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

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

August 12, 2015

Exemption No. 12448
Regulatory Docket No. FAA−2015−0813

Mr. Thomas Petitti
1704 Edgewood Drive
Milford, IA 51351

Dear Mr. Petitti:

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 March 23, 2015, you petitioned the Federal Aviation Administration (FAA) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial photography and inspections.

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 F550.

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 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, Mr. Thomas Petitti 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.

Conditions and Limitations

In this grant of exemption, Mr. Thomas Petitti is hereafter referred to as the operator.

[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.

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 F550 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 Month DD, 2017, unless sooner superseded or rescinded.

Sincerely,

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

Enclosures

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March 23rd, 2015

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

Request for exemption under FAA Modernization & Reform Act of 2012, Section 333, to operate an Unmanned Aerial System for Aerial Photography and Aerial Inspections.

Petitioner's information

Thomas Petitti

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DUAV LLC,

Petition for Exemption of CFR 14:
45.23(a)&(b);61.113(a),(b),&(2); 91.7(a)&(b); 91.119(a),(b),&(c); 91.151(a),(1),&(b); 91.405(a); 91.407(a)&(1); 91.409(a),(1),&(2); 91.417(a)&(b)

Dear Sir or Madam,

Request for relief from an airworthiness certification requirements under the FAA Modernization and Reform Act of 2012, Public Law 112-95 FEB. 14, 2012, Section 333.

Section 14 CFR §45.23 Display of marks; general.

(a) Each operator of an aircraft must display on that aircraft marks consisting of the Roman capital letter "N" (denoting United States registration) followed by the registration number of the aircraft. Each suffix letter used in the marks displayed must also be a Roman capital letter.

(b) When marks include only the Roman capital letter "N" and the registration number is displayed on limited, restricted or light-sport category aircraft or experimental or provisionally certificated aircraft, the operator must also display on that aircraft near each entrance to the cabin, cockpit, or pilot station, in letters not less than 2 inches nor more than 6 inches high, the words "limited," "restricted," "light-sport," "experimental," or "provisional," as applicable.

The UAS aircraft, will be permanently marked in multiple places with contact information containing P.I.C & owner's Name, Address, & Phone Number. In compliances with 14 CFR Section 45.29 (f), the UAS will also be marked with "Experimental" in as large as practical size of print on at least two surfaces.

Section 14 CFR §61.113 Private pilot privileges and limitations: Pilot in command.

(a) Except as provided in paragraphs (b) through (h) of this section, no person who holds a private pilot certificate may act as pilot in command of an aircraft that is carrying passengers or property for compensation or hire; nor may that person, for compensation or hire, act as pilot in command of an aircraft.

(b) A private pilot may, for compensation or hire, act as pilot in command of an aircraft in connection with any business or employment if:

(2) The aircraft does not carry passengers or property for compensation or hire.

Although no souls will be aboard, the UAS operations will be planned with the same level of safety as a commercial operation, under the command of a private pilot, holding an up to date medical certificate and photo I.D. All operations will follow a Standard weather Briefing, a preflight check, and a run up. All flights will follow a predetermined route, and maneuvers within clear airspace. The level of risk associated with the operation of the UAS are so diminished form

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the level of risk associated with commercial operations contemplated by part 61 when drafted, that allowing operations of the UAS as requested with a private pilot as the operator exceeds the present level of safety achieved by 14 CFR Section 61.113 (a) &(b).

Section 14 CFR §91.7 Civil aircraft airworthiness.

(a) No person may operate a civil aircraft unless it is in an airworthy condition.

(b) The pilot in command of a civil aircraft is responsible for determining whether that aircraft is in condition for safe flight. The pilot in command shall discontinue the flight when unairworthy mechanical, electrical, or structural conditions occur.

As there is no Airworthiness certificate issued for this aircraft, should this exemption be granted, no FAA regulatory standard will exist for determining the airworthiness. Given the size of the aircraft and the requirements contained in the manual of maintenance, and use of safety checklists prior to each flight as set forth in Section B, and Section G, an equivalent level of safety will be provided.

Section 14 CFR §91.119 Minimum safe altitudes: General.

Except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes:

(a) *Anywhere.* An altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface.

(b) *Over congested areas.* Over any congested area of a city, town, or settlement, or over any open air assembly of persons, an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft.

(c) *Over other than congested areas.* An altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure

The equivalent level of safety will be achieved given the size, weight, and speed of the UAS as well as the location of operated. No flight will be taken without the permission of the property owner or local officials. Because of the advance notice to the property owner and participants in the filming activity, attempts will be made to contact all affected individuals regarding the planned flight operations. Compared to flight operations with aircraft or rotorcraft weighting far more than the maximum 551bs. UAV limit Proposed herein, and the lack of flammable fuel, any

risk associated with these operations is far less than those presently presented with conventional aircraft. In addition, the low-altitude operations of the UAV will ensure separation between these UAS operations and the operations of conventional aircraft that must comply with Section 91.119.

Section 14 CFR §91.121 Altimeter settings.

(a) Each person operating an aircraft shall maintain the cruising altitude or flight level of that aircraft, as the case may be, by reference to an altimeter that is set, when operating—

(1) Below 18,000 feet MSL, to—

(i) The current reported altimeter setting of a station along the route and within 100 nautical miles of the aircraft;

(ii) If there is no station within the area prescribed in paragraph (a) (1) (i) of this section, the current reported altimeter setting of an appropriate available station; or

(iii) In the case of an aircraft not equipped with a radio, the elevation of the departure airport or an appropriate altimeter setting available before departure; or

(2) At or above 18,000 feet MSL, to 29.92″ Hg.

(c) To convert minimum altitude prescribed under §§91.119 and 91.177 to the minimum flight level, the pilot shall take the flight level equivalent of the minimum altitude in feet and add the appropriate number of feet specified below, according to the current reported altimeter setting:

The UAS does not operate by use of Barometric Altimeter but instead a digital GPS altitude read out for AGL. An equivalent level of safety will be achieved by the operator, pursuant to the Manual and Safety Check list, confirming the altitude of the launch site shown on the GPS altitude indicator before flight.

Section 14 CFR §91.151 Fuel requirements for flight in VFR conditions.

(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—

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(1) During the day, to fly after that for at least 30 minutes; or

(b) No person may begin a flight in a rotorcraft 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, to fly after that for at least 20 minutes.

The battery(s) powering the UAS varying time from 8 minutes to 12 minutes per battery. In 15 degree Celsius, low wind, VFR conditions flight will last approximately 12 minutes with all powered components functioning. Given the limitations on the UAS proposed flight area and the location of its proposed operations within a predetermined area, a longer time frame for flight in daylight VFR conditions is reasonable.

An equivalent level of safety can be achieved by limiting flights to have enough battery reserve to ensure the UAS lands at a safe ground station with at least 20% of battery power determining by onboard monitoring and by the pilot. A notice in a decline of power performance or the 20% reserve mark has been met enough time will be adequate to return the UAS to a safe landing station within the predetermining route.

Section 14 CFR §91.405 Maintenance required.

Each owner or operator of an aircraft—

(a) 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;

Although this sections apply only to aircraft with an airworthiness certificate; route and pre-flight inspections and maintenance will be accomplished by the P.I.C and owner. An equivalent level of safety will be meet due to the lack of size and payload of the UAS, as well as operating in restricted areas for short limited periods of time in only VFR conditions will ensure extreme precaution and safety.

Section 14 CFR §91.407 Operation after maintenance, preventive maintenance, rebuilding, or alteration.

(a) No person may operate any aircraft that has undergone maintenance, preventive maintenance, rebuilding, or alteration unless—

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(1) It has been approved for return to service by a person authorized under §43.7 of this chapter;

All preventive maintenance will be performed by a licensed private pilot and owner operator. Although there are no engines, electric motor and amplifier component, replacement will be done with equivalent safety as an aircraft power plant. Camera equipment alterations will also be done with equal caution concerning balance, power, and weight. Any major airframe work, or electrical (circuit board, reprograming, or calibrating) will be done by professional UAS builders.

Section 14 CFR §91.409 Inspections.

(a) Except as provided in paragraph (c) of this section, no person may operate an aircraft unless, within the preceding 12 calendar months, it has had—

(1) An annual inspection in accordance with part 43 of this chapter and has been approved for return to service by a person authorized by §43.7 of this chapter; or

(2) An inspection for the issuance of an airworthiness certificate in accordance with part 21 of this chapter.

All Inspections will be performed in the pre-flight check and run up check near initial take off for each battery. No commercial UAS operation will occur after any form of maintenance unless a test flight in a sparsely populated areas away from any person or property has been conducted involving every maneuver and all electrical components.

Section 14 CFR §91.417 Maintenance records.

(a) Except for work performed in accordance with §§91.411 and 91.413, each registered owner or operator shall keep the following records for the periods specified in paragraph (b) of this section:

(1) Records of the maintenance, preventive maintenance, and alteration and records of the 100-hour, annual, progressive, and other required or approved inspections, as appropriate, for each aircraft (including the airframe) and each engine, propeller, rotor, and appliance of an aircraft. The records must include—

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(i) A description (or reference to data acceptable to the Administrator) of the work performed; and

(ii) The date of completion of the work performed; and

(iii) The signature, and certificate number of the person approving the aircraft for return to service.

(2) Records containing the following information:

(i) The total time in service of the airframe, each engine, each propeller, and each rotor.

(ii) The current status of life-limited parts of each airframe, engine, propeller, rotor, and appliance.

(iii) The time since last overhaul of all items installed on the aircraft which are required to be overhauled on a specified time basis.

(IV) The current inspection status of the aircraft, including the time since the last inspection required by the inspection program under which the aircraft and its appliances are maintained.

(v) The current status of applicable airworthiness directives (AD) and safety directives including, for each, the method of compliance, the AD or safety directive number and revision date. If the AD or safety directive involves recurring action, the time and date when the next action is required.

(VI) Copies of the forms prescribed by §43.9(d) of this chapter for each major alteration to the airframe and currently installed engines, rotors, propellers, and appliances.

(b) The owner or operator shall retain the following records for the periods prescribed:

(1) The records specified in paragraph (a)(1) of this section shall be retained until the work is repeated or superseded by other work or for 1 year after the work is performed.

(2) The records specified in paragraph (a) (2) of this section shall be retained and transferred with the aircraft at the time the aircraft is sold.

(3) A list of defects furnished to a registered owner or operator under §43.11 of this chapter shall be retained until the defects are repaired and the aircraft is approved for return to service.

Equal level of safety and records in accordance with CFR 14 Section 91.405. All records will be included in a maintenance record folder as well as a designated log book. Including date of maintenance started and finished, name of qualified person or company who performs the maintenance, and type of maintenance performed on UAS.

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Public Summary

Pursuit to 14 CFR Part 11 the following summary is provided for the publication in the Federal Register, should it be determined that publication is needed.

Applicant request an exemption from the following rules Code of Federal Regulations, Title 14, Chapter 1; Volumes 1 & 2:

45.23(a) & (b); 61.113(a), (b), & (2); 91.7(a) & (b);

91.119(a), (b) & (c); 91.151(a), (1), & (b); 91.405(a);

91.407(a), & (1); 91.409(a), (1), & (2); 91.417(a) & (b)

Approval for exemptions allowing commercial operations of a UAS for aerial photography and videography intended for inspection and video reproductions in the following industries: Real Estate, Advertising, Environmental Research along with Water Quality and Shoreline Research, and Inspection of Wind Turbines, Bridges, or other large industrial buildings. Over open and moving waters, dangerous or hazardous places, and unreachable places by any other category of aircraft.

Intended to Reduce heavy lead based pollutants in the air and reduce risk of injury to pilots and passenger photographers. The limited size, weight, and distance of the UAS will also protect people and property on the ground. Compared to tradition forms of aerial photography involving large engine powered aircraft at low altitudes, over populated condensed areas, making abrupt sharp maneuvers we've removed almost all negative aspects with this new and growing technology that we hope to promote and share with the public to build a positive image and make the airspace safer.

In my small and growing community in the northwest Iowa's great lakes; we bring in millions of tourist each year. In efforts to promote my community with new safer technology then traditionally done in the area. The UAS will be used to help nonprofit organization in the local area such as: Historic Arnolds Park Inc., Keep Okoboji Blue, and Iowa great lakes water safety council. All these organizations will benefit from the future use of a UAS. Allowing closer steadier footage, but also reducing noise greatly over natural wildlife refuges, parks, and forests that surround our lakes area. Reducing bird strike issues, and insuring other large wild life safety. Efforts to promote real estate sale and grow the local year round community. I hope to help local business advertise themselves with new footage that could never be achieved before.

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Privacy

All commercial UAS operations will be conducted over private and controlled access property with property owner's prior consent knowledge with respect to any temporary flight restrictions. Only those who have giving prior consent and have agreed to be photographed or filmed and to be involved in the area of operation may be near the P.I.C., subject of filming, and along predetermined route of UAS. Any person or owner of property (public or private) ask to have images removed will be allowed. All compliances will be meet by any state or local privacy laws.

Accident & Indecent Reporting

In the event of an accident or incident all insurance or damages will be covered by DUAV LLC. The PIC of the UAS shall file a report on board form 6120.1/2 within 10 days after an accident. A report of an incident for which immediate notification is required (830.5) shall be filed only when requested by an authorized representative of the board.

Drug and Alcohol

No person may act as PIC or separate spotter/crewmember of UAS/aircraft while having a .04 percent by weight or more alcohol in the blood or if any alcoholic beverages have been consumed within the preceding 8 hours. No person my act as crewmember of UAS if using any drug the affects the persons faculties in any way contrary to safety. Any operation or attempt to operation under either of these conditions is grounds for denial of application for a certificate, rating, or authorization issued under 14 CFR Part 91.

Conclusion

Satisfaction of the criteria provided in section 333 of the Reform Act of 2012 - size, weight, speed, operating capabilities, proximity to airports and populated areas and operations within visual line of sight and national security - provide more than adequate justification for the grant of the requested exemptions allowing commercial operation of applicant's UAS in photography and inspection industry pursuant to the Manual appended hereto.

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Thank you for your time and consideration.

Sincerely,

Thomas J Petitti, Esq. PPL

DUAV LLC,

Flight Manual & Operating Procedures

Flight Restrictions

- No commercial operation will occur with a UAS gross weight exceeding 55 pounds.
- No UAS operation in any controlled airspace.
- All UAS operations will have a secondary spotter on location at all times.
- Complete logo book of flights time and safety track records
- All UAS flight operations will never exceed 400' AGL and will never lose visual contact with the PIC.
- All commercial operations will take place over private property with prior consent from property owner.
- All required permits and licenses will be obtained form the local county and state of the commercial UAS operation.
- The UAS will not operate over densely populated areas.
- The UAS will not operate at airshows.
- The UAS will not operate over any open air assembly of people.
- The UAS will not operate within 5 nautical miles of any airport without prior notice and radio communication.
- UAS operations will be restricted to civil daylight hours and VFR weather conditions.
- The PIC will brief anyone involved with or near the UAS operation on proposed route and maneuvers for each flight, along with any possible risks in the operating area.

- No flight will be conducted without a full pre-flight inspection by the PIC before each operation or change to weight and balance of the UAS.
- UAS operations will never be conducted for the purpose of hunting, trapping, or spotting.

Pre-Flight Checklist

- Test each battery with a voltmeter before powering UAS, and check batteries periodically in 5 minute intervals.
- Check all wiring for loss connections and any issues.
- Check propellers for any cracks or chips, assure leading edge of blades are smooth.
- Make sure all electric motors are clean and move freely.
- Assure all structural plastic appendages are strong and screwed fully.

UAS Start Up

- Power Devo7 transmitter and first person view system and insure full battery power.
- Power any addition gimbal and camera.
- Power DJI F550
- Wait for DJI F500 to connect with GPS, and find its home point
- Recalibrate DJI F500 compass if operating in a new location.

UAS Run Up

- Check all flight controls make sure they are free and correct.
- Check all propellers with an optical tachometer from equal power distribution.
- Throttle 50% insure UAS is properly balanced while in air.
- Check flight controls while hovering and make sure controls are correct.

UAS Shut Down

- Idle controls and propellers
- Unplug UAS

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- Turn off camera and gimbal
- Turn off first person viewing system
- Turn off Devo 7 Transmitter

TO REGAIN CONTROL AFTER LOST RADIO CONTACT

1. Failsafe = ON
2. Throttle = 50%
3. Mode = ATTI
4. Failsafe = OFF
5. Mode = GPS

If radio contact is not restored, the UA will automatically continue at 60 ft. above its last elevation before losing contact toward its takeoff point, then descend and land there autonomously

DeVention 7 Transmitter

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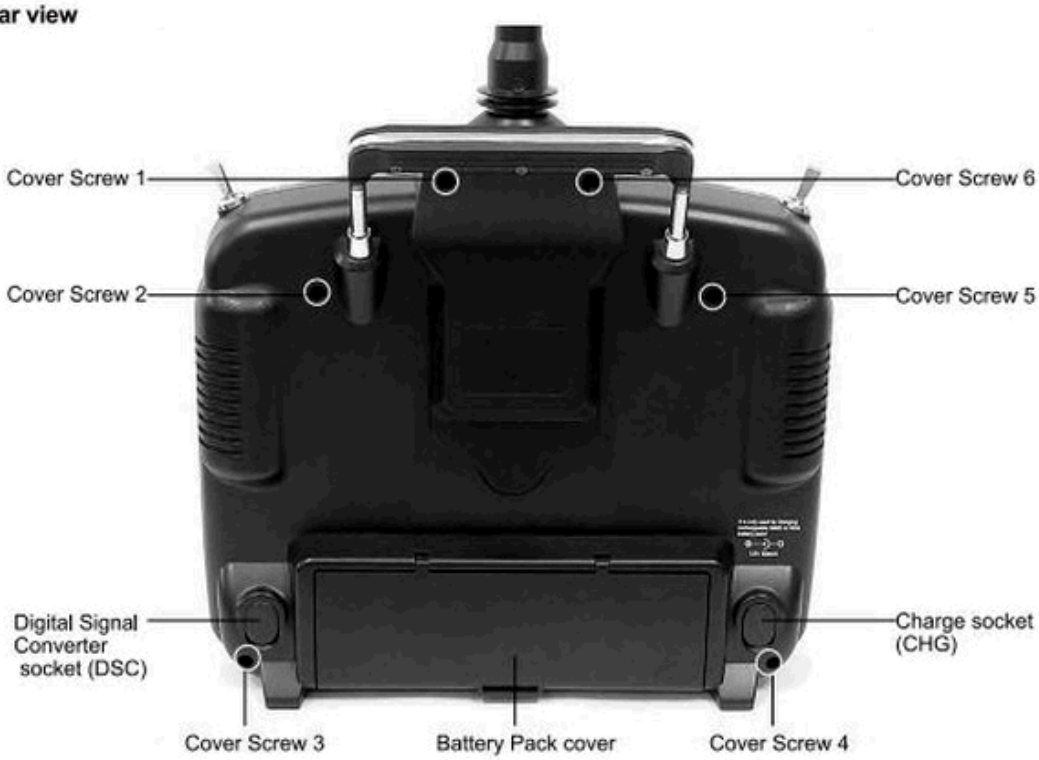
4.1 Front Panel view

4.2 Rear view



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DJI F550 Rotorcraft

F550_User_Manual_
v1.9_en.pdf

Figure 1 DJI F550 Manual

Click to Expand

Specifications

Frame

Diagonal Wheelbase 550mm
Frame Weight 478g
Takeoff Weight 1200g ~ 2400g

ESC

Current 30A OPTO
Signal Frequency 30Hz ~ 450Hz
Battery 3S ~ 4S LiPo

Motor

Stator size 22×12mm
KV 920rpm/V
Propeller 10 × 3.8in (@3S); (Optional 8 × 4.5in (@4S))

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