Aircraft Registration Branch (AFS-750) in Oklahoma City, Oklahoma.

j. Certificate Display and Manual Availability. The airworthiness and registration certificates must be displayed, and the aircraft flight manual must be available to the pilot, as prescribed by §§ 91.203 and 91.9, or as prescribed by an exemption granted in accordance with 14 CFR part 11, General Rulemaking Procedures.

2. Program Letter. The Desert Hawk III program letter for an experimental certificate, dated 11/17/2011, will be used as a basis for determining the operating limitations prescribed in this document. All operations must be conducted in accordance with the provisions of this document.

3. Aircraft Operations for the Purpose of Market Surveys, Sales Demonstrations, and Customer Crew Training. These operations cannot be performed until the flight hour requirements of § 21.195(d)(2) have been accomplished. An entry in the maintenance records is required as evidence of compliance.

4. Authorized Flight Operations Area.

a. Description of the Authorized Flight Operations Area.

1. The primary flight test area is located near Owego, NY. The launch and recovery operations are located at approximately N 42° 07', W 76° 11' and have an altitude of 1000 feet above ground level (AGL). The primary flight test area is depicted in Figure 1.

2. The primary flight test area is located approximately 11 nm southwest of Greater Binghamton Airport (KBGM) and approximately 6 nm northwest of Tri-Cities Airport (KCZG). The flight test area includes Class E airspace. Class E airspace starts at the surface. The airspace lies below the 3100' MSL and 3500' MSL floors of the terminal radar service area surrounding KBGM.

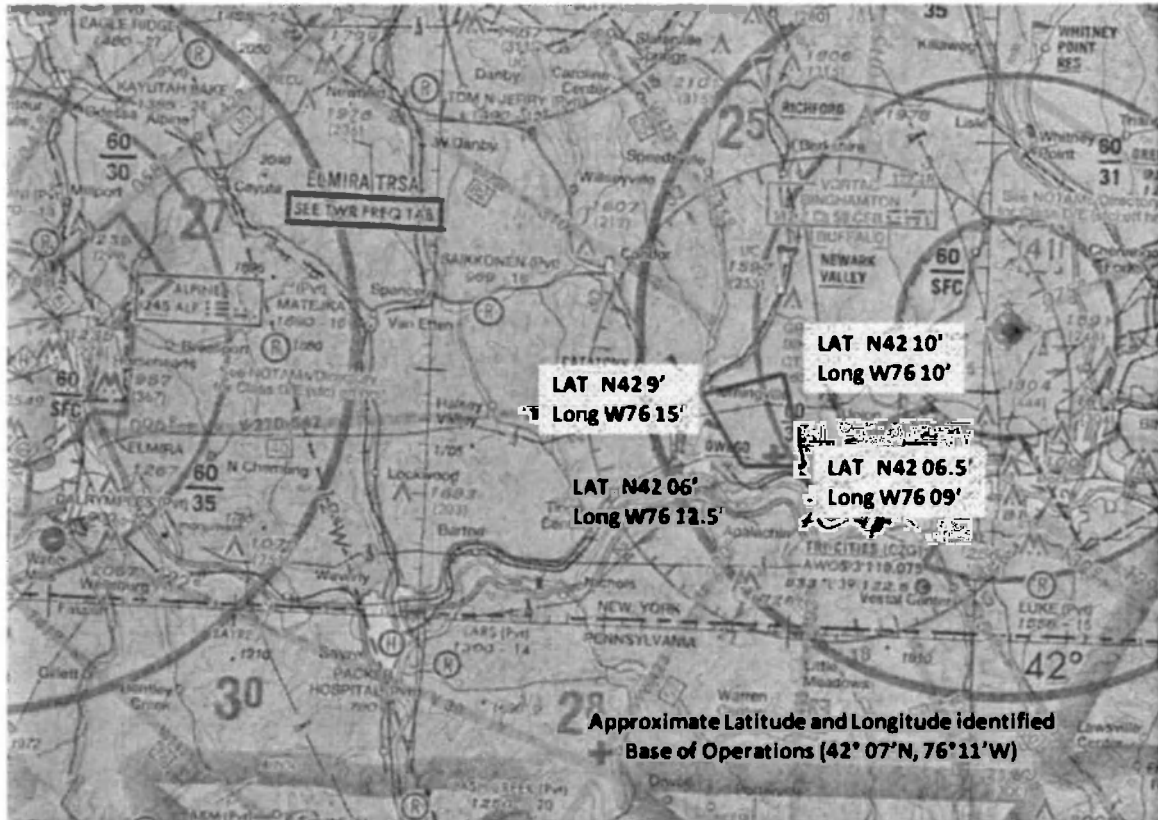


Figure 1. Flight test area.

b. Flight Conditions. All flight operations must be conducted during daylight hours in visual meteorological conditions (VMC) with cloud clearance and flight visibility minimums as specified in § 91.155 for Class E airspace. Flight operation in instrument meteorological conditions (IMC) is not permitted. Special visual flight rules (SVFR) operations are not authorized.

c. Criteria for Remaining in the Flight Test Area. The UAS PIC must ensure all UA flight operations remain within the lateral and vertical boundaries of the flight test area. Furthermore, the UAS PIC must take into account all factors that may affect the capability of the UA to remain within the flight test area. This includes, but is not limited to, considerations for wind, gross weight, and glide distances.

d. Incident/Accident Reporting. Any incident/accident and any flight operation that transgresses the lateral or vertical boundaries of the flight test area or any restricted airspace must be reported to the FAA within 24 hours. This information must be reported to the Unmanned Aircraft Program Office, AFS-407. AFS-407 can be reached by telephone at 202-385-4636 and fax at 202-385-4559. Accidents must be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB website: www.nts.gov. Further flight operations must not be conducted until the incident is reviewed by AFS-407 and authorization to resume operations is provided to Lockheed Martin Mission Systems and Sensors.

5. UA Pilots and Observers.

a. UA PIC Roles and Responsibilities.

- (1) The UA PIC must perform crew duties for only one UA at a time.
- (2) All flight operations must have a designated UA PIC. The UA PIC has responsibility over each flight conducted and is accountable for the UA flight operation.
- (3) The UA PIC is responsible for the safety of the UA as well as persons and property along the UA flight path. This includes, but is not limited to, collision avoidance and the safety of persons and property in the air and on the ground.
- (4) The UA PIC must avoid densely populated areas and exercise increased vigilance when operating in the vicinity of a congested airway in accordance with § 91.319.
- (5) The UA PIC will have operational override capability over any supplemental UA pilots, regardless of position, and must have immediate access to all controls.

b. UA PIC Certification and Ratings Requirements.

- (1) The UA PIC must hold and be in possession of, at a minimum, an FAA private pilot certificate, in the airplane category; with single- or multiengine class ratings.
- (2) The UA PIC must have and be in possession of a valid second-class (or higher) airman medical certificate issued under 14 CFR part 67, Medical Standards and Certification.

c. UA PIC Currency, Flight Review, and Training.

- (1) The UA PIC must have a flight review in manned aircraft every 24 calendar months in accordance with § 61.56, Flight review.
- (2) The UA PIC must have a flight review in unmanned aircraft every 24 calendar months in accordance with Lockheed Martin Mission Systems and Sensors company procedures.
- (3) The UA PIC must maintain and/or regain currency in the Desert Hawk III unmanned aircraft in accordance with Lockheed Martin Mission Systems and Sensors company procedures. At a minimum, the PIC must accomplish at least three takeoffs and three landings within the preceding 90 days while acting as the sole manipulator of the flight controls.

- (4) All UA PICs must have successfully completed applicable Lockheed Martin Mission Systems and Sensors company training for the UAS.

d. Supplemental UA Pilot Roles and Responsibilities.

- (1) Any additional UA pilot(s) assigned to a ground control station during UA flight operations will be considered a supplemental UA pilot.
- (2) A supplemental UA pilot assists the PIC in the operation of the UA.

(3) A supplemental UA pilot must perform crew duties for only one UA at a time. The UA PIC will have operational override capability over any supplemental UA pilots, regardless of position, and must have immediate access to all controls.

e. Supplemental UA Pilot Certification.

(1) Supplemental UA pilots must either possess, at a minimum, an FAA Private pilot certificate, or have successfully passed the private pilot, commercial pilot, or airline transport pilot knowledge test within the past 24 calendar months. If a supplemental UA pilot assumes the role of PIC, then they must be a certificated pilot and meet the requirements listed above in 5a through 5c.

(2) Supplemental pilots must have, and be in possession of, a valid second-class (or higher) airman medical certificate issued under 14 CFR part 67, Medical Standards and Certification.

f. Supplemental UA Pilot Currency, Flight Review, and Training.

(1) All supplemental UA pilots must maintain and/or regain currency in the Desert Hawk III unmanned aircraft in accordance with Lockheed Martin Mission Systems and Sensors company procedures. At a minimum, the supplemental pilot must accomplish at least three takeoffs and three landings within the preceding 90 days while acting as the sole manipulator of the flight controls.

(2) All supplemental UA pilots must have a flight review in unmanned aircraft every 24 calendar months in accordance with Lockheed Martin Mission Systems and Sensors company procedures.

(3) All supplemental UA pilots must have successfully completed applicable Lockheed Martin Mission Systems and Sensors company training for the UAS.

g. Observer Roles and Responsibilities. The task of the observer is to provide the PIC with instructions to maneuver the UA clear of any hazards and any potential collision with ground obstructions or air traffic. Additionally, the observer must assist the UA pilot to comply with the flight visibility and cloud clearance requirements of § 91.155. To satisfy these requirements—

(1) The observer must perform crew duties for only one UA at a time.

(2) Visual observers must not allow the aircraft to operate beyond the visual line-of-sight limit. Observers must be able to see the aircraft and the surrounding airspace throughout the entire flight. Observers must be able to determine the UA's altitude, flight path, and proximity to all aviation activities and other hazards (e.g., terrain, weather, structures) sufficiently to comply with §§ 91.111, 91.113 and 91.115, and prevent the UA from creating a collision hazard.

(3) Observers must continually scan the airspace for other aircraft that pose a potential conflict.

(4) All flight operations conducted in the flight test area must have an observer to perform traffic avoidance and visual observation to fulfill the see-and-avoid requirement of § 91.113, Right-of-way rules: Except water operations.

h. Observer Certification.

(1) All observers must either hold, at a minimum, an FAA private pilot certificate or military equivalent, or must have successfully completed specific observer training acceptable to the FAA. An observer does not require currency as a pilot.

(2) All observers must have, and be in possession of, a valid second-class (or higher) airman medical certificate issued under 14 CFR part 67, Medical Standards and Certification.

i. Observer training.

(1) All observers must be thoroughly trained to accomplish observer roles and responsibilities. All observers must be familiar with, and possess operational experience with the equipment being used. Such training is necessary for observation and detection of other aircraft for collision avoidance purposes as outlined in the Lockheed Martin Mission Systems and Sensors Desert Hawk III program letter.

(2) All observers must have successfully completed applicable Lockheed Martin Mission Systems and Sensors company training for the UAS.

6. Equipage.

a. Aircraft Lights. All aircraft lights must be illuminated during flight operations.

b. RF Equipment. Before conducting operations, the frequency spectrum used for operation and control of the UA must be approved by the Federal Communications Commission (FCC) or other appropriate government oversight agency. The experimental radio license issued by the FCC must be renewed prior to the expiration date to continue flight operations under this experimental certificate.

7. Air Traffic Control Provisions.

a. Notice to Airman. Lockheed Martin Mission Sensors and Systems must request a distance (D) NOTAM be issued for UA operations. Coordinate the NOTAM through Buffalo Flight Service Station at 1-877-487-6867 not more than 72 hours in advance, but not less than 24 hours prior to the operation.

b. ATC Coordination.

(1) 24 hours prior to operation, Lockheed Martin Mission Systems and Sensors must notify Binghamton (BGM) Terminal Radar Approach Control Facility (TRACON) at 607-729-6145 and Tri-Cities (CZG) Airport at 804-450-1230 and provide the times for commencing and terminating flight operations. Lockheed Martin Mission Systems and Sensors will provide the NOTAM number for the planned activities and advise ATC of the experimental nature of the aircraft.

(2) Binghamton TRACON may terminate or delay the flight operation at any time.

8. Crew Communications. All UA positions must maintain two-way communications with each other during all operations. If unable to maintain two-way communication, the UA PIC will expeditiously return the UA to its base of operations while remaining within the flight test area and conclude the flight operation.

9. Flight Prohibitions.

a. The UA is prohibited from aerobatic flight, that is, an intentional maneuver involving an abrupt change in the UA's attitude, an abnormal acceleration, or other flight action not necessary for normal flight. (See § 91.303, Aerobatic flight.)

b. Flight operations must not involve carrying hazardous material or the dropping of any objects or external stores.

c. Each UA must be operated by only one control station at a time. A control station may not be used to operate multiple UAs.

10. Flight Termination and Lost Link Procedures.

a. **Flight Termination.** Flight termination must be initiated at any point that safe operation of the UA cannot be maintained or if hazard to persons or property is imminent. All flight termination points (FTP) must be identified prior to flight.

b. **Lost Link Procedures.** In the event of lost link, the UA must provide a means of automatic recovery that ensures airborne operations are predictable and that the UA remains within the flight test area. In the event that the UA leaves the flight test area, Binghamton TRACON (607-729-6145) and Tri-Cities Airport (804-450-1230) must be immediately notified of the lost link condition and the expected UA response. Comply with the following provisions:

(1) In the event of lost link, the aircraft must follow the Loss of Signal Mission. The Loss of Signal Mission program will have the aircraft return to and orbit the launch point. If the lost link occurs for greater than five minutes, the UA will proceed to the primary pattern and land.

(2) If lost link occurs within a restricted airspace or within a warning area, the Loss of Signal Mission program will ensure that the aircraft will not exit the restricted airspace or warning area until the link is re-established.

(3) The UA lost link mission will not transit or orbit over populated areas.

(4) Lost link orbit points will not coincide with the centerline of published airways.

(5) All lost link points (LLP) must be identified prior to flight.

11. Inspection and Maintenance.

a. **General Requirements.** The UAS must not be operated unless it is inspected and maintained in accordance with the Lockheed Martin Mission Systems and Sensors documents in Table 1 below, or later accepted FAA revision. Lockheed Martin Mission Systems and Sensors must establish and maintain aircraft maintenance records in accordance with paragraph 11d.

Document	Document Name	Revision	Release Date
7415002	Operations Manual	Rev A	30 July 2010

7415040	Flight Reference Cards	Rev 0	1 November 2007
7417629	Advanced Maintenance Manual	Rev 2	26 October 2009
7427339	Air Vehicle Pre-shipment Inspection Checklist	Rev B	30 November 2011
7435668	Air Vehicle Calibration and Checkout Procedures	Rev 5	30 November 2011

Table 1.

b. Inspections. No person may operate this UAS unless it has had a condition inspection performed within the preceding 12 calendar months according to the FAA-accepted Lockheed Martin Mission System and Sensors inspection documents listed in Table 1. The UAS must also have been found to be in a condition for safe operation. This inspection will be recorded in the UAS maintenance records as described in paragraph 11d.

c. Authorized Inspectors. Only those individuals trained and authorized by Lockheed Martin Mission Systems and Sensors and acceptable to the FAA may perform the inspections and maintenance required by these operating limitations.

d. Inspection and Maintenance Records. Inspections and maintenance of the UAS must be recorded in the UAS maintenance records. The following information must be recorded:

(1) Inspection entries must contain the following, or a similarly worded, statement: *I certify that this UAS was inspected on (date), in accordance with the scope and detail of the Lockheed Martin Mission Systems and Sensors documentation listed in Table 1 of the Desert Hawk III operating limitations and was found to be in a condition for safe operation.*

(2) Maintenance record entries must include a description of the work performed, the date of completion for the work, the UAS's total time-in-service, and the name and signature of the person performing the work.

(3) UAS instruments and equipment required to be installed must be inspected and maintained in accordance with the requirements of the Lockheed Martin Mission Systems and Sensors inspection and maintenance program. Any maintenance or inspection of this equipment must be recorded in the UAS maintenance records.

12. Information Reporting. Lockheed Martin Mission Systems and Sensors will provide the following information via email, to donald.e.grampp@faa.gov on a monthly basis.

- a. Number of flights conducted under this certificate.
- b. Pilot duty time per flight.
- c. Unusual equipment malfunctions (hardware or software).

- d. Deviations from ATC instructions.
- e. Unintended entry into lost link flight mode.

13. Revisions and Other Provisions.

a. Experimental Certificates, Program Letters, and Operating Limitations. The experimental certificate, FAA-accepted Lockheed Martin Mission Systems and Sensors program letter for an experimental certificate, and operating limitations cannot be reissued, renewed, or revised without application being made to the Boston (MA) Manufacturing Inspection District Office (MIDO-42), in coordination with AIR-200. AIR-200 will be responsible for FAA Headquarters internal coordination with the Aircraft Certification Service, Flight Standards Service, Air Traffic Organization, Office of the Chief Counsel, and Office of Rulemaking.

b. Certificates of Waiver or Authorization. Lockheed Martin Mission Systems and Sensors will immediately notify the Production and Airworthiness Division, AIR-200, and the Boston (MA) Manufacturing Inspection District Office (MIDO-42), if there is any plan for requesting a Certificate of Waiver or Authorization (COA) for UAS operations during the time the experimental certificate is in effect. An entry in the aircraft logbook is required to document that the aircraft flight authority has been changed from the experimental certificate to COA. When COA operations are concluded and the aircraft resumes flying under the experimental certificate, a record entry will be made in the aircraft logbook by an appropriately rated person. This entry will document that the aircraft is in a condition for safe operation and appropriately configured.

c. Amendments and Cancellations. The provisions and limitations annotated in this operational approval may be amended or cancelled at any time as deemed necessary by the FAA.

d. Reviews of Revisions. All revisions to Lockheed Martin Mission Systems and Sensors FAA-accepted Inspection and Maintenance Program must be reviewed and accepted by the Rochester Flight Standards District Office.

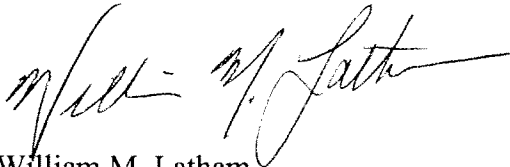
14. UAS Modifications.

a. Software and System Changes. All software and system changes will be documented as part of the normal maintenance procedures and will be available for inspection. All software and system changes must be inspected and approved per Lockheed Martin Mission Systems and Sensors Desert Hawk III Advanced Maintenance Manual dated 10/26/2009. All software changes to the aircraft and control station are categorized as major modifications.

b. Major Modifications. All major modifications, whether performed under the experimental certificate, COA, or other authorizations, that could potentially affect the safe operation of the system, must be documented and provided to the FAA before operating the aircraft under this certificate. Major modifications incorporated under COA or other authorizations need to be provided only if the aircraft is flown under these authorizations during the effective period of the experimental certificate.

c. Submission of Modifications. All information requested must be provided to AIR-200.

End of Limitations.



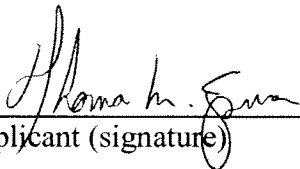
William M. Latham
Aviation Safety Inspector
MIDO-42
12 New England Executive Park
Burlington, MA 01803

12/01/2011

Date:

I certify that I have read and understand the operating limitations and conditions that are a part of the special airworthiness certificate, FAA Form 8130-7, issued on 12/01/2011, for the purposes of research and development, market survey, and crew training.

This special airworthiness certificate is issued for Lockheed Martin Mission Systems and Sensor's Desert Hawk III, serial number AV-0569, registration number N3001D.



Applicant (signature)

12/1/2011

Date:

Name (Printed): Thomas M. Spurr

Title: ENGINEERING PROGRAM MANAGER SUAS

Company: Lockheed Martin MSA