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US ARMY RESEARCH, DEVELOPMENT AND ENGINEERING COMMAND
AVIATION AND MISSILE RESEARCH, DEVELOPMENT, AND ENGINEERING CENTER
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RDMR-AEV

9 August 2011

AWR ROVER20110809

MEMORANDUM FOR Program Manager, Threat Systems Management Office (SFAE-STRI-PMITTS-S), Redstone Arsenal, AL 35898-5000

SUBJECT: Airworthiness Release, Qualification Level 3, Authorizing Operation of the ROVER MK II XS Unmanned Aircraft System (AWR ROVER20110809) (TN 100688)

1. Scope: This memorandum constitutes an Airworthiness Release (AWR), Qualification Level 3, authorizing operation of the ROVER MK II XS Unmanned Aircraft System (UAS) within active restricted airspace and airspace near Menlo, GA defined in the Federal Aviation Administration (FAA) Certificate of Authorization (COA) approved for the U. S. Army.
2. Validity: This AWR is new and terminates 8 August, 2013, upon changes in configuration of the subject equipment, or upon issuance of a later AWR, whichever occurs first. This AWR is valid only for operations within active restricted airspace and airspace near Menlo, GA defined in the FAA COA approved for the U. S. Army.
3. Appendices: This memorandum and its appendices shall be carried in the logbook and 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 points of contact (POC) are: (b) (6) DSN 788-7134 or e-mail: (b) (6)
(b) (6) DSN 746-4947, or e-mail: (b) (6)

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Appendix A - Restrictions and Operating Information:

WARNING

The ROVER MK II XS 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 ROVER MK II XS UAS outside of Restricted airspace or the FAA approved COA airspace shall be immediately reported to Air Traffic Control (ATC)/Range Control. The operator shall make immediate actions to correct the flight path and/or follow ATC/Range Control direction.

WARNING

The ROVER MK II XS 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 ROVER MK II XS UAS has not undergone 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 operations.

WARNING

The ROVER MK II XS UAS does not have a sense and avoid system. Mid-air collision is a risk. All flight operations shall be conducted to ensure that minimum separation standards are maintained.

CAUTION

The ROVER MK II XS UAS (to include the ground controller and supporting subsystems) has not been tested for the effects of lightning. Flight operations shall be restricted to no less than 25 nautical miles from lightning activity.

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1. The aircraft operating instructions, procedures, and limitations shall be in accordance with the ROVER MK II XS Civilian UAV System Assembly & Operations Handbook, Piccolo User's Guide, Georgia Tech Research Institute Standard Operating Procedure for Rover UAS, (References D-1, D-2, and D-3), the FAA approved COA, and this AWR. In the event of conflict between these documents, the information in this AWR shall prevail.
2. Flight of the ROVER MK II XS UAS is restricted to Visual Meteorological Conditions (VMC).
3. Due to lack of Safety of Flight (SOF) Explosive Atmosphere testing, ground operations of the aircraft shall be conducted at the greatest distance practical (no less than 50 feet) from all other aircraft and fuel depots.
4. Use of data links is limited to approved frequencies for all ground and flight operations. Data link frequencies shall be de-conflicted through the local frequency manager/coordinator prior to conducting operations.
5. During preflight someone other than the operator shall verify that the Lost Comm Waypoint is entered correctly.
6. The Lost Comm Waypoint shall be over a suitable ditch point.
7. In the event of a catastrophic failure, local ATC/Range Control authority will be notified immediately.
8. Any unexplained anomaly shall initiate return to the Lost Comm Waypoint.
9. In case of loss of communications between the aircraft operator and local ATC/Range Control authority, the aircraft shall be directed to the Lost Comm Waypoint.
10. Local ATC/Range Control authority shall be notified with a flight plan or flight strip prior to flight operations to aid in airspace de-confliction.
11. Verified loss of any aircraft flight critical subsystem or Ground Control Station (GCS) flight critical subsystem shall require a return home.
12. Mission profiles should be planned to minimize flight operations that are outside of the glide ratio to the ditch point.
13. All flight operations shall be conducted with a minimum of one controller. For improved safety, it is recommended to conduct operations with a secondary controller.
14. 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.

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15. Commander's Corner:

- a. Flight over populated areas is prohibited.
- b. Coordination of channel selection with other systems operating in the area is critical to avoid interferences between systems thus reducing accident rates.
- c. The ROVER MK II XS Unmanned Aircraft System (UAS) has not completed full airworthiness qualification testing. Strict adherence to the operator's manuals and this AWR will minimize the hazards of operation.
- d. This AWR is applicable only for a COA that is specifically for the U. S. Army.

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Appendix B - Configuration and Installation Detail:

1. Configuration - The aircraft configuration is identified in ROVER MK II XS Civilian UAV System Assembly & Operations Handbook, (reference D-1) with the addition of the Piccolo II Autopilot System and the Rover Bungee Launch System. Any deviation to the 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. Conduct inspections, checks, testing and maintenance as specified by the ROVER MK II XS Civilian UAV System Assembly & Operations Handbook (reference D-1).
2. This AWR is not authorization to procure any material or sources "Sole Source."
3. An Electromagnetic Compatibility (EMC) check shall be performed prior to first flight.

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Appendix D - Reference List:

1. Technical Manual, ROVER MK II XS Civilian UAV System Assembly & Operations Handbook, Issue 2.0/03-11, Integrated Dynamics, dated March 2011.
2. Technical Manual, Piccolo User's Guide, V2.1.1, Cloud Cap Technology, dated 9 June 2010.
3. Georgia Tech Research Institute Standing Operating Procedure for Rover UAS, SOP# D6303-0000-B-1, Version 1.0, dated 1 July 2011.