November 20, 2014

U.S. Department of Transportation
Docket Management System
1200 New Jersey Ave, SE.
Washington.
DC 20590

Exemption Request Under Section 333 of the FAA Modernization and Reform Act of 2012 and 14 C.F.R. Part 11

Dear Sir or Madam:

Aviation Unmanned (AU) requests exemptions from several provisions of the Federal Aviation Regulations (FAR) in accordance with Section 333 of the FAA Modernization and Reform Act of 2012. AU seeks exemption in order to commercially operate the MLB Super Bat unmanned aircraft system (UAS) in remote and rural parts of US. Super Bat Pilots in Command hold a private pilot certificate as a minimum qualification. Operators are trained on the Super Bat following the OEM training guidelines and syllabus.

The Super Bat is a gas-powered rotary UAS operating with an electro-optical and thermal capable payload. The UAS operates under the control of a ground station where live video and telemetry from the aircraft are monitored. The Super Bat has a maximum take-off weight of 50 pounds, 80in length and 103in wingspan. The maximum cruising speed is 60 knots, maximum ceiling of 15000' MSL and the datalink range is 6 miles maximum with omni-directional antennas. The aircraft has technical, maintenance and checklist documentation from the OEM that will be strictly adhered to during the operation of the aircraft to provide a level of safety that is needed to operate in the NAS with the exemptions requested.

The Super Bat UAS is a safe and effective aircraft that would be used for aerial inspections of utility powerlines and pipelines operated in remote and sparsely populated areas where the safety of the National Airspace (NAS) would not be compromised. Combining the safety record, small scale of aircraft and the experience level of the licensed operators ensures commercial operations conducted with Super Bat will not pose a hazard to other users of the NAS or a threat to national security.

AU requests that should the application need further clarification or modification in order be granted approval that the FAA contact the applicant below:

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AU requests the following exemptions under Section 333:

Part 21 Subpart H	Airworthiness certification
14 C.F.R. § 45.23(b)	Markings
14 C.F.R. § 61.113(a) and (b)	Private pilot privileges
14 C.F.R. § 61.133(a)	Commercial pilot privileges
14 C.F.R. § 91.7(a) and (b)	Civil aircraft airworthiness
14 C.F.R. § 91.103(b)(2)	Performance data
14 C.F.R. § 91.105(a)(2) & (b)	Flight crew members at stations
14 C.F.R. § 91.109(a)	Instruction
14 C.F.R. § 91.119	Minimum safe altitudes
14 C.F.R. § 91.203(a)(1) and (2)	Civil aircraft certifications
14 C.F.R. § 91.207	Emergency location transmitters
14 C.F.R. § 91.405(a)	Maintenance
14 C.F.R. § 91.407(a)(1)	Operation after maintenance
14 C.F.R. § 91.409(a)(2)	Inspections
14 C.F.R. § 91.417(a)	Maintenance records

1. Extent of relief we seek and the reason we seek the relief

The request for these exemptions is for the use of our Unmanned Systems to provide aerial inspection and surveys. These inspections would include property and land surveys, tower inspections for early detection of failure and post-disaster aerial support. The technical manual, checklists and maintenance schedule are submitted with this application for reference in evaluating the following exemption requests:

Part 21 Subpart H.

Part 21 Subpart H prescribes procedural requirements for the issue of airworthiness certificates. AU requests exemption from this subpart to operate Super Bat without the

requirement for an airworthiness certificate. Super Bat has been operational for 5 years and has been granted COAs previously by the FAA to operate in support of government projects. Given the rural areas in which Super Bat is proposed to be operate this exemption would not adversely affect safety or other users of the NAS.

14 C.F.R. § 45.23(b) - Display of marks; general.

As the proposed UAS does not have any entrances to the cockpit or cabin AU requests that in order to identify the aircraft as a restricted type the word “RESTRICTED” will be displayed in 2 inch lettering on either side of the fuselage.

14 C.F.R. § 61.113(a) and (b) Private pilot privileges and limitations: Pilot in command.

AU requests exemption from 14 C.F.R. § 61.113(a) and (b) to allow AU to commercially operate the Super Bat UAS with operators holding private pilot certificates. The operators whilst holding private pilot licenses would be trained by commercial pilots who are certified as instructors by the OEM. This process would achieve the level of safety required by operators in the NAS.

14 C.F.R. § 61.133(a) Commercial pilot privileges and limitations.

AU requests exemption from 14 C.F.R. § 61.133(a) in accordance with the above request enabling an operator with a private pilot certificate to operate the Super Bat UAS commercially. Based on aircraft simplicity, line of sight operations in sparsely populated areas this exemption would not degrade safety of operation of the NAS

14 C.F.R. § 91.7(a) and (b) Civil aircraft airworthiness

AU requests an exemption from 14 C.F.R. § 91.7(a) and (b) as the aircraft would not have an airworthiness certificate when operating under the construct of this proposal. The highest safety level would be maintained following OEM operator and maintenance guidance with experienced operators as PIC. The rural area of operation will also allow risk to be mitigated in the operation of Super Bat.

14 C.F.R. § 91.103(b)(2) Preflight action.

MLB Super Bat is catapult launched system and therefore does not require a runway. Temperature and density altitude will be checked before launch to ensure the aircraft is operating within the performance envelope ensuring safety of operation. A landing zone of 150’ feet is required for landing. The aircraft lands on the underside of the fuselage and comes to rest within 30 feet of touchdown.

14 C.F.R. § 91.105(a)(2) & (b) Flight crew members at stations.

AU requests exemption from 14 C.F.R. § 91.105(a)(2) & (b) as the crew operating the system will be at the controls of the ground station remote from the aircraft. The requirements under this section are not applicable in the construct of operation of Super Bat.

14 C.F.R. § 91.109(a) Flight instruction; Simulated instrument flight and certain flight tests.

This section limits flight instruction to aircraft with dual controls. The UAS proposed does not have dual controls, AU requests exemption from the section in order to conduct training of operators. The instructors hold CPL and have CFI certificates with significant military and civil experience in manned and unmanned aircraft. This level of experience will ensure an equivalent level of safety is achieved with the instructor immediately able to directly take control of the UAS if it were required.

14 C.F.R. § 91.119 Minimum safe altitudes: General.

This section limits aircraft to a minimum altitude of 500' unless over water or in a sparsely populated area. AU requests a waiver of this section as the proposed maximum altitude of the UAS will be 400 feet above ground level. The planned area of flights will be in un-congested areas with more detail provided in the COA filed detailing the proposed flight in accordance with the process under section 333.

14 C.F.R. § 91.203(a)(1) and (2) Civil aircraft: Certifications required.

Under the proposal AU would not be operating the UAS with an airworthiness certificate as requested under the exemption for Part 21 Subpart H. The exemption for this section is required as AU would not be able to display the airworthiness certificate in accordance with 14 C.F.R. § 91.203(a)(1) and (2).

14 C.F.R. § 91.207 Emergency Locator transmitters.

The Super Bat does not have an emergency locator transmitter fitted to the aircraft. This exemption is requested based on the aircraft being operated under line of sight only by the PIC and as such any crash of the UAS would be visual and the aircraft would be quickly located. The safety and intent under this section can be achieved with the crew maintaining line of sight at all times during operation.

14 C.F.R. § 91.405(a) Maintenance required.

An exemption is requested as the section requires the aircraft be inspected in accordance with Part 43. The aircraft is a small UAS and will be operated in rural areas as requested in the COA application. The maintenance training for all operators is in

accordance with OEM guidance. AU will follow the service intervals for the aircraft as directed by the OEM. The level of safety will be maintained given the simplicity of the aircraft and the experience level and qualification of the operators in manned and unmanned aircraft types.

14 C.F.R. § 91.407(a)(1) Operation after maintenance.

AU requests exemption from this section as it references returning the aircraft to service under a person authorized under Part 43. The level of safety will be achieved by using OEM maintenance trained personnel to inspect the aircraft and a further aircraft problems will be resolved in consultation with manufacturer guidance.

14 C.F.R. § 91.409(a)(2) Inspections.

AU requests exemption from 14 C.F.R. § 91.409(a)(2) due to the aircraft not being operated with an airworthiness certificate as requested and therefore not requiring an inspection for issuance of an airworthiness certificate. The level of safety will be maintained by following OEM inspection and maintenance schedules using experienced operators.

14 C.F.R. § 91.417(a) Maintenance records.

An exemption for 14 C.F.R. § 91.417(a) is requested due to the references in keeping records in accordance with Part 43 and the maintenance schedule associated with Part 43 and the aircraft airworthiness certificate. Records for the aircraft maintenance in accordance with OEM guidance will be maintained as closely to section 14 C.F.R. § 91.417(a) as possible with work that is carried out on the aircraft to ensure safety is maintained at the same level expected under this section.

2. How our request would benefit the public as a whole

- UAS Integration Development

AU operation of UAS by licensed pilots will allow information to be gathered on the operation of commercial drones in the NAS. The level of training and experience, both military and commercial, of the operators ensures a safe level of UAS integration under this exemption into the NAS. The feedback from these early operations will provide the public and the FAA data to further allow development and implementation of rules and regulations of UAS operations in the NAS.

- Routine Inspections

With the routine inspection of power lines (distribution or transmission), cameras can identify arcing early which will allow timely repair to the affected area before they become a problem. This early identification will help maintain reliable service to customers.

• Emergency Response

After Hurricane Ike in 2008, much of Houston and Galveston was without power for over 10 days. Lessons learned have been identified from this event, one of which was the lack of accurate, real time information. Thousands of personnel and trucks mobilized to survey and repair areas that turned out to be lightly damaged, while other heavily damaged areas heavily were left undiscovered for days. Identifying true problem areas will allow more accurate focus repair efforts and significantly decrease time to get power restored. Surveys of damaged areas will also enable an expedited response from insurers in processing claims by those with property affected by natural disasters.

3. Reasons why the exemption would not adversely affect safety, or how the exemption would provide a level of safety at least equal to the existing rule

The areas to be covered are remote, sparsely populated, and thorough mission planning is undertaken before each flight. Current sectional charts are checked for airspace restrictions, NOTAMS, TFR's, restricted airspace, and helicopter corridors. The aircraft will be flown below 400' AGL, outside any controlled airspace and outside 3 miles from any airport IAW §91.126(d), but at all times at a minimum safe altitude to allow for obstacle and terrain clearance.

AU operates a robust safety observer program, and if required our aircraft can be monitored by Aviation Unmanned personnel who at a minimum possess private pilot certificates.

4. Summary to publish in the Federal Register

Pursuant to 14 C.F.R. § 11.81(f), the following summary is provided for publication in the Federal Register, should the FAA determine that publication is needed:
Docket No.: No. FAA-2014-____
Petitioner: Aviation Unmanned.
Section of 14 CFR: Part 21 Subpart H, 14 C.F.R. § 45.23(b), 14 C.F.R. § 61.113(a) and (b), 14 C.F.R. § 61.133(a), 14 C.F.R. § 91.7(a) and (b), 14 C.F.R. § 91.103(b)(2), 14 C.F.R. § 91.105(a)(2) & (b), 14 C.F.R. § 91.109(a), 14 C.F.R. § 91.119, 14 C.F.R. § 91.203(a)(1) and (2), 14 C.F.R. § 91.207, 14 C.F.R. § 91.405(a), 14 C.F.R. § 91.407(a)(1), 14 C.F.R. § 91.409(a)(2), 14 C.F.R. § 91.417(a).
Description of Relief Sought: Aviation Unmanned is seeking an exemption to conduct commercial agriculture, powerline survey, and patrol operations using unmanned vehicles in remote areas of the continental United States.

5. Additional information, views, or arguments available to support our request

AU have established standard operating procedures within our company to enable safe and effective use of our unmanned systems in any situation. Our operations and these standards are based on our extensive military flying experience in the MQ-1B and MQ-9 systems for nearly 18 years combined, and we will comply with 14 CFR to the maximum

extent possible. Furthermore, our operations are safe, efficient, and will assist the public and FAA in developing operating regulation for UAS.

Certifications and Training

- Our pilots all hold current FAA Private Pilot certificates and a minimum of FAA Second Class medicals.
- Many of our pilots hold Commercial, CFI, MEI, and ATP certificates as well as current military qualifications on unmanned aircraft.
- Our pilots have completed rigorous training for the systems we operate including academics, simulators, and flight training. These courses, developed by Aviation Unmanned in conjunction with manufacturers, provide our pilots the best training possible to operate our systems. This also includes emergency procedure training and evaluation, experience building with a qualified instructor, and initial/recurring flight evaluations.

Currency and Proficiency

- Our pilots maintain currency and proficiency in accordance with a company specific Aircrew Proficiency Program. If crew members lapse on currency, they are not able to perform flying duties until completion of either (depending on how long they have been non-current): at least one flight with a qualified instructor or re-training and completion of a flight review by a qualified instructor.

Flight Operations

- Operations will take place during daytime VMC. Airspace would be limited to class E and G. The aircraft will remain in visual LOS at all times. Altitude of the aircraft will be restricted to 400 feet above ground level.
- AU operators abide by a “sterile cockpit” rule anytime one of the following three criteria are met:
    - Presets or Landing checklists have started
    - Altitude is less than 150’ AGL or
    - Aircraft position is 0.25 nm or less from the ground control station.
- Each flight is operated under the crew concept, and there are always two fully qualified pilots in the crew. The Pilot in Command is responsible for flying the aircraft and ensuring the safety of flight operations, the Second in Command is responsible for operating the payload and providing input to the PIC. In the event of PIC incapacitation the SIC can step in and safely land the aircraft.

Regulations Adherence

- AU crews are required to adhere to 14 CFR §91.17 (Alcohol or Drugs) and 14 CFR §121.471 (Flight time limitations and rest requirements: All flight crew members)

Aircraft

- The system we will use to perform these inspections are proven, reliable systems. The technical manual, checklists and maintenance schedule are submitted with this application.

- Super Bat aircraft have detailed Lost Comm plans that, in the event of a loss of communication, will bring the aircraft back at a specific altitude, position, and airspeed.
    - Operators can set them to automatically land in a cleared area or hold over the cleared area while working to restore communications.
    - Operators set the Lost Comm plan routing to avoid populated areas and major roads.

6. <u>Reasons why you want to exercise the privileges of our exemption outside the United States</u>

We do not currently intend on exercising these privileges out of the United States.

Please contact me if there are any questions or issues regarding this request.