



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

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

July 13, 2015

Exemption No. 12020
Regulatory Docket No. FAA-2015-1512

Osprey Assessments LLC
484 East Carmel Drive, Suite 260
Carmel, IN 46033

Dear Osprey Assessments LLC:

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 20, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Osprey Assessments LLC (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial photography, videography, thermography, and data collection.

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 S1000+.

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 collection¹. 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, Osprey Assessments 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.

Conditions and Limitations

In this grant of exemption, Osprey Assessments LLC 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 S1000+ 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.nts.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

April 20, 2015

Federal Aviation Administration:

On behalf of Osprey Assessments LLC we would like to formally submit for an exemption from part 21, subpart H; and Sections 45.23(b), 91.7(a), 91.9(b)(2), 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). This proposed exemption would allow our operation of unmanned aircraft systems (UAS) for the purpose of UAV based photo, video, thermography, LiDAR and integrated software control and capture systems to conduct façade and roof condition assessments of multi-story buildings and agriculture areas.

We will operate a UAS, the DJI S1000+, which is comprised of an unmanned aircraft, an attached camera and a transportable ground station.

The DJI S1000+ is an octocopter with a maximum gross weight of about 24 pounds. It is equipped with eight rotors that are driven by electric motors powered by batteries. The UA has a maximum airspeed of approximately 40 knots. We will operate the UA in various metropolitan and rural areas across the US.

UAS Operating Parameters

We will abide by the following additional operating conditions under this exemption:

- operate UAS within a 100 foot envelope of the building being assessed or below 400 feet AGL, whichever is greater, and within radius distance of 1000 feet from the controller to aid in direct line of sight visual observation;
- obtain permission from the owner/controller of any vessels, vehicles and structures when operations may be conducted closer than 500 feet to any such vessels, vehicles or structures; we will conduct a safety assessment of the risk of operating closer to those objects and determine that it does not present an undue hazard;
- operate at all times with an automatic emergency recovery system, equal to or better than the DJI Dropsafe parachute recovery system, that is installed and armed;
- operate the UAS for 10-20 minutes per flight;
- land UAS prior to the manufacturer's recommended minimum level of battery power;
- operate UAS within visual line of sight (VLOS);

- use the UAS' global positioning system (GPS) flight safety feature whereby it hovers and then slowly lands if communication with the remote control pilot is lost;
- contact respective airports if operations will be within 5 miles to advise them of his estimated flight time, flight duration, elevation of flight and other pertinent information;
- always obtain all necessary permissions prior to operation;
- have procedures in place to abort flights in the event of safety breaches or potential danger (reference "DJI S1000+ Pilot Operating Handbook" provided);
- conduct extensive preflight inspections and protocols, during which safety carries primary importance (reference "DJI S1000+ Pilot Operating Handbook" provided).

UAS Pilot in Command (PIC)

The PIC will hold either an airline transport, commercial, private, recreational or sport pilot certificate. The PIC will also hold a current FAA airman medical certificate or a valid US driver's license.

All PICs will demonstrate the ability to safely operate the UAS in a manner consistent with how the UAS will be operated under the requested exemption, including evasive and emergency maneuvers and maintaining appropriate distances from persons, vessels, vehicles and structures.

Specific Exemptions Requested

Given the size, weight, speed, and limited operating area associated with the UA, we feel an exemption from 14 CFR part 21, Subpart H (Airworthiness Certificates) and § 91.203(a) and (b) (Certifications required), subject to certain conditions and limitations, is warranted and meets the requirements for an equivalent level of safety under 14 CFR part 11 and Section 333 of P.L. 112-95 (Section 333).

We request an exemption from § 45.23 Marking of the aircraft because the UA will not have a cabin, cockpit or pilot station on which to mark certain words or phrases. Further, the two-inch lettering is difficult to place on such a small aircraft with dimensions smaller than the minimal lettering requirement. Regardless of this, we can mark the UAS in the largest possible lettering by placing the word "Experimental" on its fuselage as required by § 45.29(f) so that anyone will see the markings.

We request an exemption from § 91.7(a) which prohibits the operation of an aircraft without an airworthiness certificate, since there is currently no certificate applicable to our operation, this regulation is inapplicable.

We request an exemption from §§ 91.405(a), 91.407(a)(1), 91.409(a)(2) and 91.417(a) and (b) Maintenance inspections since they only apply to aircraft with an airworthiness certificate. However, as a safety precaution we will perform a preflight inspection of the UAS before each flight as outlined in the attached operating documents.

We request an exemption from § 91.9(b)(2) which requires an aircraft flight manual in the aircraft, however since there are no pilots or passengers on board the aircraft and given its size, this regulation is inapplicable. We believe an equivalent level of safety will be achieved by maintaining a safety/flight manual with the UAS ground station.

We request an exemption from § 91.119 which prescribes safe altitudes for the operation of civil aircraft, but it allows helicopters to be operated at lower altitudes in certain conditions. We will operate the UAS within a 100 foot envelope of the building being assessed, or below 400 feet AGL, whichever is greater.

We request an exemption from § 91.121 Altimeter settings as it is inapplicable since the UAS utilizes electronic GPS with a barometric sensor.

We request an exemption from § 91.151(a) Fuel requirements for flight in VFR conditions. The UAV is 100% electric and two low battery alerts are issued - per the operating documents, the UAV will be landed at the first alert. Also, our flights will last only 5-20 minutes each, and the UAS has an automated function which results in immediate landing when a low battery is detected. The PIC will not begin a flight unless (considering wind and forecast weather conditions) there is enough power to fly to the first point of intended landing and, assuming normal cruising speed, land the UA with 30% battery power remaining.

Business and Public Interest

Ground and suspended scaffold based photo, video, thermography and LiDAR assessments have been around for some time, but can be cost-prohibitive and time consuming. In the case of operations from suspended scaffold stages and Boatswains' chairs are inherently risky and governed by OSHA Fall Protection regulations. By granting this exemption we would be able to provide this service at a much lower risk profile, both for inspectors and the public, lower cost and with greater efficiency. Further, our small UAS will pose no threat to the public given its small size, automatic emergency recovery system and lack of combustible fuel when compared to larger manned aircraft.

Summary

We will comply with all of the following conditions and limitations should this grant of exemption be provided:

- 1) Operations will be limited to the following aircraft described in the operating documents which is an octocopter aircraft weighing less than 24 pounds: DJI S1000+ Unmanned Aircraft System.
- 2) The UA will be operated at all times with an automatic emergency recovery system, equal to or better than the DJI Dropsafe parachute recovery system, that has been inspected, installed and armed prior to each flight.
- 3) The UA will not be flown at an airspeed exceeding 40 knots.
- 4) The UA will be operated within a 100 foot envelope of the building being assessed or below 400 feet AGL, whichever is greater, and within radius distance of 1000 feet from the controller to aid in direct line of sight visual observation.
- 5) The UA will be operated within visual line of sight (VLOS) of the Pilot In Command (PIC) at all times.
- 6) All operations will utilize a visual observer (VO). The UA will be operated within the visual line of sight (VLOS) of the VO at all times. The VO and PIC will be able to communicate verbally at all times. The PIC will be designated before the flight and will not transfer his or her designation for the duration of the flight. The PIC will ensure that the VO can perform the functions prescribed in the operating documents.
- 7) The operating documents will be accessible during UAS operations and made available to the Administrator upon request. Any revisions to the operating documents will be presented to the Administrator upon request.
- 8) 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 UAS will not be operated until the necessary maintenance has been performed and the UAS is found to be in a condition for safe flight. The Ground Control Station will be included in the preflight inspection. All maintenance and alterations will be properly documented in the aircraft records.
- 9) Any UAS maintenance or alterations that affect the UAS operation or flight characteristics, e.g. replacement of a flight critical component, will undergo a functional test flight. The PIC who conducts the functional test flight will make an entry in the aircraft records.
- 10) The pre-flight inspection section in the operating documents will account for all discrepancies, i.e. inoperable components, items, or equipment, not already covered in the relevant sections of the operating documents.

- 11) We will follow the UAS manufacturer's aircraft/component, maintenance, overhaul, replacement, inspection, and life limit requirements.
- 12) We will carry out maintenance, inspections, and record keeping requirements, in accordance with the operating documents. Maintenance, inspection, and alterations will be noted in the aircraft records, including total flight hours, description of work accomplished, and the signature of the authorized person returning the UAS to service.
- 13) Each UAS operated will comply with all manufacturer Safety Bulletins.
- 14) An authorized person will make an entry in the aircraft record of the corrective action taken against discrepancies discovered between inspections.
- 15) UAS operations will be conducted by a PIC possessing at least a private pilot certificate and at least a current third-class medical certificate or a valid US driver's license.
- 16) Prior to operations conducted for the purpose of this exemption, the PIC will demonstrate their ability to safely operate the UAS, including evasive and emergency maneuvers and maintaining appropriate distances from persons, vessels, vehicles and structures.
- 17) The UA will not operate within 5 nautical miles of an airport reference point as denoted on a current FAA-published aeronautical chart, unless a letter of agreement with that airport's management is obtained or otherwise permitted by a COA issued.
- 18) The UA will 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.
- 19) If a UA loses communications or loses its GPS signal, it will return to a predetermined location within the planned operating area and land or be recovered in accordance with the operating documents.
- 20) The PIC will abort a flight in the event of unpredicted obstacles or emergencies in accordance with the operating documents.
- 21) The PIC will not begin a flight unless (considering wind and forecast weather conditions) there is enough power to fly at normal cruising speed to the intended landing point and land the UA with 30% battery power remaining.
- 22) Before conducting operations, the radio frequency spectrum used for operation and control of the UA will comply with the Federal Communications Commission (FCC) or other appropriate government oversight agency requirements.

23) 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 UAS is operating. These documents will be made available to the Administrator or any law enforcement official upon request.

24) The UA will remain clear and yield the right of way to all manned aviation operations and activities at all times.

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

26) The UA will not be operated over congested or densely populated areas without an inspected, armed and operational emergency recovery system rated for the maximum gross weight of the UAS.

27) Flight operations will 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. We will 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 and/or;

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.

28) All operations will be conducted over private or controlled-access property with permission from the land owner/controller or authorized representative. Permission from land 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 will be reported to the FAA's UAS Integration Office (AFS-80) within 24 hours. Accidents will be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.nts.gov.