U.S. Department
of Transportation
**Federal Aviation
Administration**

800 Independence Ave., S.W.
Washington, D.C. 20591

July 27, 2015

Exemption No. 12166
Regulatory Docket No. FAA–2015–1688

Mr. Bart S. Ferguson
Partner
Chesapeake Aerial Solutions, LLC
3951 Main Street
Trappe, MD 21673

Dear Mr. Ferguson:

This letter is to inform you that we have granted your request for exemption. It transmits our decision, explains its basis, and gives you the conditions and limitations of the exemption, including the date it ends.

By letter dated April 29, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Chesapeake Aerial Solutions, LLC (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial data capture.

See Appendix A for the petition submitted to the FAA describing the proposed operations and the regulations that the petitioner seeks an exemption.

The FAA has determined that good cause exists for not publishing a summary of the petition in the Federal Register because the requested exemption would not set a precedent, and any delay in acting on this petition would be detrimental to the petitioner.

Airworthiness Certification

The UAS proposed by the petitioner is a DJI Phantom 2.

The petitioner requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*. In accordance with the statutory criteria provided in Section 333 of Public Law 112−95 in reference to 49 U.S.C. § 44704, and in

consideration of the size, weight, speed, and limited operating area associated with the aircraft and its operation, the Secretary of Transportation has determined that this aircraft meets the conditions of Section 333. Therefore, the FAA finds that the requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*, and any associated noise certification and testing requirements of part 36, is not necessary.

The Basis for Our Decision

You have requested to use a UAS for aerial data collection[1]. The FAA has issued grants of exemption in circumstances similar in all material respects to those presented in your petition. In Grants of Exemption Nos. 11062 to Astraeus Aerial (*see* Docket No. FAA−2014−0352), 11109 to Clayco, Inc. (*see* Docket No. FAA−2014−0507), 11112 to VDOS Global, LLC (*see* Docket No. FAA−2014−0382), and 11213 to Aeryon Labs, Inc. (*see* Docket No. FAA−2014−0642), the FAA found that the enhanced safety achieved using an unmanned aircraft (UA) with the specifications described by the petitioner and carrying no passengers or crew, rather than a manned aircraft of significantly greater proportions, carrying crew in addition to flammable fuel, gives the FAA good cause to find that the UAS operation enabled by this exemption is in the public interest.

Having reviewed your reasons for requesting an exemption, I find that—

- They are similar in all material respects to relief previously requested in Grant of Exemption Nos. 11062, 11109, 11112, and 11213;
- The reasons stated by the FAA for granting Exemption Nos. 11062, 11109, 11112, and 11213 also apply to the situation you present; and
- A grant of exemption is in the public interest.

Our Decision

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. 106(f), 40113, and 44701, delegated to me by the Administrator, Chesapeake Aerial Solutions, LLC is granted an exemption from 14 CFR §§ 61.23(a) and (c), 61.101(e)(4) and (5), 61.113(a), 61.315(a), 91.7(a), 91.119(c), 91.121, 91.151(a)(1), 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b), to the extent necessary to allow the petitioner to operate a UAS to perform aerial data collection. This exemption is subject to the conditions and limitations listed below.

[1] Aerial data collection includes any remote sensing and measuring by an instrument(s) aboard the UA. Examples include imagery (photography, video, infrared, etc.), electronic measurement (precision surveying, RF analysis, etc.), chemical measurement (particulate measurement, etc.), or any other gathering of data by instruments aboard the UA.

Conditions and Limitations

In this grant of exemption, Chesapeake Aerial Solutions, LLC is hereafter referred to as the operator.

Failure to comply with any of the conditions and limitations of this grant of exemption will be grounds for the immediate suspension or rescission of this exemption.

1. Operations authorized by this grant of exemption are limited to the DJI Phantom 2 when weighing less than 55 pounds including payload. Proposed operations of any other aircraft will require a new petition or a petition to amend this exemption.

2. Operations for the purpose of closed-set motion picture and television filming are not permitted.

3. The UA may not be operated at a speed exceeding 87 knots (100 miles per hour). The exemption holder may use either groundspeed or calibrated airspeed to determine compliance with the 87 knot speed restriction. In no case will the UA be operated at airspeeds greater than the maximum UA operating airspeed recommended by the aircraft manufacturer.

4. The UA must be operated at an altitude of no more than 400 feet above ground level (AGL). Altitude must be reported in feet AGL.

5. The UA must 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, as specified on the PIC's FAA-issued airman medical certificate or U.S. driver's license.

6. All operations must utilize a visual observer (VO). The UA must be operated within the visual line of sight (VLOS) of the PIC and VO at all times. The VO may be used to satisfy the VLOS requirement as long as the PIC always maintains VLOS capability. The VO and PIC must be able to communicate verbally at all times; electronic messaging or texting is not permitted during flight operations. The PIC must be designated before the flight and cannot transfer his or her designation for the duration of the flight. The PIC must ensure that the VO can perform the duties required of the VO.

7. This exemption and all documents needed to operate the UAS and conduct its operations in accordance with the conditions and limitations stated in this grant of exemption, are hereinafter referred to as the operating documents. The operating documents must be accessible during UAS operations and made available to the Administrator upon request. If a discrepancy exists between the conditions and limitations in this exemption and the procedures outlined in the operating documents,

the conditions and limitations herein take precedence and must be followed. Otherwise, the operator must follow the procedures as outlined in its operating documents. The operator may update or revise its operating documents. It is the operator's responsibility to track such revisions and present updated and revised documents to the Administrator or any law enforcement official upon request. The operator must also present updated and revised documents if it petitions for extension or amendment to this grant of exemption. If the operator determines that any update or revision would affect the basis upon which the FAA granted this exemption, then the operator must petition for an amendment to its grant of exemption. The FAA's UAS Integration Office (AFS−80) may be contacted if questions arise regarding updates or revisions to the operating documents.

8. Any UAS that has undergone maintenance or alterations that affect the UAS operation or flight characteristics, e.g., replacement of a flight critical component, must undergo a functional test flight prior to conducting further operations under this exemption. Functional test flights may only be conducted by a PIC with a VO and must remain at least 500 feet from other people. The functional test flight must be conducted in such a manner so as to not pose an undue hazard to persons and property.

9. The operator is responsible for maintaining and inspecting the UAS to ensure that it is in a condition for safe operation.

10. Prior to each flight, the PIC must conduct a pre-flight inspection and determine the UAS is in a condition for safe flight. The pre-flight inspection must account for all potential discrepancies, e.g., inoperable components, items, or equipment. 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.

11. The operator must follow the UAS manufacturer's maintenance, overhaul, replacement, inspection, and life limit requirements for the aircraft and aircraft components.

12. Each UAS operated under this exemption must comply with all manufacturer safety bulletins.

13. Under this grant of exemption, a PIC must hold either an airline transport, commercial, private, recreational, or sport pilot certificate. The PIC must also hold a current FAA airman medical certificate or a valid U.S. driver's license issued by a state, the District of Columbia, Puerto Rico, a territory, a possession, or the Federal government. The PIC must 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.

14. The operator may not permit any PIC to operate unless the PIC demonstrates the ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption, including evasive and emergency maneuvers and maintaining appropriate distances from persons, vessels, vehicles and structures. PIC qualification flight hours and currency must be logged in a manner consistent with 14 CFR § 61.51(b). Flights for the purposes of training the operator's PICs and VOs (training, proficiency, and experience-building) and determining the PIC's ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption are permitted under the terms of this exemption. However, training operations may only be conducted during dedicated training sessions. During training, proficiency, and experience-building flights, all persons not essential for flight operations are considered nonparticipants, and the PIC must operate the UA with appropriate distance from nonparticipants in accordance with 14 CFR § 91.119.

15. UAS operations may not be conducted during night, as defined in 14 CFR § 1.1. All operations must be conducted under visual meteorological conditions (VMC). Flights under special visual flight rules (SVFR) are not authorized.

16. The UA may not operate within 5 nautical miles of an airport reference point (ARP) as denoted in the current FAA Airport/Facility Directory (AFD) or for airports not denoted with an ARP, the center of the airport symbol as denoted on the current FAA-published aeronautical chart, unless a letter of agreement with that airport's management is obtained or otherwise permitted by a COA issued to the exemption holder. The letter of agreement with the airport management must be made available to the Administrator or any law enforcement official upon request.

17. The UA may not be operated less than 500 feet below or less than 2,000 feet horizontally from a cloud or when visibility is less than 3 statute miles from the PIC.

18. If the UAS loses communications or loses its GPS signal, the UA must return to a pre-determined location within the private or controlled-access property.

19. The PIC must abort the flight in the event of unpredicted obstacles or emergencies.

20. The PIC is prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough available power for the UA to conduct the intended operation and to operate after that for at least five minutes or with the reserve power recommended by the manufacturer if greater.

21. Air Traffic Organization (ATO) Certificate of Waiver or Authorization (COA). All operations shall be conducted in accordance with an ATO-issued COA. The exemption holder may apply for a new or amended COA if it intends to conduct operations that cannot be conducted under the terms of the attached COA.

22. All aircraft operated in accordance with this exemption must 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.

23. Documents used by the operator to ensure the safe operation and flight of the UAS and any documents required under 14 CFR §§ 91.9 and 91.203 must be available to the PIC at the Ground Control Station of the UAS any time the aircraft is operating. These documents must be made available to the Administrator or any law enforcement official upon request.

24. The UA must remain clear and give way to all manned aviation operations and activities at all times.

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

26. All Flight operations must be conducted at least 500 feet from all nonparticipating persons, vessels, vehicles, and structures unless:
    a. Barriers or structures are present that sufficiently protect nonparticipating persons from the UA and/or debris in the event of an accident. The operator must 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 UA, flight operations must cease immediately in a manner ensuring the safety of nonparticipating persons; and
    b. The owner/controller of any vessels, vehicles or structures has granted permission for operating closer to those objects and the PIC has made a safety assessment of the risk of operating closer to those objects and determined that it does not present an undue hazard.

    The PIC, VO, operator trainees or essential persons are not considered nonparticipating persons under this exemption.

27. All operations shall be conducted over private or controlled-access property with permission from the property owner/controller or authorized representative. Permission from property owner/controller or authorized representative will be obtained for each flight to be conducted.

28. Any incident, accident, or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA must be reported to the FAA's UAS Integration Office (AFS−80) within 24 hours. Accidents must be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.ntsb.gov.

If this exemption permits operations for the purpose of closed-set motion picture and television filming and production, the following additional conditions and limitations apply.

29. The operator must have a motion picture and television operations manual (MPTOM) as documented in this grant of exemption.

30. At least 3 days before aerial filming, the operator of the UAS affected by this exemption must submit a written Plan of Activities to the local Flight Standards District Office (FSDO) with jurisdiction over the area of proposed filming. 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 for the UAS aerial filming conducted under this grant of exemption;
    c. Name and phone number of the person responsible for the on-scene operation of the UAS;
    d. Make, model, and serial or N−Number of UAS to be used;
    e. Name and certificate number of UAS PICs involved in the aerial filming;
    f. A statement that the operator has obtained permission from property owners and/or local officials to conduct the filming production event; the list of those who gave permission must be made available to the inspector upon request;
    g. Signature of exemption holder or representative; and
    h. A description of the flight activity, including maps or diagrams of any area, city, town, county, and/or state over which filming will be conducted and the altitudes essential to accomplish the operation.

31. Flight operations may be conducted closer than 500 feet from participating persons consenting to be involved and necessary for the filming production, as specified in the exemption holder's MPTOM.

Unless otherwise specified in this grant of exemption, the UAS, the UAS PIC, and the UAS operations must comply with all applicable parts of 14 CFR including, but not limited to, parts 45, 47, 61, and 91.

This exemption terminates on July 31, 2017, unless sooner superseded or rescinded.

Sincerely,
/s/
John S. Duncan
Director, Flight Standards Service

Enclosures

Chesapeake Aerial Solutions, LLC

April 29, 2015

U.S. Department of Transportation

Docket Management System

1200 New Jersey Ave., SE

Washington, DC 20590

Re:

Exemption Request Section 333 of the FAA Reform Act

Dear Sir or Madam

This petition is being submitted on our own behalf without legal counsel or consulting services.

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (the Reform Act), and 14 C.F.R. Part 11, Chesapeake Aerial Solutions, LLC (CAS) which has filed an Article of Organization as an aerial photography and mapping company for various industries, hereby applies for an exemption from the Federal Aviation Regulations (FARs) listed below to allow operation of our sUAS commercially in airspace regulated by the Federal Aviation Administration (FAA) so long as such operations are conducted with and under the conditions outlined herein or as may be established by the FAA as required by Section 333.

The requested exemption would permit Chesapeake Aerial Solutions, LLC to pursue its commercial interests in providing services to consumers interested in aerial data capture using a small advanced sUAS in the following areas:

- Agriculture (monitoring of CREP Easement strips)
- Surveying
- Marsh Surveys (vegetation in-fill and wildlife habitat)
- Real Estate Photography
- Landscape Architecture

Chesapeake Aerial Solutions, LLC states that all sUAS flights that will occur over private or controlled access property will do so with the property owner's prior consent and knowledge and that only people who have consented or otherwise have agreed to be in the area where filming will take place will be filmed.

Chesapeake Aerial Solutions, LLC Pilot in Command Biographies:

Eric Wheatley

Eric is 44 years old and has been building and flying radio controlled (RC) model aircraft for 10 years. He is a current member of the Academy of Model Aeronautics (AMA), with a valid open membership card No. 895693. He has experience with RC boats, cars, helicopters, quadcopters, and propeller driven airplanes and jets, all powered by fuel, gas, or electric. The majority of his flight time has been dedicated to precision aerobatic airplanes including giant scale aerobatic, 2-meter pattern, and .60 size antique pattern airplanes. He has extensive building and maintenance knowledge of all RC interests that he is active in. Eric has also been a RC flight instructor to beginner pilots at his regular flying club.

Along with his RC skills, Eric also has a background in basic machinist skills, design, and research and development practices.

Bart Ferguson

Bart is 41 years old and has been building and flying radio controlled (RC) model aircraft for 16 years. He is a current member of the Academy of Model Aeronautics (AMA), with a valid open membership card No. 675305. He has experience with RC boats, cars, quadcopters, and airplanes, all powered by fuel, gas, or electric. The majority of his flight time has been dedicated to giant scale gas airplanes and .60 size antique pattern airplanes. The vast majority of his airplanes have been built by him from kits or plans. Bart has also been an RC flight insrtuctor to beginner pilots both at his regular flying club and at nearby clubs and private flying fields in the area.

Bart was raised in an aviation centered home, with his father having a Commercial Pilot Certificate with a multi-engine rating and a Flight Instructor Certificate. His father logged thousands of hours flight time over his career. Although Bart did not follow in his father's footsteps of becoming a pilot, he still grew up with a love of aviation and spent many hours as a boy in the right seat riding next to his father, or just hanging around the local airports trying to stay out of trouble, of course.

Additionally both of these RC pilots have logged many hours flying together and spotting for each other over the years, and communicate effectively with each other. Both are well versed in pre-flight inspections, maintenance of aircraft and support systems, and planned operations within airspace. Both pilots are very knowledgeable about the general rules and risks of aviation and take flying and the safety of themselves and others seriously.

Unmanned Aircraft System:

sUASs are oftentimes seen as superior to full scale aircraft due to the much smaller size and light weight, advanced use of GPS technology, low operating costs, and reduced noise and as such, a much smaller environmental footprint which promotes public safety and comfort.

We are petitioning for exemption to enable Chesapeake Aerial Solutions, LLC to operate a DJI Phantom 2 equipped with a two-axis Walkera G-2D Gimbal and Turnigy SJ4000 Camera. The standard gross take-off weight for this sUAV is 2.7 lbs. This sUAS has a built-in capability to limit the height it flies above the ground, to limit the radius of the distance it flies from the operator and to exclude it from Class B, C and D airspace including a no fly zone feature. The Phantom 2 also has the failsafe function of the Naza-M autopilot system which means when the communication between the Main Controller and the transmitter is disconnected, the outputs of all command sticks from controller will go to the center position. If the GPS signal is good enough, the system will automatically trigger Return to Home and will land safely.

Chesapeake Aerial Solutions, LLC will also uphold the Model Aircraft Operating Standards as set by the Academy of Model Aeronautics National Safety Code, §A & §B, Effective January 1, 2014:

A. GENERAL: A model aircraft is a non-human-carrying aircraft capable of sustained flight in the atmosphere. It may not exceed limitations of this code and is intended exclusively for sport, recreation, education and/or competition. All model flights must be conducted in accordance with this safety code and any additional rules specific to the flying site.

   1. Model aircraft will not be flown:

      (a) In a careless or reckless manner.

      (b) At a location where model aircraft activities are prohibited.

   2. Model aircraft pilots will:

      (a) Yield the right of way to all human-carrying aircraft.

      (b) See and avoid all aircraft and a spotter must be used when appropriate. (AMA Document #540-D.)

      (c) Not fly higher than approximately 400 feet above ground level within three (3) miles of an airport without notifying the airport operator.

      (d) Not interfere with operations and traffic patterns at any airport, heliport or seaplane base except where there is a mixed use agreement.

(e) Not exceed a takeoff weight, including fuel, of 55 pounds unless in compliance with the AMA Large Model Airplane program. (AMA Document 520-A.)

(f) Ensure the aircraft is identified with the name and address or AMA number of the owner on the inside or affixed to the outside of the model aircraft. (This does not apply to model aircraft flown indoors.)

(g) Not operate aircraft with metal-blade propellers or with gaseous boosts except for helicopters operated under the provisions of AMA Document #555.

(h) Not operate model aircraft while under the influence of alcohol or while using any drug that could adversely affect the pilot's ability to safely control the model.

(i) Not operate model aircraft carrying pyrotechnic devices that explode or burn, or any device which propels a projectile or drops any object that creates a hazard to persons or property.

Exceptions:

- Free Flight fuses or devices that burn producing smoke and are securely attached to the model aircraft during flight.
- Rocket motors (using solid propellant) up to a G-series size may be used provided they remain attached to the model during flight. Model rockets may be flown in accordance with the National Model Rocketry Safety Code but may not be launched from model aircraft.
- Officially designated AMA Air Show Teams (AST) are authorized to use devices and practices as defined within the Team AMA Program Document. (AMA Document #718.)

(j) Not operate a turbine-powered aircraft, unless in compliance with the AMA turbine regulations. (AMA Document #510-A.)

3. Model aircraft will not be flown in AMA sanctioned events, air shows or model demonstrations unless:

(a) The aircraft, control system and pilot skills have successfully demonstrated all maneuvers intended or anticipated prior to the specific event.

(b) An inexperienced pilot is assisted by an experienced pilot.

4. When and where required by rule, helmets must be properly worn and fastened. They must be OSHA, DOT, ANSI, SNELL or NOCSAE approved or comply with comparable standards.

B. RADIO CONTROL (RC)

1. All pilots shall avoid flying directly over unprotected people, vessels, vehicles or structures and shall avoid endangerment of life and property of others.

2. A successful radio equipment ground-range check in accordance with manufacturer's recommendations will be completed before the first flight of a new or repaired model aircraft.

3. At all flying sites a safety line(s) must be established in front of which all flying takes place. (AMA Document #706.)

   (a) Only personnel associated with flying the model aircraft are allowed at or in front of the safety line.

   (b) At air shows or demonstrations, a straight safety line must be established.

   (c) An area away from the safety line must be maintained for spectators.

   (d) Intentional flying behind the safety line is prohibited.

4. RC model aircraft must use the radio-control frequencies currently allowed by the Federal Communications Commission (FCC). Only individuals properly licensed by the FCC are authorized to operate equipment on Amateur Band frequencies.

5. RC model aircraft will not knowingly operate within three (3) miles of any pre-existing flying site without a frequency-management agreement. (AMA Documents #922 and #923.)

6. With the exception of events flown under official AMA Competition Regulations, excluding takeoff and landing, no powered model may be flown outdoors closer than 25 feet to any individual, except for the pilot and the pilot's helper(s) located at the flightline.

7. Under no circumstances may a pilot or other person touch an outdoor model aircraft in flight while it is still under power, except to divert it from striking an individual.

8. RC night flying requires a lighting system providing the pilot with a clear view of the model's attitude and orientation at all times. Hand-held illumination systems are inadequate for night flying operations.

9. The pilot of an RC model aircraft shall:

   (a) Maintain control during the entire flight, maintaining visual contact without enhancement other than by corrective lenses prescribed for the pilot.

   (b) Fly using the assistance of a camera or First-Person View (FPV) only in accordance with the procedures outlined in AMA Document #550.

   (c) Fly using the assistance of autopilot or stabilization system only in accordance with the procedures outlined in AMA Document #560.

Additionally Chesapeake Aerial Solutions, LLC will only operate its sUAS

- Within line of sight of a pilot and/or observer where both are within clear communication and will operate at sites that are a 'sufficient distance' from populated areas within the sterile area described in the FOPM. Such operations will insure that the sUAV will "not create a hazard to users of the national airspace system or the public."
- When flying sUAV within 5 miles of an airport, airport operators will be notified and the operator will give the right of way to avoid flying in the proximity of full-scale aircraft.
- Maximum flight time for each operational flight will be ~20 minutes. Flights will be terminated at 25% battery power reserve should that occur prior to the 20 minute limit.
- The sUAS will be programmed so that it will not be operated at an altitude of more than 400 feet AGL, and not more than 200 feet above an elevated platform from which filming is planned.
- Minimum crew for each operation will consist of the sUAS Pilot and a Visual Observer
- The sUAS PIC's (Pilot in Command) will always be an experienced AMA membership holding RC pilot
- The sUAS operated by the petitioner weighs less than 55 pounds, including the payload (i.e. camera, lens, and gimbal).
- The sUAS will operate at speeds of no more than 50 knots, can hover, and can simultaneously move vertically and horizontally.
- Given the small size of the sUAS and the restricted sterile environment within which they will operate, our sUAS operations will adhere to the Reform Act's safety requirements.
- If a loss of precise control or mechanical failure is ever to happen, the sUAV is to be forcibly landed in the farthest and/or safest possible location from persons or personal property so as to preserve the safety of life. This is the same measure instituted (sometimes unwritten) at RC Flying fields to protect fellow RC pilots and spectators alike.

Standard flight checklist:

CHESAPEAKE AERIAL SOLUTIONS, LLC

DJI PANTOM 2 V2.0

Software V 3.08

Walkera G2D Gimbal. / Turnigy SJ4000 Action Cam.

FLIGHT LOG/CHECKLIST: MM__DD__YY__JOB#_____

LOCATION_____FLIGHT No._____CONDITIONS_____TEMP_____

☐ **1. Permission Granted For Flight.**

☐ **2. Flight Battery Charged. Voltage. % ___**

☐ **3. Transmitter Batteries Checked. No. Of Flights.___**

☐ **4. All Props Secure.**

☐ **5. Compass Calibrated.**

☐ **6. G.P.S. Locked On All Satellites.**

☐ **7. Camera And Gimbal Secure.**

☐ **8. Gimbal Angle Set.**

☐ **9. Camera ON.**

☐ **10. Camera Record ON.**

☐ **11. Clear Line Of Sight.**

☐ **12. Wind Direction/Speed. N. NE. E. SE. S. SW. W. NW. (Circle.) M.P.H.____**

☐ **13. Take Off Time__:__ Landing Time__:__= Flight Duration: ____Min.**

Address._____

City._____ State.____ Zip._____

Lat._____ Lon._____Elv.____Ft./Meters. (Circle one.)

Pilot. X_____ Observer. X_____ Property. Owner. X_____

Similar Exemption Requests Granted:

01/06/2015 Advanced Aviation Solutions

02/09/2015 Viafield

02/10/2015 Blue-Chip UAS,

02/13/2015 Capital Aerial Video, LLC

02/18/2015 Bosh Precision Agriculture, dba Digital Harvest

03/03/2015 Singer's Creations

04/03/2015 CineDrones, LLC

04/08/2015 Altavian, Inc

04/08/2015 Charles J. Lesowske

04/08/2015 Cherokee UAS, LLC

04/08/2015 Chustz Surveying, Inc

04/08/2015 Price Aviation Group

04/08/2015 Sydor Aerial Photography, LLC

EXEMPTION REQUESTS AND EQUIVALENT LEVEL OF SAFETY

Chesapeake Aerial Solutions, LLC requests an exemption from the following listed Federal Aviation Regulations (FARs) as well as any additional regulations that may technically apply to the operation of the sUAS, so long as such operations are conducted within and under the conditions outlined herein or as may be established by the FAA as required by Section 333.

List of FAR's from which the exemption is requested:

14 C.F.R. Part 21

14 C.F.R. 45.23 (b)

14 C.F.R. 61.113(a) and (b)

14 C.F.R. 61.23

14 C.F.R. 91.7 (a)

14 C.F.R. 91.9 (b) (2)

14 C.F.R. 91.109

14 C.F.R. 91.119

14 C.F.R. 91.121

14 C.F.R. 91.151(a)

14 C.F.R. 91.203 (a) & (b)

14 C.F.R. (91.401 - 91.417)

14 CFR Part 21, Subpart H

Airworthiness Certificates

Subpart H establishes the procedural requirements for the issuance of airworthiness certificates as required by FAR 91.203 (a) (1).

Given the size and limited operating area associated with the aircraft to be utilized by Chesapeake Aerial Solutions, LLC, an exemption from Part 21 Subpart H meets the requirements of an equivalent level of safety under Part 11 and Section 333 of the Reform Act. The Federal Aviation Act (49 USC 44701 (f)) and Section 333 of the Reform Act both authorize the FAA to exempt aircraft from the requirement for an airworthiness certificate, upon consideration of the size, weight, speed, operational capability, and proximity to airports and populated areas of the particular sUAS. In all cases, an analysis of these criteria demonstrates that the sUAS operated without an airworthiness certificate, in the restricted environment and under the conditions proposed, will be at least as safe, or safer, than a conventional aircraft operating with an airworthiness certificate without the restrictions and conditions proposed.

14 CFR 45.23 & 14 CFR 45.29

Display of Marks: General & Size of Marks

These regulations provide that each aircraft must display "N" and the aircraft's registration number in letters at least 3 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 sUAS 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.

The word "EXPERIMENTAL" will be affixed to the top of the sUAV, where the Pilot in Command, Visual Observer and others in the vicinity of the aircraft while it is preparing for launch will be able to see the designation. We will also be placing a decal noting Chesapeake Aerial Solutions, LLC's name and address. The command station of the aircraft is to be as openly visible as possible, so that anyone that enters near the area of sUAS operations can easily find the Pilot in Command and the Visual Observer.

14 CFR 61.113 (a) and (b)

Private pilot privileges and limitations: Pilot in Command

These regulations limit private pilots to non-commercial operations.

Because the sUAV cannot carry a pilot or passengers and all the operational flights are carefully preplanned and adjusted to each individual locations' possible complications, we strongly feel that our experience we have with RC model aviation and full scale aviation that our flights will be carried out in a very structured and professional methodology, that will meet or exceed a commercial pilot that has limited RC aviation experience.

Furthermore, there are no standards for either private or commercial sUAS pilot certificates, knowledge of airspace regulations and dexterity in the control and operation of the sUAS acquired from actual operation of the aircraft will be the most important factors in establishing an equivalent level of safety. It cannot be assumed that a commercial pilot, approved to operate a manned helicopter or fixed wing aircraft, has the skill or ability to safely operate an unmanned aerial vehicle, operating at 400 feet AGL or lower, within controlled airspace.

14 CFR 61.23

Medical Certificates

This regulation requires pilots of manned aircraft to hold a medical certificate.

Since risks associated with the operation of the proposed sUAS are so diminished from the level of risk associated with any manned aircraft; the sUAS is of a size, weight, speed, and operational capabilities which makes it much safer than any manned aircraft; since operations will occur in tightly controlled and limited airspace; and considering that all operations will be on private property that is clear of all people, obtaining and maintaining a medical certificate would not improve the safety of the operation. In the very rare case of a mishap, the sUAS being flown will pose significantly less of a threat than manned helicopters and fixed wing aircraft because the sUAS's are a fraction of the size, a fraction of the weight, will be flown at a fraction of the speed, carry no flammable fuel, and carry no crew or passengers. In the case that the Pilot in Command should suffer from a medical emergency, the sUAS will either come to a stop and hover, or continue its pre-programmed course if the control inputs are released, as they are programmed to remain in flight autonomously.

14 CFR 91.7 (a)

Civil Aircraft Airworthiness Certificate

Prohibits the operation of an aircraft without an airworthiness certificate.

As no such certificate will be applicable in the form contemplated by the FARs, this Regulation is inapplicable. It will be the Pilot in Command of the sUAS that will make the final determination and accept responsibility of Airworthiness on a per flight basis.

14 CFR 91.9

Civil aircraft flight manual, marking, and placard requirements

This regulation provides that no person may operate an aircraft unless a current, approved flight manual is in the aircraft.

We assume that the intent of this requirement is to ensure that flight manual information is available to the aircrew while operating the aircraft. We request an exemption to this requirement since the aircraft is not only too small to carry documentation, the documentation would not be available to the crew during flight operations. To obtain an equivalent level of safety and meet the intent of 91.9, we propose that a current, approved sUAS Flight Manual (product information manual) must be available to the crew at the ground station anytime the aircraft is in, or preparing for, flight.

14 CFR 91.109

Flight Instruction

This regulation 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.

sUAS's and remotely piloted aircraft, by their design do not have fully functional dual controls. Flight control is accomplished through the use of a control box that communicates with the aircraft via radio communications. The FAA has approved exemptions for flight training without fully functional dual controls for a number of aircraft and for flight instruction in experimental aircraft. An equivalent level of safety is provided by the fact that neither a pilot nor passengers will be carried in the aircraft and the size and speed of the aircraft is such that the likelihood of severe damage to personal property or severe injury to persons is unlikely in the event of a loss of control, as compared to a full scale aircraft.

14 CFR 91.119

Minimum safe altitudes: General

The regulation states that over sparsely populated areas the aircraft cannot be operated closer than 500 feet to any person, vessel, vehicle, or structure.

Since the typical mission of the sUAV would be photography or survey of persons or property it will be necessary to operate within the 500 feet safety envelope. Operations will only be flown over property or persons where permission has been obtained, people involved in the photography, filming, or surveying operations are within communication and understand typical pilot distress calls, and careful pre-planning has been performed. The aircraft will be operated at a low altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface. Therefore we maintain that due to the physical size and weight of the sUAV, the hazard to persons, vehicles and structures is minimal compared to manned aircraft, which should be considered in granting the exemption.

14 CFR 91.121

Altimeter settings

This regulation requires each person operating an aircraft to maintain cruising altitude by reference to an altimeter that is set "…to the elevation of the departure airport or an appropriate altimeter setting available before departure."

The sUAS does not have a barometric altimeter with a read out, using GPS coordinate solutions instead. The GPS information is provided via electronic downlink to a ground station or cellular phone connection broadcasting, among other details, the altitude of the sUAV. To maintain a margin of safety by not accidentally flying above the 400' AGL threshold, it will be part of the Pilot in Command and sometimes a qualified visual observer to confirm the altitude before and during a flight.

14 CFR 91.151

Fuel Requirements for Flight in VFR Conditions

This regulation prohibits an individual from beginning "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."

The battery powering the sUAS provides approximately a total of 25-30 minutes of powered flight. That would make it impossible to meet the 30 minute reserve requirement. Given the limitations on the sUAS's proposed flight area and the location of its proposed operations within a predetermined area, 30 minutes of flight time of reserved battery power (fuel) is unnecessary for safe operation of the sUAS.

An equivalent level of safety can be achieved by limiting flights to 20 minutes or 25% of battery power (whichever occurs first). This restriction would be more than adequate to return the sUAS to its planned landing zone from anywhere in its limited operating range.

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 2.7 pounds, the sUAV is too small to carry documentation, does not have an entrance or hatch, and it is 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. In order to identify the aircraft, we propose that the information found on airworthiness and registration certificates be permanently affixed to the aircraft via placard containing the pilot names, company name, telephone number, address, and. The word "EXPERIMENTAL" will be added to satisfy the requirement of 14 CFR 45.23, if deemed necessary.

14 CFR 91.401;

14 CFR 91.405 (a);

14 CFR 91.407 (a)(1);

14 CFR 91.409 (a)(1);

14 CFR 91.409 (a)(2);

14 CFR 91.417 (a) and (b)

Maintenance Inspections

These regulations require that an aircraft operator or owner "shall have that aircraft inspected as prescribed in subpart E of this part and shall between required inspections, except as provided in paragraph (c) of this section, have discrepancies repaired as prescribed in part 43 of this chapter...," and others shall inspect or maintain the aircraft in compliance with Part 43.

Given that these sections and Part 43 apply only to aircraft with an airworthiness certificate, these sections will not apply. Maintenance will be accomplished by the Pilot in Command; pursuant to the DJI Phantom 2 User Manual v1.4, Quick Start Guide, and Smart Flight Battery Safety Guidelines manual; as provided by DJI. An equivalent level of safety will be achieved because these small sUAVs are very limited in size, will carry a small payload, and operate only in controlled areas for limited periods of time. If mechanical issues arise, the sUAV can land immediately and will be operating less than 400 feet AGL. As outlined in the Chesapeake Aerial Solutions, LLC Checklist, the Pilot in Command will ensure that the sUAS is in working order prior to initiating flight and perform maintenance as required. Moreover, the Pilot in Command is the person most familiar with the aircraft and it will be his ultimate responsibility that the aircraft in an airworthy condition to provide the highest level of safety.

We respectfully request exemption under Section 333 to enable Chesapeake Aerial Solutions, LLC to operate efficient, limited, low-risk commercial sUAS operations for the activities stated respecting at all times the space and privacy of citizens and property whilst keeping our skies safe.

Sincerely

Bart S. Ferguson

Partner

Chesapeake Aerial Solutions, LLC

3951 Main St

P.O.Box 443

Trappe, MD 21673