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US ARMY RESEARCH, DEVELOPMENT AND ENGINEERING COMMAND
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RDMR-AEV

AWR NOVA 2-20081023R1

11 March 2010 R1
08 October 2008

MEMORANDUM FOR Col. Corps of Engineers, Commanding (CESAJ-DE),
Jacksonville, FL 2207

SUBJECT: Airworthiness Release (AWR) for Operation of NOVA Unmanned Aircraft
System (UAS) (AWR NOVA 2-20081023R1) (TN 63633A)

1. Scope: This memorandum constitutes an Airworthiness Release Qualification Level 3 authorizing operation of the third generation NOVA Unmanned Aircraft System, now named Mako, within the airspace identified In Accordance With (IAW) the Federal Aviation Administration and Department of Defense Memorandum of Agreement (MOA) (reference D-1), in an area surrounding Lake Okeechobee, State of Florida Fish and Wildlife "Holey Land and Rotenburger" area, State of Florida South Florida Water Management District "Water Conservation Areas", US Fish and Wildlife Service "Loxahatchee" area, US Park Service "Big Cypress National Preserve" and US Park Service "Everglades National Park" identified in reference D-2.

2. Validity: This AWR is revised for changes in the aircraft and terminates 2 years after issue, 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 that are conducted IAW reference D-1 in areas identified in reference D-2.

3. Appendices: This memorandum and its appendices shall be carried in the logbook, controlling ground control station (GCS), 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)

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Appendix A - Restrictions and Operating Information:

WARNING

The NOVA 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 NOVA UAS outside of areas identified in reference D-2 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 NOVA 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 NOVA 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. Do not operate the system in the presence of flammable vapors.

WARNING

The NOVA 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 NOVA UAS 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 references D-1, D-3 and this AWR. In the event of conflict between these documents, the information in this AWR shall prevail.
2. Flight of the NOVA UAS is restricted to Visual Meteorological Conditions (VMC).
3. Data link frequencies shall be de-conflicted through the local frequency manager/coordinator before any operations.
4. The lost link waypoint shall be over a suitable ditch point and at an altitude within the limits identified in reference D-1.
5. An appropriate lost link waypoint shall be set such that the aircraft will not exit the appropriate airspace during lost link flight.
6. In the event of loss of control, local ATC shall be notified immediately.
7. The flight path of the aircraft shall be within a 4:1 glide ratio of a pre-established, suitable ditching point.
8. In case of loss of communications between the aircraft operator and local ATC, the aircraft shall be directed to the lost link waypoint.
9. Flight over populated areas is prohibited and shall be avoided.
10. During preflight someone other than the operator shall verify that the lost link waypoint is entered correctly.
11. All flight shall take place during daylight hours established for the area of operations.
12. Verified loss of any aircraft flight critical subsystem or ground control station flight critical sub-system shall require return to base.
13. Airspace de-confliction outside of the restricted airspace shall be IAW D-1.
14. Any unexplained anomaly shall initiate a return to base.
15. 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.
16. Commander's Corner:

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The NOVA Unmanned Aircraft System (UAS) has not completed full airworthiness qualification testing. Strict adherence to the Operators Manual and this AWR will minimize the hazards of operation.

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Appendix B - Configuration and Installation Detail:

Configuration- This aircraft is a production configuration as identified in reference D-3. Any deviation to production 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, maintenance, and logbook entries as specified in the System Operator's Manual (see reference D-3).

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Appendix D - Reference List:

1. Memorandum of Agreement between the Department of Defense (DoD) and the Federal Aviation Administration (FAA) Concerning the Operation of DoD Unmanned Aircraft Systems in the National Airspace System, September 24, 2007.
2. Map of Lake Okeechobee flight operations area and operational area Map Provided by U.S. Army Corps of Engineers, Jacksonville, District Florida.
3. System Operator's Manual, Nova Series Unmanned Aircraft Systems, Unmanned Aircraft Systems Research Program, Version 1.1, 28 February, 2010.