



DEPARTMENT OF THE ARMY
US ARMY RESEARCH, DEVELOPMENT AND ENGINEERING COMMAND
AVIATION AND MISSILE RESEARCH, DEVELOPMENT, AND ENGINEERING CENTER
5400 FOWLER RD
REDSTONE ARSENAL, AL 35898-5000

R2: 14 Dec 09
R1: 22 June 09
08 Sep 08

RDMR-AEV

AWR MQ-5B20080908R2

MEMORANDUM FOR Project Manager, Unmanned Aircraft Systems (SFAE-AV-UAS),
Redstone Arsenal, AL 35898-5000

SUBJECT: Airworthiness Release (AWR) Qualification Level 3 for Operation of Hunter
MQ-5B Unmanned Aircraft System (UAS) (AWR MQ-5B20080908R2) (TN 61807B).

1. Scope: This memorandum constitutes an AWR Qualification Level 3 authorizing operation of the MQ-5B Hunter UAS within the Federal Aviation Authority (FAA) approved Certificate of Authorization (COA) region at Robert Gray Airfield and the R-6302 Restricted Airspace at Ft. Hood, TX.
2. Validity: This AWR is a revision on AWR MQ-5B20080908 and terminates on 22 June 2011, upon changes in configuration of the subject equipment, or upon issuance of a later AWR of same subject, whichever occurs first. This AWR is valid only for operations within the FAA approved COA region Robert Gray Airfield and the R-6302 Restricted Airspace at Ft. Hood, TX in accordance with (IAW) the limitations and restrictions of the COA.
3. Appendices: This AWR with all appendices shall be carried in the logbook, controlling One System Ground Control Station (OSGCS), and in the aircraft historical record file.

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

4. The point of contact (POC) is (b) (6) commercial: (b) (6) or e-mail:
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for

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of Aviation Engineering

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Appendix A - Restrictions and Operating Information

WARNING

The MQ-5B Hunter 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

Accidental operation of the MQ-5B Hunter UAS outside of the FAA approved COA region and/or active restricted airspace shall be immediately reported to Air Traffic Control (ATC). The operator shall make immediate risk identification and take actions to correct the flight path and/or follow ATC direction.

WARNING

The MQ-5B Hunter UAS has not undergone complete Electromagnetic Interference/Electromagnetic Compatibility (EMI/EMC) testing. Flight into high intensity EMI areas may result in erroneous data reports and/or loss of control of aircraft. Operators shall avoid known high intensity EMI areas.

WARNING

The MQ-5B Hunter UAS has not undergone Safety of Flight (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. The precautions in paragraph 3 of this appendix shall be observed in order to ensure safe flight.

WARNING

The MQ-5B Hunter 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 maintain safe separation.

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CAUTION

The MQ-5B Hunter UAS (to include OSGCS and supporting sub-systems) has not been tested for lightning. Flight operations shall be restricted to no less than 25 nautical miles from lightning activity.

1. The aircraft operating instructions, procedures, and limitations shall be IAW Appendix D, reference 1, Operator's Procedures; reference 2, Operator and Crewmember's Checklist; reference 3, Flight Operations Procedures; and this AWR. In the event of conflict between these documents, the information in this AWR shall prevail.
2. Flight of the MQ-5B Hunter UAS is restricted to Visual Meteorological Conditions (VMC).
3. Due to lack of SOF Explosive Atmosphere testing, the following precautions shall be observed in order to ensure safe flight:
 - a. The aircraft shall be un-powered and properly grounded IAW Appendix D, references 1 and 2 during refueling operations.
 - b. While on the ground the aircraft shall maintain the greatest distance practical from all other aircraft and fuel depots, while achieving mission objectives.
4. In the event of a single engine failure, the operator shall initiate a Return to Base (RTB) before attempting to restart the engine.
5. Data link frequencies shall be de-conflicted through local frequency manager/coordinator before any operations.
6. The auto return home function shall be set for no more than 15 seconds of lost data link.
7. The return home waypoint shall be over an approved impact area.
8. In the event of dual engine failure or other catastrophic failure, ATC will be notified immediately and the aircraft will be ditched over the return home waypoint if possible. If not possible to make the ditch point, every effort shall be made to visually inspect the impact area with the payload prior to impact and/or parachute deployment.

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9. Mission profiles should be planned to minimize flight operations that are outside of the 4:1 glide ratio to the ditch point. If mission planning identifies flight outside of the 4:1 glide slope, additional ditch points shall be identified, planned and briefed during the mission briefing.
10. In case of loss of communications between the aircraft operator and ATC, the aircraft shall be directed to the return home waypoint.
11. Flight over populated areas should be avoided.
12. The aircraft shall not be flown at altitudes below 2000 feet Above Ground Level (AGL) except for launch and recovery activities.
13. ATC shall be briefed before each flight with expected mission duration to aid in airspace de-confliction.
14. During preflight someone other than the operator shall verify that the return home waypoint is entered correctly.
15. If a non-cooperative aircraft enters the active restricted airspace and/or FAA approved COA region while occupied by the Hunter UAS, ground observers and/or chase plane shall alert the OSGCS operator who will direct the Hunter UAS to a safe position.
16. Verified loss of any aircraft or OSGCS sub-system shall require RTB. Degraded flight is not authorized.
17. Any unexplained anomaly shall initiate RTB or trouble shooting may be performed within the R-6302 restricted airspace at Ft. Hood.
18. There shall be a minimum of one controlling OSGCS and one back-up OSGCS for all flight operations.
19. Any Procedural deficiencies or flight anomalies detected during operations shall be corrected, annotated, and reported to the POC listed in paragraph 4 of this AWR.
20. A qualitative EMC test shall be performed when any newly installed or relocated equipment not previously EMC tested on this aircraft with the exact electrical/electronic configuration are incorporated into the aircraft configuration.

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21. Operators shall use the Ground Data Terminal (GDT) connected to the shelter for primary aircraft control during launch and recovery. The Launch and Recovery Terminal (LRT) should only be used for secondary aircraft control if the GDT is not available due to a failure.

22. Commander's Corner:

The MQ-5B Hunter UAS has not completed full airworthiness qualification testing. Strict adherence to the Operators Manual and this AWR will minimize the hazards of operations. This Level 3 AWR states that the aircraft is safe to operate within the restrictions listed.

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Appendix B - Configuration and Installation Detail:

1. Configuration – This aircraft is a production configuration MQ-5B Hunter UAS as identified in Appendix D, reference 1, Operator's Procedures. Any deviations to this configuration shall be approved in writing by the Aviation Engineering Directorate (POC in cover memorandum paragraph 4) for this AWR to be valid.

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Appendix C Inspections, Maintenance, and Logbook Instructions:

1. In the event any operating limit, or limits established by this release is exceeded, in addition to the normal entry on Department of the Army (DA) Form 2408-13-1, appropriate inspections shall be performed prior to next flight. Any incident or malfunction of the aircraft suspected of being related to configuration modifications shall be reported immediately to the POC in memorandum paragraph 4.

2. Aircraft Logbook Entries:

a. In accordance with DA Pamphlet 738-751, the following entries shall be made on the DA Form 2408-13-1 and shall be perpetrated on each form during the period of installation, until superseded by another AWR, or until reason for limitation is removed.

(1) On DA form 2408-13 place a circled "X" on the form IAW DA Pamphlet 738-751. On DA Form 2408-13-1 in the Fault Information Block, make the following entry: "Operate within limitations and restrictions specified in the enclosed AWR MQ-5B20080908R2 dated, **14 Dec 2009.**"

(2) On DA form 2408-13-1, as required by Appendix A, paragraph 23, enter a horizontal dash "--" status symbol and the following remark: EMC test required IAW the enclosed AWR MQ-5B20080908R2 dated **14 Dec 2009.**" Upon successful completion of the required EMC test, this entry shall be removed. Adjust DA form 2408-13-1 as appropriate.

(3) A weight and balance form DD365 shall be maintained on file in each aircraft's logbook and weight and balance book maintained at the Hunter Northrop-Grumman Depot in Sierra Vista, AZ or by the operation unit.