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

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

June 17, 2015

Exemption No. 11843
Regulatory Docket No. FAA–2015–1160

Mr. Gary R. Brekke
Principal
Alaska Aerial Survey, LLC
6510 Beechcraft Road
Wasilla, AK 99654

Dear Mr. Brekke:

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 16, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Alaska Aerial Survey, LLC (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial photography and videography for real estate, insurance, utility, and telecommunications industries.

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 Inspire l.

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, Alaska Aerial Survey, 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, Alaska Aerial Survey, 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 Inspire l 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 June 30, 2017, unless sooner superseded or rescinded.

Sincerely,

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

Enclosures

Project Officer: _____

**MR GARY R BREKKE**
**ALASKA AERIAL SURVEY LLC**
**6510 BEECHCRAFT RD**
**WASILLA AK 99654**

April 16, 2015

U.S. Department of Transportation
Docket Management System
1200 New Jersey Avenue, SE
Washington, D.C. 20590

Alaska Aerial Survey, LLC
Gary R. Brekke, Principal
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**RE: Exemption Request Section 333 of the FAA Reform Act of the Federal Aviation Regulations** : from 14CFR 91.7(a); 91.9(B)(2); 91.103; 9l.109; 91.119 (c); 91.121; 91.J 51(a)(l); 91.203(a)(b); 91.405(a); 91.407(a)( l); 9l.409(a)(l)and(2); 91.417(a)&(b); 45.23(b); Part 21; 61.l13(a)(b)

To whom it may concern:

I am writing pursuant to the FAA Modernization and Reform Act of 2012 ( Reform Act), and the procedures contained in 14 C.F.R. 11, to request that Alaska Aerial Survey, LLC, an owner and operator of small unmanned aircraft, be exempted from the Federal Aviation Regulations (FARs) listed above so that Alaska Aerial Survey, LLC may operate its small unmanned aircraft *I* lightweight unmanned aircraft system (UAS) commercially in airspace regulated by the Federal Aviation Administration (FAA); as 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.

It is the request of the petitioner for exemptions listed above in order to legally and safely operate the DJI Inspire l UAS, in the National Airspace System, for the purpose of Unmanned Aerial Photography and Videography for the real estate, insurance, utility and telecommunications industries. Enhancement of Public awareness of UAS operation and finally enhanced safety for both the General Public, Flight Crews and the Labor Force is described herein.

The main purpose for the requested Exemption is to allow Alaska Aerial Survey, LLC to utilize its UAS's to inspect cellular towers for telecommunications companies and their subcontractors. Alaska Aerial Survey, LLC would also utilize their UAS's for Municipal permitting services concerning communications towers, residential and commercial real estate aerial inspections, bridge inspections, construction site inspections and search and rescue services if requested. Alaska Aerial Survey, LLC will receive written consent to access these locations by the property and tower owners. Site access allows Alaska Aerial Survey, LLC to perform all inspections at low altitude and always within VLOS (visual line of sight). Most all tower inspection flights will be under 200' AGL (above ground level), and all flight operations will remain below 400' AGL. Alaska Aerial Survey, LLC will cordon off the site to add a safety buffer to keep the public and non-participants away from the work area as much as practical. This will be accomplished using various methods, but typically by using cones and signs advising of the possible hazard. Alaska Aerial Survey, LLC and its UAS would alleviate the day to day height exposure of manual inspection services and allow them to concentrate on service and repairs. Climbers have one of the highest incidents of accidental death in the labor force. UAS operations would greatly reduce the number of falls, injuries and deaths associated with this type of operation. UAS used to inspect cell towers allows the communications carriers to enhance operability to its clients by reducing down time and increasing site reliability by proactively inspecting towers and making repairs before failure or damage occur.

The secondary request for Exemption is to allow Alaska Aerial Survey, LLC to utilize its UAS to inspect power transmission lines for utility companies and their subcontractors. This would reduce the need for low flying manned aircraft. While these manned flights have a relatively good safety record, the use of UAS would further reduce the human risk and noise pollution generated by manned aircraft used for such purposes. The operations that Alaska Aerial Survey, LLC will perform would be localized and remain VLOS on larger transmission lines under 400' AGL. These larger transmission lines are generally located in restricted ROW's (right of way) which would limit concern for non-participant exposure. Alaska Aerial Survey, LLC will take all practical measures to keep the public and non-participants safe. This will be done by using cones and warning signs advising of the possible hazard. Helping to keep the energy grid fully operational and maintained with the aid of UAS is definitely in public interest.

The third request for Exemption is to allow Alaska Aerial Survey, LLC to utilize its UAS to assist insurance companies with claim assessments, survey and inspect residential and commercial real estate, survey construction sites, bridges and other civil structures.

Currently, insurance companies use their employees to climb roof tops to assess damage with ladders (ladders themselves pose property damage exposure to gutters, windows & siding). This involves climbing on high roof tops often with steep pitches. This is an area of major concern for insurance companies as this exposure has led to many injurious falls to their employees. Real estate agencies and their brokers are beginning to recognize the value of quality video surveys of real properties and raw land to enhance sales of same. Alaska Aerial Survey, LLC will acquire written consent to access these sites by the property owners and the insurance carriers. Alaska Aerial Survey, LLC will cordon off the site to add a safety buffer to keep the public and non-participants safe. This will be done by using cones and warning signs advising of the possible hazard. Operations would remain VLOS, under 200' AGL and utilize a PIC (pilot in command) & VO (visual observer).

The operations listed above may require flight within 100' of buildings and structures. Alaska Aerial Survey, LLC has instituted several safety measures to limit and avoid collision or damage to such buildings or structures and *I* or minimize risks and exposures:

- Written permission from property and building owners outlining operations and describing potential hazards.
- General Liability insurance to cover any damages.
- All flight operations follow operation manual guidelines and procedures listed herein.

Alaska Aerial Survey, LLC exemption request limits it's operation of lightweight (less than 55 lbs.), UAS in tightly controlled and limited airspace. Flight operations will occur in predetermined, specifically marked areas, cordoned off locations with corresponding enhancements to operate within current safety parameters and new ones to be implemented by the FAA.

Safety is of paramount importance to Alaska Aerial Survey, LLC. We endeavor to help integrate UAS into the NAS (national air space) by performing our services with the utmost concern for the safety of our operators, the general public and property. To achieve this, Alaska Aerial Survey, LLC has instituted several flight parameters, conditions, guidelines and limitations to adhere to before, during and after flight operations - all of which are outlined in the UAS User Manual *I* Operators Manual. These conditions are based off of Part 333 exemptions that have already been approved by the FAA and have been integrated into our operations:

- The UAS will not exceed a ground speed of 50 knots.
- All operations will remain below 400' AGL.
- The UAS will weigh less than 55 lbs.
- All operations will remain in VLOS.
- All operations will utilize a VO. This VO will always be able to communicate verbally with the PIC.
- The operator must follow the procedures as outlined in its operator's manual. (listed herein as Protocols & Procedures & DJI User's Manual *and* Operators Manual).
- Prior to each flight the PIC must inspect the UAS to ensure it is in a condition for safe flight. Any UAS that has undergone maintenance or alterations that would affect the UAS operation or flight characteristics must undergo a functional test flight in accordance with operators manual.
- The operator must follow the manufacturer's UAS aircraft component, maintenance, overhaul, replacement, inspection and life limit requirements.
- The PIC will must possess at least a private pilot certificate and at least a third-class medical certificate and also meet flight review requirements specified in the 14 CFR 61.56.
- Prior to operations the PIC will undergo UAS specific training for type (multi-rotor), make and model aircraft and log hours appropriately. PIC will also maintain proficiency and currency (every 90 days) with UAS. Keeping with a manner consistent with 14 CFR 6l.51(b).

- PIC & VO will have successfully completed a qualification process, as outlined in the operator's manual. Completion of this qualification process will be documented.

- The UAS will not be operated directly over any person, except authorized and consenting flight personnel.

- The PIC & VO will ensure that no unauthorized persons are allowed within 200' (or a distance deemed safe and practical due to physical terrain constraints) of the flight area except those consenting flight personnel.

- If UAS loses communication or loses it GPS signal, the UAS must return to a pre-determined location within the security perimeter and land or be recovered in accordance with operator's manual.

- The UAS must abort the flight in the event of unpredicted obstacles or emergencies in accordance with operators manual.

- The operator must obtain an Air Traffic Organization (ATO) issued Certificate of Waiver or Authorization (COA) prior to conducting any operations.

- All operators will comply with all manufacturers Safety Bulletins.

- Before conducting operations, the radio frequency spectrum used for operation and control of UAS will comply with Federal Communications Commission (FCC).

- Prior to the planned operation (3 days) the operator will contact the local Flight Standards District Office (FSDO) (that has jurisdiction of the area) in writing and cover the plan of activities for the flight operation.

- The documents required under 14CFR 91.9 and 91.203 will be available to the PIC at the ground station during all operations.

- The UAS will remain clear and yield the right of way to all other manned operations and activities at all times.

- All operations will be conducted under VFR (visual flight rules) and no night operations during night as defined in 14 CFR 91.151

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

- The UAS will not be operated less than 500 ' below or less than 2,000' horizontally from a cloud or when visibility is less than 3 statute miles from the PIC.

- The UAS will not operate in Class B, C, or D airspace without written approval from the FAA. The UAS will not operate within 5 nautical miles of the geographic center of a non-towered airport.

- 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 website.

The petitioner will outline in this document:

1. Request for exemptions by Part and Subpart
2. Petitioners protocols and procedures for operations
3. The Unmanned Aircraft System (UAS)
4. The Public Interest

**Requests For Exemption by Part and Subpart**

14 CFR 91.7(A) Airworthiness Certificate;

Prohibits the operation of an aircraft without an airworthiness certificate. Petitioner requests exemption based on previous exemption no. 11138. The FAA has ruled that this make and model of aircraft (UAS) does not require an airworthiness certificate.

14 CFR 91.9(B) (2) Aircraft Flight Manual

Requires an aircraft flight manual in the aircraft. As there are no pilots or passengers aboard and given the size of the UAS, this regulation is inapplicable. An equivalent level of safety will be achieved by maintaining a manual at the flight operations center. The FAA has previously issued exemptions to this regulation no. 10700 and 32827.

14 CFR 91.103 Pre-flight;

No approved Aircraft Flight Manual on board the aircraft. The petitioner asserts that an equivalent level of safety will be achieved by the PIC taking all pre-flight actions set forth in the operating documents including weather, flight battery requirements, landing and take-off distances and aircraft performance data before initiation of each flight.

14 CFR 91.109 Flight Instruction;

There are no dual controls available for flight instruction.

14 CFR 91.119 (C) Minimum Safe Altitudes;

States that no person may operate an aircraft below the following altitudes: over other than congested areas, an altitude of 500' above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500' to any person, vessel, vehicle, or structure.

The petitioner will not operate any UAS over an altitude of 400' AGL. The majority of the operations proposed will operate between 0 to 200' AGL as this usually provides the best angle of capture for the type of photography and videography operations proposed.

The UAS utilized for this exemption is of exceptionally light weight and is not capable of speeds over 30 knots. The UAS is equipped with GPS guided auto pilot with a return home function in case loss of control by the PIC and is powered by sealed batteries thereby reducing the chance of post impact fire to nearly zero.

There will be cases when the 500' distance from structures will need to be exempted. (Example: Aerial Video of a 2 story home roof to determine andandor document extent of storm damage.) In this type of operation every assurance will be made to keep persons outside of a reasonable, safe, clear area of operations and will only be conducted with the express permission of the property owner. See Protocols and Procedures Section.

The petitioner will implement procedures and policies to ensure that any person in the general vicinity of operations will be aware of such operations and ensure that all non-essential personnel are cleared of the area of operations to the extent possible.

The petitioner therefore requests relief in part from 14CFR 91.119(C)

14 CFR 91.121 Altimeter Settings;

The petitioner requests relief from 91.121 for the following reason. The UAS is equipped with GPS derived altitude capability, however due to the limited altitude requested in this exemption, the FAA has previously granted Exemption for these types of operations. Reference Exemption No. 11138

14CFR 91.151(a)(1) Fuel for Flight;

No person may begin a flight in an airplane under VFR conditions unless (considering wind and forecast weather conditions) unless there is enough fuel to fly to the first point of intended landing and, assuming normal cruise speeds.

(a)(l) During the day to fly for at least 30 minutes.

The petitioner requests relief from 91.151 (a) due to the fact that the UAS is equipped with a battery and percentage indicator system. The UAS has a flight capability on full charge of approximately 25 minutes depending on camera usage and other variables. The petitioner has established that the maximum flight will be 15 minutes on a fully charged battery. This constitutes landing with approximately 25 percent fuel remaining. The petitioner believes that this follows the spirit and intent of the rule with a great margin of safety.

No UAS operations will be conducted at night, as defined by Federal Aviation Regulations.

14 CFR 91.203(a)(b) Carrying of civil aircraft Certifications and Registrations;

Provides for the carrying of civil aircraft certifications and registrations. They are inapplicable for the same reasons described above. Operations manuals and Safety Procedures will be maintained at the Alaska Aerial Survey, LLC home office with copies of same traveling with the PIC.

14 CFR 91.405(a) Maintenance required;

The petitioner requests relief in part from 91.405(a)(l) based on the Protocols and Procedures Section on Maintenance and Maintenance Records. Also reference Exemption No. 11138

14CFR 91.407(a)(l)

Operation after maintenance, preventive maintenance, rebuilding, or alteration;

The petitioner requests relief from 91.407(a)(l) based on the Protocols and Procedures Section on Maintenance, Return to service after maintenance, and Maintenance records. Reference Exemption No. 11138

14 CFR 91.409(a)(l)(2) Inspections;

The petitioner requests relief from 91409(a)( 1)(2) based on the Protocols and Procedures Section on Inspections. Reference Exemption No. 11138

14 CFR 91417(a)(b) Maintenance records;

The petitioner requests relief from 91.417(a)(b) based on the Protocols and Procedures Section on Maintenance records.

14 CFR 45.23(b) Marking of the Aircraft;

Applicable codes of Federal Regulation require aircraft to be marked according to certain specifications. Alaska Aerial Survey, LLC UAS's are, by definition, unmanned. They therefore do not have a cabin, cockpit or pilot station on which to mark certain words or phrases. Further, two inch lettering is difficult to place on such small aircraft. Regardless, Alaska Aerial Survey, LLC will , if required , mark its UAS's in the largest possible lettering by placing the " N "number on its fuselage as required by 14CFR 45.29 (f) so that the pilot, technician, spotter and others working with the UAV will see the markings. The FAA has previously issued exemptions to this regulation through Exemption No 10167 and 10700

14 CFR 21, Sub Part H Airworthiness Certificates;

Entitled Airworthiness Certificates, set forth requirements for procurement of necessary airworthiness certificates in relation to FAR 91.203(a)(l). The size, weight and enclosed operational area of Alaska Aerial Survey, LLC UAS permits exemption from Part 21 because Alaska Aerial Survey, LLC UAS meet an equivalent level of safety pursuant to Section 333 of the Reform Act. The FAA is authorized to exempt aircraft from the airworthiness certificate requirement under both the Act (49 USC 44701(f)) and Section 333 of the Reform Act. Both pieces of the legislation permit the FAA to exempt UAS from the airworthiness certificate requirement in consideration of the weight, size, speed, maneuverability and proximity to areas such as airports and dense populations. Alaska Aerial Survey, LLC UAS meet or exceed each of the elements.

14 CFR 61.l 13(a)(b) Private Pilot Privileges and Limitations PIC;

Private pilots are limited to non-commercial operations. Alaska Aerial Survey, LLC can achieve an equivalent level of safety as achieved by current Regulations because Alaska Aerial Survey, LLC UASs do not carry any pilots or passengers. Further, while helpful, a pilot license will not ensure remote control piloting skills, though Alaska Aerial Survey, LLC pilot vetting and training program will. Further, private pilot licensees will operate Alaska Aerial Survey, LLC UASs with the same skill. Further the risk attendant to the operation of Alaska Aerial Survey, LLC UAS is far less than the risk levels inherent in the commercial activities

outlined in CFR 61. Thus, allowing Alaska Aerial Survey, LLC to operate its UAS with a private pilot as the pilot in control will exceed current safety levels in relation to CFR 61.l 13(a)(b).

## PROTOCOLS AND PROCEDURES FOR UAS OPERATIONS

A. Preflight
B. Area Security
C. Limitations of Operations
D. Airworthiness
E. Maintenance and Records
F. Pilot in Command Requirements
G. Visual Observer and Requirements
H. Reporting of Incidents and Accidents

### A. Preflight Inspection of UAS

(I). Preflight of the Unmanned Aerial System will follow the instructions in the DJI instruction and User Manual. The Pilot in Command will certify that a preflight inspection has been accomplished with the date and time and signature in the UAS logbook. The preflight shall include the aircraft, transmitter, and batteries, motors, rotors, landing gear, camera and gimbal mount. As a part of the preflight the Pilot in Command will assure that weather conditions, area security, and any other information essential to safe operation has been obtained.

### B. Area Security

(1). The PIC of the UAS will ensure that the operational area for the purposes of UAS flight shall be cleared of all nonessential persons at all times the UAS is in flight. Additionally all nonessential persons shall be required to remain clear of the operations area by a minimum distance of 200' (or by as much as practical) during operations. PIC shall ensure that cones and clearly marked signs are posted at all ingress \ egress points to the operations areas. These signs will be of white background with red lettering stating the following: "Unmanned aircraft operations underway. Please remain clear."

(2). In the event of a breach by nonessential persons into the operations area during the flight of UAS, the PIC shall immediately terminate flight operations until such time as the area can be cleared of these persons.

(3). The UAS area of operation is defined as the horizontal flight path(s) of the UAS as well as the Vertical flight path and Maximum altitude to be reached. Additionally, the area between the UASs current position and its Home location is also considered operational area as it will proceed direct to its home location in the event of loss of ground control.

### C. Limitations of Operations

(1) The UAS shall be operated in Day time only, as defined by 14 CFR

(2) UAS night operations are prohibited.

(3) The UAS shall be operated by VLOS at all times

(4) A Visual Observer shall be utilized at all times and must maintain VLOS at all times.

(5) The UAS shall remain within 1 000' horizontal distance of the PIC at all times.

(6) The UAS to be utilized is the DJI Inspire Unmanned Aircraft System. No other systems will be operated.

(7) The UAS will have an altitude restriction of 400ft AGL.

(8) The UAS will not be operated at a speed exceeding 30 Knots.

(9) Operations Documents will be accessible to the PIC at all times and must be accessible during UAS operations and made available to the Administrator on request.

(10) PIC must inspect and ensure that UAS and ground control station is in airworthy condition prior to each operation; if determined un-airworthy, all operations will be suspended until such time as necessary maintenance has been performed and the UAS is determined to be in a safe condition for flight.

(11) An operational flight test is required after any maintenance or alterations that may affect UAS operation or flight.

(12) UAS maintenance must follow manufactures aircraftandcomponent, maintenance, overhaul, and replacement, inspection, and life limit requirements.

(13) The operator must carry out its maintenance, inspections, and record keeping requirements, in accordance with the operating documents. Maintenance and inspection, and alterations must be noted in the aircraft records
including total flight hours, description of work performed, and the signature of the authorized person returning the UAS to service.

(14) UAS must comply with all Manufacturers' Safety Bulletins.

(15) An authorized person must make an entry in the aircraft record of the corrective action taken against discrepancies discovered between inspections.

(16) UAS must by operated by a PIC possessing at least a Private Pilot Certificate, with most appropriate Class and Category and at least a current Third Class Medical.

(17) PIC must meet the flight review requirements of 14 CFR 61.56 in an aircraft in which the PIC is rated.

(18) Prior to operations for which exemption is requested the PIC must have accumulated and logged ,in a manner consistent with 14 CFR 61.5l(b), a minimum of 25 hours of total time as a UAS rotorcraft pilot including at least 10 hours of UAS multi-rotor.

(l9) Prior to operations the PIC must have accumulated and logged a minimum of 5 hours as a UAS pilot in make and model listed in exemption. PIC must log at a minimum 3 takeoffs and landings in the preceding 90 days to meet currency requirements.

(20) PIC is required to operate the UAS in accordance with 14CFR 91.119.

(21) No UAS operation within 5 nautical miles of a controlled airport reference point as denoted on a current FAA chart.

(22) No operations are allowed in the surface areas of Class B, C, and D airspace or in restricted airspace.

(23) No operations are allowed if the return home function and \ or autopilot are, or are suspected to be malfunctioning.

(24) UAS shall not be operated from a moving platform of any type.

(25) No operations shall be conducted without an appropriate Certificate of Authority issued by the Administrator.

(26) A Visual Observer shall be utilized at all times when operating the UAS.

(27) Should the PIC or Visual Observer detect that a manned aircraft is being operated in close proximity to the operations area, the UAS shall give right of way to the manned aircraft, and the PIC shall cease operations and land until such time as the manned aircraft has
cleared the area.

(28) The UAS will not be operated any closer than 100' to any structure without the express permission of the structure *I* building *I* property owner.

(29) The UAS will be limited to 18 minutes of flight or 25% of battery power, whichever occurs first.

**D. UAS Airworthiness**

(1). The PIC shall ensure that the UAS is in an airworthy condition before each flight. Airworthiness shall be determined by a preflight inspection in accordance with DJI operating documents and any and all applicable Federal Aviation Regulations, and any additional requirements as defined by the Administrator. PIC shall document each preflight inspection by date, Aircraft total Flight time to date, any discrepancies noted, and signature and certificate number. Any discrepancy noted shall be addressed before UAS operation.

**E. UAS Maintenance and Records**

(l). The operator shall maintain aircraft maintenance logbooks. Each VAS shall have its own and separate maintenance log book. DJI documents, handbooks, user manuals, supplements, Safety Bulletins, etc., shall be the only approved documents for performing repairs, maintenance, inspections, overhauls, or replacement of life limited components. A record of each preflight inspection will additionally be recorded in these logbooks. The preflight inspection must be conducted by the PIC for that operation. Preflight sign-off shall include at least the following information: date of operation, Aircraft Total time, aircraft serial or operating number, PIC signature and certificate number.

Example: Preflight inspection completed, No defects noted. 1-1-15, AC FIT 50.l hours, VAS number 1, Gary Brekke - PIC

(2). Any required maintenance, inspection, alteration or repair must be completed by an approved person. At the completion of this work the approved person must make an entry in the aircraft log book that at least includes: Date, Aircraft serial or operating number, brief description of the discrepancy, inspection, alteration or repair, the reference material used as guidance for the repair, statement approving the aircraft for return to service, and signature of person who completed the work.

Example: 1-1-15 UAS I , ACFIT 50.l hours, replaced number 3 rotor with new rotor, in accordance with DJI Inspire I User Manual. Flight or ops check completed. Aircraft is approved for return to service. Gary Brekke

(3). Maintenance records shall be kept with the UAS at all times and shall be made available to any authorized agency or the Administrator upon request.

**F. Pilot in Command Requirements**

(1). The Pilot in Command shall hold at least a Private Pilot Certificate and a current Third Class Medical whenever conducting operations. Operator prefers that the Certificate be in the most appropriate Class and Category to the UAS being operated.
(2). The Pilot in Command shall have accumulated and logged a minimum of 200 flight cycles and 25 hours of rotorcraft UAV flight time before performing any operation for which exemption is requested.
(3). The Pilot in Command shall have at least 5 hours in make and model before performing any operation for which exemption has been requested.
(4).The Pilot in Command shall perform a pre-flight inspection before each flight is conducted,
(5).The Pilot in Command shall observe all Federal Aviation Regulations at all times with the exceptions of the exemptions requested by the operator. In those cases the Pilot in Command shall adhere to company operating standards or Federal Aviation Administration Limitations placed upon exemptions, whichever is more stringent.
(6). The Pilot in Command will not operate the UAS without a Visual Observer present. (7). The Pilot in Command must have 3 takeoff and landings within the preceding 90 days.
(8). The Pilot in Command must maintain a record of flight information to establish currency and that he or she meets the requirements of this section.
(9). The Pilot in Command will utilize eye protection in the event that sun glare would reduce YLOS operations.

**G. Visual Observers: Responsibilities and Requirements**

(1). A Visual Observer shall be used during any and all operations of the UAS System.
(2). The Visual Observer shall maintain verbal communication with the PIC at all times during UAS operation.
(3). The Visual Observer shall maintain Visual Contact with the UAS at all times. In the event that Visual Contact is lost the VO will notify the PIC who will immediately cease operations and land the aircraft.
(4). The Visual Observer shall also help the PIC maintain area of operations security and ensure that all non-essential persons remain clear of the area of operations. In the event of a breach by unauthorized person(s) the VO shall notify the PIC and operations will

cease immediately.
(5).The Visual Observer shall also assist the PIC in looking for manned aircraft traffic near the operations area. If manned aircraft traffic is observed near the operations area, the YO will notify the PIC who will immediately cease operations and land the UAS.
(6). The VO will utilize eye protection in the event that sun glare would reduce VLOS operations.

**H. Reporting of Incidents andandor Accidents**

Any incident or accident, or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA will be reported within 24 hours to:

FAA UAS Integration Office (AFS-80) Accidents:
National Transportation Safety Board
(www.ntsb.gov.)

**The Unmanned Aircraft System UAS**

The petitioner will operate the DJI Inspire I UAS System. This shall be the only system operated by the petitioner. This is an ultra-light weight system using a quad-rotor system for flight. The manufacturer has built in several features to make operations safer: in the event of lost signal the UAS will return to its pre-determined location within the security perimeter and land; PIC has ability to take over or abort flight manually in the event of loss to GPS; and the UAS has built-in software that limits operations near airports and restricted airspace. The petitioner has attached the hyperlinks for the operating and user documents for the system as additional supplements for this petition. Please see attached supplemental documentation.

**The Public Interest**

The request for this exemption is in the Public Interest as it is safe to assume that there are many consumer applications for the services that can be provided by UAS. It is clear that the Congress of the United States, the business sector, and the consumer want to integrate UAS into the NAS and utilize their unique and cost effective capabilities. It is also in the Public Interest that many of the low level flight operations now conducted by manned aircraft could be accomplished with these light, fire resistant and environmentally friendly unmanned aircraft that can operate at a fraction of the cost to both the operator and consumer. These aircraft can be operated without risk of loss to life or limb, and without significant financial impact to the operator or any person or property on the ground in the event of the loss of an aircraft. Utilizing these UAS will create a safer more productive work environment, reduce environmental pollution and have a positive impact on the local community which is in the Public Interest. Finally, the petitioner believes that granting this exemption would help to further by Administrative process the integration of UAS systems and the possibility to help create additional regulations and guidance to be used as these systems become more widely utilized.

Please forward any questions or concerns to the address or email below.

Sincerely,

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