

U.S. Department of Transportation, Docket Operations
West Building Ground Floor, Room w12-140
1200 New Jersey Ave., SE Washington, DC 20590
Re: Petition of Offshore Aviation LLC for an Exemption Pursuant to Section 333 of the
FAA Modernization and Reform Act of 2012

Petition for Exemption Filed under Section 333 of the FAA Reform Act and Part 11 of
the Aviation Regulations.

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (the Reform
Act) and 14 C.F.R. Part 11, Offshore Aviation LLC, a Maryland limited liability
company, hereby applies for an exemption from the listed Federal Aviation Regulations
(FARs) to allow it to operate a small Unmanned Aircraft System (UAS) under the
conditions and limitations set forth in this Petition. The areas of aerial filming production
include real estate marketing, feature films, television commercials, documentaries,
construction survey, 3-D mapping, and educational research & development.

This exemption is made based on information outlined in this petition (Appendix A), as
well as the accompanying VulcanUAV and DJI Manuals (Appendix B), Offshore
Aviation LLC's Standard Operation Procedures (SOPs) (Appendix C), Pilot Checklists,
Briefing Guide (Appendix D), and UAS photos and specifications (Appendix E).

Introduction

Offshore Aviation LLC is a professional production company specializing in aerial
digital media. The company, which was founded by professional military and
commercial aviators, intends to operate aerial camera systems for commercial
photography and videography in the United States.

Offshore Aviation LLC has years of experience demonstrating UAS technology and has a
history of supporting academic research and development (R&D) projects. The
company's pilots and camera operators have participated in numerous student science
and R&D projects in Maryland, Virginia, and Washington DC and are widely recognized
as experts in UAS design and flight operations.

Offshore Aviation LLC's comprehensive operations and training programs are based on
sound military techniques and procedures. We use professionally designed UAS(s) that
are supported by technical manuals, military style maintenance programs, and operational
standards designed to promote safe and effective operations.

Our UAS pilots have FAA Commercial multi-engine ratings and hold current class II or
higher medical certificates. In addition to these advanced ratings our Director of UAS
Operations, Chief UAS Pilot and Instructor has accumulated over 2,500 military jet hours
and over 2,000 military UAS hours. He has a Master's Degree in Aerospace
Engineering, is a graduate of United States Navy Test Pilot School, United States Naval

Aviation Safety School and has been flying in the radio control aircraft hobby for over 16 years. He brings this wealth of knowledge and experience to our professional UAS operations.

Specifically, the UASs are:

Two lightweight (< 30.0 lbs gross weight with all on-board equipment), battery operated 6 and 8-motor rotorcraft in the form of a Hexacopter (Mantis) & Octocopter (Raven) that take-off and land vertically. The airframes are manufactured by VulcanUAV and electronics are manufactured by DJI, with the following equipment:

- An on-board flight computer with GPS navigation and location ability that receives signals for flight controls from a ground-based transmitter/controller;
- An on-board camera capable of capturing imagery in the form of full color, high definition still photos and video;
- Onboard camera and gimbal is controlled by separate controller operated by dedicated Payload Operator (PO);
- An on-board telemetry system that delivers flight data from the on-board flight computer to the on-board radio transmitter including altitude AGL, horizontal and vertical speed, compass direction of flight and direction back to its launch site;
- A 600mW, 5.8GHz on-board radio transmitter that transmits live video from the on-board camera plus all the flight data from the telemetry system described above;

The Ground Station Includes:

- A Pilot in Command (PIC) in operational control of a flight operation from beginning to end and who controls the UAS while in the air;
- A 500mW, 433MHz radio transmitter/controller operated by the PIC to control the UAS while in flight;
- A 100mW, 2.4GHz radio transmitter/controller operated by the PO to control the camera and gimbal while in flight;
- A radio receiver receiving live video and flight data from the on-board camera and computer projects it all together onto a screen for the PIC to view during flight if needed;
- A radio receiver receiving live video and flight data from the on-board camera and computer projects it all together into a pair of video goggles for the PO to view during flight.

Proposed Operations:

Offshore Aviation LLC intends to use the UASs in three general areas. First, Offshore Aviation LLC seeks an exemption to perform video filming and photographing by air for public and private use. Second, it will employ UAS's to inspect land, residential commercial and industrial structures and property. Third, Offshore Aviation LLC seeks permission to use UASs to offer training to persons, from both private and public entities, which are interested in the safe operation of UAS.

Specifically, Offshore Aviation LLC will use UASs which are equipped with cameras and sensors, in order to engage in the following commercial activities:

- (a) Video filming by air and photographing for public and private purposes, including: cinematography, educational research & development, feature films and documentaries.
- (b) Video filming by air and photographing to support professional operations in engineering, land surveying, architecture, real estate and other related professional activities.
- (c) Inspections by air of infrastructure such as bridges, highways, electrical installations, dams, aqueducts, photovoltaic power stations, wind farms and pipes. These inspections will only be done under contract with the owners or with any local government authority.
- (d) Inspection by air of land and residential, commercial and industrial structures, only under contract with the owners or with any local government authority.
- (e) Inspections by air to detect sources of pollution and gas emissions, under contract with the owners in the area or with any local government authority.
- (f) Support provided to search and rescue operations and reconnaissance in cases of need, emergency or natural disasters and only when government authorities have requested it by contract or donation.
- (g) Offshore Aviation LLC is avid believer that offering training to persons, private and public entities, which are interested in the safe use of UAS(s), will enhancing their skills and safety controls which make the NAS safer and further protects persons and property.

Relevant Statutory Authority:

This Petition for Exemption is submitted pursuant to Section 333(a) through (c) of the FAA Modernization and Reform Act of 2012 ("Reform Act"). Congress has directed the FAA "to safely accelerate the integration of civil unmanned aircraft systems into the national airspace system." Pursuant to Section 333 of the Reform Act, the FAA Administrator is to permit unmanned aircraft systems to operate in the National Air Space ("NAS") where it is safe to do so based on the following considerations:

- The UAS's size, weight, speed and operational capability;
- Operation of the UAS in close proximity to airports and populated areas; and
- Operation of the UAS within the visual line of sight of the operator.

Additionally, the FAA Administrator has general authority to grant exemptions from the agency's safety regulations and minimum standards when the Administrator decides a requested exemption is in the public interest. See 49 U.S.C. § 106(f) (defining the authority of the Administrator); 49 U.S.C. § 44701(f) (permitting exemptions from §§ 44701(a), (b) and §§ 44702-44716, et seq.). A party requesting an exemption must explain the reasons why the exemption: (1) would benefit the public as a whole, and (2) would not adversely affect safety (or how it would provide a level of safety at least equal to the existing rules). See 14 C.F.R. § 11.81 (petitions for exemption).

Offshore Aviation LLC proposed UAS Operations Meet the Requirements of Section 333 of the Reform Act

Offshore Aviation LLC proposed operations in this Petition for Exemption qualify for expedited approval pursuant to Section 333 of the Reform Act as each of the statutory criteria and relevant factors are satisfied.

Approval is Warranted Based on the UAS Size, Weight, Speed, and Operational Capability:

Offshore Aviation LLC will employ the UASs (Vulcan Mantis & Vulcan Raven) for the operations specified in this Petition for exemption. The Mantis UAS has a maximum take-off weight of 17 pounds; the Raven has a maximum take-off weight of 29 pounds. The flight speed will not exceed 30 miles per hour, and it will not be flown in controlled airspace without prior permission from the controlling agency or at an altitude that exceeds 400 feet AGL. All flights will be flown in such a way that they can be safely terminated with a reserve battery power of 25% of the battery's maximum charge. The Vulcan UASs do not carry any flammable propellant or fuel. They have an integrated GPS system that calculates the UAS's position and height and relays that information via a secure connection to the operators. Additionally, the Vulcan UASs contain a failsafe mode which activates if its connection to the remote control is lost or can via a switch on the PICs transmitter/controller, and this system permits the UAS to return to a predetermined location and land without injury or damage. For added safety, the Vulcan Raven UAS is equipped with bright LED position lighting in the standard FAA configuration (red, green and white strobe). These can be easily seen during the day and give positional awareness to PIC and other aircraft.

Approval is Warranted Based on the Operational Restrictions Set Forth in the Operations Manual:

The Offshore Aviation LLC SOPs, Pilot Checklists and Briefing Guide, plus the VulcanUAV and DJI operator's manuals contain all of the procedures and limitations necessary to successfully perform the operations specified in this Petition for Exemption. (Appendices B, C & E).

Public Interest:

The public interest will be served by granting Offshore Aviation LLC Petition for Exemption. Congress has established a national policy that favors early integration of UASs into the NAS in controlled, safe working environments such as those proposed in this Petition. In addition, the public also has an interest in reducing the hazards associated with alternate methods of conducting similar aerial photographic operations. Currently operations are conducted using teams that climb structures using ladders to position equipment, or low flying helicopters and aircraft. By using UAS, exposure to physical hazards will be reduced by conducting the operation while remaining safely on the ground.

Additionally, Offshore Aviation LLC's intended uses for the UAS's have identifiable safety benefits that include reducing the danger and emissions associated with full size

aircraft, such as dangerous fuels, vastly lower noise pollution, vulnerable aircrew and public safety in general. If there is a mishap with the UAS the impact to persons and property is far less than if a full size aircraft is involved.

Federal Register Summary:

Pursuant to 14 C.F.R. Part 11, the following summary is provided for publication in the Federal Register, should it be determined that publication is needed:

Offshore Aviation LLC seeks an exemption from the following rules:

Parts 21; §§ 45.23(b); 27; 61.113(a) and (b); 61.3; 91.7(a); 91.9(b)(2); 91.103; 91.109; 91.119; 91.121; 91.151(a); 91.203(a) and (b); 91.405(a); 91.407(a)(1); 91.409(a)(2); and 91.417(a) and (b) of Title 14, Code of Federal Regulations (14 CFR).

The exemption will enhance safety by reducing risk to the general public and property owners from the substantial hazards associated with performing equivalent work with conventional aircraft, rotorcraft, or other methods.

Conclusion:

Offshore Aviation LLC Petition for Exemption satisfies the criteria articulated in Section 333 of the Reform Act of 2012 including weight, speed, operating capabilities, proximity to airports and populated areas, operation within visual line of sight and national security. Additionally, the Petition provides more than adequate justification for the grant of the requested exemptions to permit Offshore Aviation LLC to operate the selected UASs for the operations specified herein.

Granting the exemption will benefit the public interest as a whole in several ways, including (1) significantly improving safety and reducing risk by alleviating human exposure to danger, and (2) improving the quality of services and decreasing operating costs compared with conventional flight operations.

Very Respectfully,
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Appendix A

The regulations from which the exemptions is requested are listed below, underneath each are our proposed equivalent level of safety:

Parts 21, §§ 45.23(b); 27, 61.113(a) and (b) 61.3; 91.7(a); 91.9(b)(2); 91.103; 91.109; 91.119; 91.121; 91.151(a); 91.203(a) and (b); 91.405(a); 91.407(a)(1); 91.409(a)(2); and 91.417(a) and (b) of Title 14, Code of Federal Regulations (14 CFR).

Exemptions Requested:

The Federal Aviation Act expressly grants the FAA the authority to issue exemptions. This statutory authority, by its terms, includes exempting civil aircraft, as the term is defined under § 40101 of the Act, including UASs, from its safety regulations and minimum standards when the Administrator decides a requested exemption is in the public interest.

Offshore Aviation LLC seeks an exemption from several interrelated provisions of 14 C.F.R. Parts 21, 27, 45, 61 and 91 for purposes of conducting the requested operations using a UAS. Listed below are the specific sections of 14 C.F.R. for which exemption is sought:

14 C.F.R. Part 21, Subpart H - Airworthiness Certificates:

The FAA has stated that no exemption is needed from this section if a finding is made under the Reform Act that the UAS selected provides an equivalent level of safety when compared to aircraft normally used for the same application. (Regulatory Docket No. FAA-2014-0352). These criteria are met, and therefore no exemption is needed.

Equivalent Level of Safety:

The UASs selected by Offshore Aviation LLC are safe when taking into account their size, weight, speed, and operational capability. The UASs weigh less than 30 pounds and will be flown at less than 30 miles per hour and outside controlled airspace unless prior permission is granted by controlling agency. Additionally, the UASs carry neither pilots nor passengers, carry no explosive materials and or flammable liquid fuels, and operate exclusively within the parameters stated in the Operator's Manuals and SOPs.

Operations under this exemption will be closely controlled and monitored by the operator and will be conducted in compliance with local public safety and security requirements. Offshore Aviation LLC will also provide the FAA with advance notice of all operations via NOTAMS and coordination with the local FSDO. In all cases, the UAS operated under the proposed conditions, will be at least as safe as, or safer than conventional rotorcraft operating with an airworthiness certificate without the restrictions and conditions of the proposed UAS operations.

14 C.F.R. Part 27 Airworthiness Standards: Normal Category Rotorcraft

14 C.F.R. Part 27 sets forth the procedural requirements for airworthiness certification of normal category rotorcraft. To the extent the Offshore Aviation LLC UASs would otherwise require certification under Part 27, we seek an exemption from Part 27's airworthiness standards for the same reasons identified in the request for exemption from 14 C.F.R. Part 21, Subpart H.

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

These regulations provide that each aircraft must display "N" and the aircraft's registration number in letters at least 2 inches high. Additionally, the aircraft must display the word "EXPERIMENTAL" in letters at least 2 inches high near the entrance to the cabin, cockpit, or pilot station. The UAS does not have an entrance in which the word "EXPERIMENTAL" can be placed, and may not have a registration number assigned to it by the FAA.

Offshore Aviation LLC proposes to achieve an equivalent level of safety by including the word "EXPERIMENTAL" as large as practicable on the top of the aircraft, where the PIC, PO and others in the vicinity of the aircraft while it is preparing for launch will be able to see the designation. Finally, the ground station will display a high contrast flag or banner that contains the words "Unmanned Aircraft Ground Station" in letters 3 inches high or greater. The banner should be visible to anyone that observes the aircraft and chooses to investigate its point of origin.

In a previous Grant of Exemption, Regulatory Docket No. FAA-2014-0352, the FAA determined that exemption from these requirements was warranted provided that the aircraft "have identification (N-Number) markings in accordance with 14 C.F.R part 45, Subpart C if the markings are as large as practicable."

14 CFR § 61.113 (a) and (b); 61.3 (c,2-v): Private Pilot Privileges and Limitations, Medical Certificate:

Although all current Offshore Aviation LLC PICs hold a commercial pilot certificate and class II or high medical we seek exemption from 14 C.F.R § 61.113, which restricts private pilot certificate holders from flying aircraft for compensation or hire, and which would also require a second class medical certificate for possible future PICs. The purpose of this section is to ensure the skill and competency of any PIC where the aircraft is carrying passengers or cargo for hire. In this case, while the UAS will be operated as part of a commercial operation, it carries neither passengers nor cargo. In the Grant of Exemption in FAA Docket No. FAA-2014-0352, the FAA determined that the unique characteristics of UAS operation outside of controlled airspace did not warrant the additional cost and restrictions attendant with requiring the PIC to have a commercial pilot certificate and class II medical certificate. Additionally, instead of having a second or third class medical, we suggest that the PIC exercise the privileges similar to that of a sport pilot, requiring only a valid US driver's license.

Safety Mitigation:

Petitioner seeks to ensure safe operation by ensuring that any PIC is thoroughly versed in airspace and communication issues pertaining to all aircraft operators but also in the unique aspects of UAS flight. The owners and all current PICs of Offshore Aviation LLC have commercial pilot's license, however, the experience obtained beyond a private pilot certificate in pursuit of a commercial pilot certificate in manned flight does not necessarily aid a pilot in the operational environment proposed. To that end, Offshore Aviation LLC will require a PIC to have at a minimum completed private pilot's ground school, pass a FAA private pilot's knowledge test and adhere to the SOPs listed in Appendix C.

We find that the combination of aeronautical knowledge, UAS airmanship skills, and verification through remaining current is a sufficient method to evaluate a pilot's qualifications, given that operations will be conducted within the limitations outlined in this petition.

14 C.F.R. § 91.7(a): Civil Aircraft Airworthiness:

Offshore Aviation LLC seeks an exemption from 14 C.F.R. § 91.7(a), which requires that a civil aircraft be in airworthy condition to be operated. The FAA has stated (Regulatory Docket No. FAA-2014-0352) that no exemption is required to the extent that the requirements of Part 21 are waived or found inapplicable.

14 C.F.R. § 91.9(b)(2): Civil Aircraft Flight Manual in the Aircraft:

Given its size, configuration, and load capacity, the Vulcan Mantis & Raven have no ability to carry such a manual on the aircraft, not only because there is no pilot on board, but because there is simply no room or capacity to carry such an item on the aircraft.

Safety Mitigation:

The safety related purpose of this manual requirement can be equally satisfied by maintaining the UAS Manuals at the ground control point where the crew flying the UAS will have immediate access to it. Accordingly, we request an exemption from § 91.9(b) (2)'s flight manual requirements, on the condition that the Mantis & Raven flight manuals be available at the control point during each operation.

14 C.F.R. § 91.103: Preflight Action

Offshore Aviation LLC seeks an exemption from 14 C.F.R. § 91.103, which requires a PIC to become familiar with specific information before each flight, including information contained in the FAA-approved Flight Manual on board the aircraft. While the PIC will be familiar with all information necessary to safely conduct the flight, an exemption is requested to the extent that an FAA-approved Flight manual is required.

Safety Mitigation:

An equivalent level of safety will be provided by following the Aircraft Operations Manual and flight manual provided by the manufacturer. The PIC will take all required preflight actions- including performing all required checklists and reviewing weather, flight requirements, battery charge, landing and takeoff distance, aircraft performance data, and contingency landing areas - before initiation of flight. The Operators Manual and SOPs will be kept at the ground station with the operators at all times.

14 C.F.R. § 91.109(a): Flight Instruction

Offshore Aviation LLC seeks an exemption from 14 C.F.R. § 91.109(a), which provides that "no person may operate a civil aircraft (except a manned free balloon) that is being used for flight instruction unless that aircraft has fully functioning dual controls." UAS and remotely piloted aircraft, by their design, do not have functional dual controls. Instead, flight control is accomplished through the use of a device that communicates with the aircraft via radio communications.

Safety Mitigation:

Given the size and speed of the UAS employed by Offshore Aviation LLC, an equivalent level of safe training can still be performed without dual controls because no pilot or passengers are aboard the UAS and all persons will be at a safe distance away in the event that the UAS encounters any difficulties during flight instruction. In addition, we will conduct flight training at our Research and Development test sites, which are located on its own property. These training flights will be conducted in a sterile area and will otherwise comply with the provisions in the Operator's Manual for flights at the R&D facility. The FAA has stated (Regulatory Docket No. FAA-2014-0352) that no exemption is required.

14 C.F.R. § 91.119: Minimum Safe Altitudes

Offshore Aviation LLC requests an exemption from the minimum safe altitude requirements of 14 C.F.R. § 91.119. Section 91.119 prescribes the minimum safe altitudes under which aircraft may not operate, including 500 feet above the surface and away from any person, vessel, vehicle, or structure in non-congested areas. See 14 C.F.R. § 91.119(c). Section 91.119(d) allows for a helicopter to operate at less than those minimum altitudes when it can be operated "without hazard to persons or property on the surface," provided that "each person operating the helicopter complies with any routes or altitudes specifically prescribed for helicopters by the FAA."

Safety Mitigation:

Compared to flight operations with rotorcraft weighing far more than the maximum weights proposed herein, and given the lack of flammable fuel, any risk associated with

these operations is far less than those that presently exist with conventional aircraft. An equivalent level of safety will be achieved given the size, weight, and speed of the UAS, as well as the location where it is operated. In order to avoid any risk to aircraft, flight operations will be restricted to 400' AGL or below. Prior to conducting UAS operations, all persons not essential to flight operations (nonparticipating persons) shall remain at appropriate distances. In open areas, the UAS shall remain 500 feet from all persons other than essential flight personnel (i.e. PIC, PO, operator trainees or essential persons). If barriers or structures are present that can sufficiently protect nonparticipating persons from the UAS or debris in the event of an accident, then the UAS may operate closer than 500 feet to persons afforded such protection. The UAS operator shall also ensure that nonparticipating persons remain under such protection. If a situation arises where nonparticipating persons leave such protection and are within 500 feet of the UAS, flight operations shall cease immediately. When considering how to immediately cease operations, the primary concern is the safety of those nonparticipating persons. In the event that operations must be conducted closer than 500 feet to vessels, vehicles and structures the PIC shall receive permission from the owner/controller of any such vessels, vehicles or structures and the PIC shall make a safety assessment of the risk of operating closer to those objects and determines that it does not present an undue hazard.

14 C.F.R. § 91.121: Altimeter Settings

This petition seeks an exemption from 14 C.F.R. § 91.121, which requires a person operating an aircraft to maintain cruising altitude or flight level by reference to an altimeter that is set to the elevation of the departure airport or barometric pressure. An exemption is required to the extent that the UASs do not have a barometric altimeter, but rather a GPS altitude read out.

Safety Mitigation:

The FAA has stated that an equivalent level of safety can be achieved if the UAS will be operated at 400' AGL or below and within visual line-of-sight in addition to GPS based altitude information relayed in real time to the operator. See Grant of Exemption to Astraeus Aerial, Docket No. FAA-2014-0352. As the attached Operations Manual indicates, the chosen UAS meets these requirements, and a zero altitude initiation point will be obtained prior to flight.

14 C.F.R. § 91.151(a): Fuel Requirements for Flight in VFR Conditions

Offshore Aviation LLC requests an exemption from 14 C.F.R. § 91.151(a)'s fuel requirements for flight in VFR conditions. Section 91.151 states:

- (a) No person may begin a flight in an airplane under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed -
- (1) During the day, to fly after that for at least 30 minutes; or
 - (2) At night, to fly after that for at least 45 minutes.

Here, the technological limitations on UAS battery power means that no meaningful flight operations can be conducted while still maintaining a 30 minute reserve. Offshore Aviation LLC proposes that all flights comply with this requirement by mandating that the aircraft be safely landed with no less than 25% of battery life remaining.

Safety Mitigation:

The FAA has stated that an equivalent level of safety is provided if the UAS flight is terminated with at least 25% reserve battery power still available. See Grant of Exemption to Astraerus Aerial, Docket No. PAA-2014-0352. The Operations Manual conforms to this limit, providing an equivalent level of safety.

14 CFR 91.203(a) & (b) Civil aircraft: Certifications required

The regulation provides that an airworthiness certificate, with the registration number assigned to the aircraft and a registration certificate must be aboard the aircraft. Additionally, subparagraph (b) provides that the airworthiness certificate be "displayed at the cabin or cockpit entrance so that it is legible to passengers or crew."

At a maximum gross weight of less than 30 pounds, the UASs are too small to carry documentation, do not have an entrance, and are not capable of carrying passengers or crew. To obtain an equivalent level of safety and meet the intent of 91.203, we propose that documents deemed appropriate for this aircraft by the FAA will be co-located with the crew at the ground control station and available for inspection upon request. The FAA has stated (Regulatory Docket No. FAA-2014-0352) that no exemption is required.

14 C.F.R. 91.405(a); 91.407(a)(1); 91.409(a)(2); and 91.417(a) and (b) Maintenance Required

Offshore Aviation LLC seeks an exemption from the maintenance inspection requirements contained in 14 C.F.R. § 91.405(a), 91.407(a)(1), 91.409(a)(2); 91.417(a) and (b). These regulations specify maintenance and inspection standards in reference to 14 C.F.R. Part 43. See, e.g., 14 C.F.R. § 91.405(a) (stating that each owner or operator of an aircraft "[s]hall have the aircraft inspected as prescribed in subpart E of this part and shall between required inspections...have discrepancies repaired as prescribed in part 43 of this chapter"). An exemption from these regulations is needed because Part 43 and these sections only apply to aircraft with an airworthiness certificate, which the UASs will not have.

Safety Mitigation

An equivalent level of safety will be achieved because maintenance and inspections will be performed in accordance with the Operators Manual. As provided in the Operators Manual, flights will not be conducted unless a flight operations checklist is performed that includes all of the aircraft's components.

Appendix B – UAS manuals (see attached)

Appendix C

Standard Operating Procedures (SOP):

1. The unmanned aircraft systems (UASs) will weigh less than 30 pounds, including energy source(s) and equipment.
2. The UAS will not be flown at a ground speed exceeding 30 MPH.
3. Flights will be operated at an altitude of no more than 400 feet above ground level (AGL), as indicated by the procedures specified in the operator's manual. All altitudes reported to ATC must be in feet AGL.
4. The UAS will be operated within visual line of sight (VLOS) of the PIC at all times. This requires the PIC to be able to use human vision unaided by any device other than corrective lenses.
5. All operations will utilize a Payload Operator (PO). The PO may be used to satisfy the VLOS requirement, when not using video goggles, as long as the PIC always maintains VLOS capability. The PO and PIC must be able to communicate verbally at all times.
6. Prior to each flight the PIC will inspect the UAS to ensure it is in a condition for safe flight. If the inspection reveals a condition that affects the safe operation of the UAS, the aircraft is prohibited from operating until the necessary maintenance has been performed and the UAS is found to be in a condition for safe flight. The Ground Control Station (GCS), if utilized, will be included in the preflight inspection. All maintenance, alterations and software upgrades will be properly documented in the aircraft records.
7. If the UAS has undergone maintenance, alterations or software upgrades that affect the UAS operation or flight characteristics, e.g. replacement or upgrade of a flight critical component, the UAS will undergo a functional test flight in accordance with the operator's manual. The PIC who conducts the functional test flight will make an entry in the UAS aircraft records of the flight. The requirements and procedures for a functional test flight and aircraft record entry will be added to the operator's manual.
8. The operator will follow the manufacturer's UAS aircraft/component, maintenance, overhaul, replacement, inspection, and life limit requirements. When unavailable, aircraft maintenance/component/overhaul, replacement, and inspection/maintenance requirements will be established and identified in the operator's manual. At a minimum, requirements for the following will be included in the operator's manual:
 - a. Actuators / Servos;
 - b. Powerplant (motors);
 - c. Propellers;
 - d. Electronic speed controller;
 - e. Batteries;
 - f. Remote command and control;
 - g. Ground control station (if used); and
 - h. Any other components as determined by the operator;

9. The Pilot-In-Command (PIC) will have passed a FAA private pilot's knowledge test and have a valid driver's license. The PIC will also meet the flight review requirements specified in 14 CFR § 61.56 in an aircraft in which the PIC is rated on his or her pilot certificate, if applicable.

10. Prior to operations the PIC will have accumulated and logged, in a manner consistent with 14 CFR § 61.51(b), a minimum of 200 flight cycles or 25 hours of total time as a UAS pilot and at least ten hours logged as a UAS pilot with a similar UAS type (single blade or multi-rotor). Prior documented flight experience that was obtained in compliance with applicable regulations may satisfy this requirement. Training, proficiency, and experience-building flights can also be conducted to accomplish the required flight cycles and flight time.

11. Prior to operations the PIC will have accumulated and logged, in a manner consistent with 14 CFR § 61.51(b), a minimum of five hours as UAS pilot operating the make and model of UAS to be utilized for operations and three take-offs and three landings in the preceding 90 days. Training, proficiency, experience-building, and take-off and landing currency flights can be conducted to accomplish the required flight cycles and flight time.

12. The UAS may not be operated directly over any person, except authorized and consenting personnel, or below an altitude that is hazardous to persons or property on the surface in the event of a UAS failure or emergency.

13. The operator will ensure that no persons are allowed within 500 feet of the area except those consenting. This provision may be reduced if barriers or structures are present that can sufficiently protect nonparticipating persons from the UAS or debris in the event of an accident.

14. The UAS PIC will abort the flight in the event of unpredicted obstacles or emergencies in accordance with the operator's manual.

15. Each UAS operation will be completed within 60 minutes flight time or with 25% battery power remaining, whichever occurs first.

16. The operator will obtain an Air Traffic Organization (ATO) issued Certificate of Waiver or Authorization (COA) prior to conducting any operations. This COA will also require the operator to request a Notice to Airman (NOTAM) not more than 72 hours in advance, but not less than 48 hours prior to the operation.

17. All aircraft operated in accordance with regulations will be identified by serial number, registered in accordance with 14 CFR part 47, and have identification (N-Number) markings in accordance with 14 CFR part 45, Subpart C. Markings must be as large as practicable.

18. Each UAS operated will comply with all manufacturer Safety Bulletins.

19. The radio frequency spectrum used for operation and control of the UAS will comply with the Federal Communications Commission (FCC) or other appropriate government oversight agency requirements.

20. At least three days before scheduled flight, the operator will submit a written Plan of Activities to the local FSDO with jurisdiction over the area of proposed flight area. The 3-day notification may be waived with the concurrence of the FSDO. The plan of activities must include at least the following:

- a. Dates and times for all flights;
- b. Name and phone number of the operator
- c. Make, model, and serial or N-number of UAS to be used;

d. Name of UAS PIC involved

e. A statement that the operator has obtained permission from property owners and/or local officials to conduct the flight operations; the list of those who gave permission must be made available to the inspector upon request;

f. Signature of exemption-holder or representative; and

g. A description of the flight activity, including maps or diagrams of any area, city, town, county, and/or state over which flights will be conducted and the altitudes essential to accomplish the operation.

22. The documents required under 14 CFR §§ 91.9 and 91.203 will be available to the PIC at the Ground Control Station of the UAS any time the aircraft is operating.

23. The UAS will remain clear and yield the right of way to all other manned operations and activities at all times (including, but not limited to, ultralight vehicles, parachute activities, parasailing activities, hang gliders, etc.).

24. UAS operations will not be conducted during night, as defined in 14 CFR § 1.1. All operations will be conducted under visual meteorological conditions (VMC). Flights under special visual flight rules (SVFR) are not authorized. Special authorization may be requested for night operations by government agencies in emergency situations on a case by case basis.

25. The UAS will not be operated by the PIC from any moving device or vehicle.

26. The UAS will not be operated less than 500 feet below or less than 2,000 feet horizontally from cloud.

27. The UAS will not operate in Class B, C, or D airspace without written approval from the FAA. The UAS may not operate within 5 nautical miles of the geographic center of a non-towered airport as denoted on a current FAA-published aeronautical chart unless a letter of agreement with that airport's management is obtained, and the operation is conducted in accordance with a NOTAM as required by the operator's COA. The letter of agreement with the airport management must be made available to the Administrator upon request.

28. Any incident, accident, or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA will be reported to the FAA's UAS Integration Office (AFS-80) within 24 hours.

Appendix D - Pilot Checklists, Briefing Guide (see attached)

Appendix E - UAS photos and specifications (see attached)