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

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

June 18, 2015

Exemption No. 11855
Regulatory Docket No. FAA–2015–1163

Mr. Stephen Elms
US Drone Aviation LLC
P.O. Box 7998
Jackson, WY 83002

Dear Mr. Elms:

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 15, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of US Drone Aviation LLC (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct commercial operations for inspections, surveying, and conservation reviews.

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 are the DJI Phantom, DJI S1000, 3DRobotics X8+, and 3DRobotics X-8M.

The petitioner requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*. In accordance with the statutory criteria provided in Section 333 of Public Law 112−95 in reference to 49 U.S.C. § 44704, and in consideration of the size, weight, speed, and limited operating area associated with the aircraft and its operation, the Secretary of Transportation has determined that this aircraft meets the conditions of Section 333. Therefore, the FAA finds that the requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*, and any associated noise certification and testing requirements of part 36, is not necessary.

The Basis for Our Decision

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

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

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

Our Decision

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. 106(f), 40113, and 44701, delegated to me by the Administrator, US Drone Aviation 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

[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.

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, US Drone Aviation LLC is hereafter referred to as the operator.

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

1. Operations authorized by this grant of exemption are limited to the DJI Phantom, DJI S1000, 3DRobotics X8+, and 3DRobotics X-8M 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

April 15 2015

US DRONE AVIATION LLC

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

RE: Exemption Request Section 333 of the FAA Reform Act

Dear Sir or Madam:

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 and 14 CFR Part 11, US Drone Aviation, LLC a Wyoming Corporation, hereby applies for an exemption from Federal Aviation Regulations (FARs) identified below, to allow commercial operations of small unmanned aerial system (*i.e.*, sUAS).

We have enclosed US Drone Aviation's Flight Operations Operations Manual[1], the sUAS manufacturer's operations flight, instruction manual, and maintenance manuals and any other requirements established by the FAA pursuant to Section 333 of the Reform Act.

The requested exemption would permit US Drone Aviation to pursue its commercial interests in providing services to clients using small advanced sUAS in rural or sparsely populated Wyoming, with particular focus on the following commercial areas:

- Oil and Gas Infrastructure Monitoring and Inspection Services
- Mining Inspections
- Aerial Surveying
- Industrial Facilities Inspections
- Conservation Reviews
- General Video and Photography assignments
- Inspection of Power and Wind Towers

In addition to the waiver authority provided in Section 333 of the Modernization Act, the FAA may grant an exemption under 49 U.S.C. Section 44701(f) if it has determined that such an exemption is in the public interest.

Granting an Exemption is in the Public Interest.

Oil and gas personnel routinely inspect well heads, flare stacks and underlying infrastructure, such as pipelines. At present, primarily personnel in motor vehicles, or on foot do this work. While the oil and gas industry does all it can to make these inspections as safe as possible, there is always an element of risk involved whenever employees are required to inspect structures. Personnel may need to climb over or onto structures, which can be slippery, rough, and/or exposed to the elements. Some structures, such as Flare stacks, are high above the ground and require costly "shut downs" for inspections. The use of sUAS for infrastructure and general asset evaluation would reduce the risks to personnel by allowing for remote aerial review.

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[1] US Drone Aviation submits the US Drone Aviation Flight Operations Manual as a Confidential document under 14 CFR §11.35(b), the entire content of the Manual contain confidential commercial and proprietary information that US Drone Aviation has not and will not share with others. This Manual contains operating procedures and training procedures that are not available to the public and are protected from release under the Freedom of Information Act, 5 USC § 552 (b) (4).

Additionally, the sheer amount of Oil and Gas assets and the widely dispersed locations – in many instances far from sizeable population centers – means that visual inspection in all instances by company personnel can be inefficient. For example, Oil and Gas infrastructure in the Upper Green River Basin of Western Wyoming cover 100,000's of acres, remote from qualified analysts. Aerial analysis by traditional fixed wing aircraft is impractical because the required altitudes for safe flight reduce visibility below meaningful levels – it is simply not possible to see all asset anomalies from such heights, plus it is cost prohibitive. By using sUAS for asset evaluation, US Drone Aviation will be able to substantially upgrade the industry's capacity to detect and address issues expeditiously and in a safer manner. Thus, the use of sUAS has the potential to improve efficiency, resulting in faster and safer delivery of oil and gas, vital to the U.S. economy.

Regulations from which exemption is requested:

14 C.F.R. Part 21
14 C.F.R. 45.23(b)
14 C.F.R. 61.113(a) & (b)
14 C.F.R. 91.7(a)
14 C.F.R. 91.9(b) (2)
14 C.F.R. 91.109
14 C.F.R. 91.119
14 C.F.R. 91.121
14 C.F.R. 91.151(a)
14 C.F.R. 91.203(a) & (b)
14 C.F.R. 91.205(b)
14 C.F.R. 91.401 – 91.417

An exemption would allow US Drone Aviation to broadly evaluate assets and operations with sUAS, resulting in a safer and more efficient inspection and monitoring regime in the resource industries. Accordingly, the grant of an exemption is consistent with Congress' intent, reflected in Section 333 of the FAA Modernization and Reform Act of 2012 (Modernization Act), that safe systems be permitted in the national airspace prior to the issuance of final regulations governing general use of these systems

This exemption would permit commercial operation by US Drone Aviation, which uses DJI Phantom, DJI S-1000, 3D Robotics 8+ & 8M sUAS' to conduct infrastructure inspections of oil and gas facilities and other inspections of infrastructure in the resource and communications industries in sparsely populated areas of Wyoming. USDA's operation under the exemption will be subject to strict operating requirements and conditions to ensure an equivalent level of safety to currently authorized operations using manned aircraft and under conditions as maybe modified by the FAA as required by Section 333.

US Drone Aviation states that all sUAS flights will occur over private or controlled access property, will do so with the property owner's consent and knowledge, and only people who have consented or agreed will be in the area where flights will take place.

Furthermore the petitioner will only operate its sUAS in line-of-sight (VLOS) of a pilot and/or observer and will operate at sites in Wyoming that are 'sufficient distance' from populated areas within the sterile area described in the US Drone Aviation's Operating Manual. Such operations will ensure that the sUAS will "not create a hazard to users of the national airspace system or the public."

Additionally, US Drone Aviation's crew will consist of a sUAS pilot who will hold a FAA Private Pilots License with a Class III Medical Certificate. plus an Observer (VO). If observers

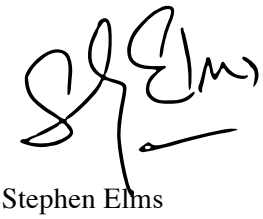
are not qualified pilots, they will attend a ground school to understand the proper roles of an observer, communication procedures, and proper visual scan techniques, operations at non-towered airports and appropriate sections of the Aeronautical Information Manual (AIM).

In keeping with previous exemptions granted, we will ensure that operations will not occur within 5 miles of an airport. The sUAS operated by US Drone Aviation all weigh less than 25 pounds, including payload (i.e. sensors, camera, lens, and stabilized gimbal), and operate at speeds below 50knots, and will not be operated at altitudes that exceed 400 feet AGL.

Given the small size of the sUAS and the restricted sterile environment within which it will operate, US Drone Aviation's operations adhere to the Reform Act's safety requirements. The fact the pilot holds an FAA Private Pilot license demonstrates US Drone Aviation's high regard for safe operations with an understanding of FARs, pre- flight inspections, knowledge of operations and differences in airspace classifications, maintenance and repair, as well as being trained to high safety standards. Under the requested exemption, US Drone Aviation ensures all crews have completed sUAS education and training programs including all applicable regulations and guidance documents; including aeronautical background information such as charts, NOTAMS and Aircraft Circulars; Radio Communications Procedures; Human Factors and Crew Resource Management; Basic sUAS Aerodynamics; Weather factors; Airmanship and Decision-making and Safe Operations Procedures.

We respectively request exemption under Section 333 to enable US Drone Aviation to operate efficient, limited, low-risk commercial sUAS operations for the activities stated, respecting at all times the space and privacy of citizens and property while keeping airspace safe.

Sincerely



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EXEMPTION REQUESTS AND EQUIVALENT LEVEL OF SAFETY

US Drone Aviation requests an exemption from the following regulations as well as any additional regulations that may technically apply to the operation of the sUAS System:

14 CFR Part 21, Airworthiness Certificates

This part establishes the procedures for the issuance of an airworthiness certificate. While the FAA continues to work to develop airworthiness standards for Unmanned Aerial Systems, we request an experimental certificate be issued for the 1/ DJI Phantom 2, 2/ DJI S-1000 3/ 3D Robotics 8m, and 4/ 3D Robotics x8+ under either, or both, of the following provisions:

21.191 Experimental certificates. Experimental certificates are issued for the following purposes:**(a) Research and development.** Testing new aircraft design concepts, new aircraft equipment, new aircraft installations, new aircraft operating techniques, or new uses for aircraft. **(b) Showing compliance with regulations.** Conducting flight tests and other operations to show compliance with the airworthiness regulations including flights to show compliance for issuance of type and supplemental type certificates, flights to substantiate major design changes, and flights to show compliance with the function and reliability requirements of the regulations. Since the experimental certificate can be used for commercial purposes such as market surveys, sales demonstrations, and customer crew training, we would expect that an experimental certificate would permit our commercial purpose as well. The aircraft will not carry persons or property, will not carry fuel, and will only fly under strict operational requirements. Combined with the UA's lightweight, being constructed primarily of carbon fiber and plastic, we propose that the UA will be at least as safe, if not safer, than a conventionally certificated aircraft performing the same mission. If an experimental airworthiness certificate is not appropriate for this application, then we request an exemption of 14 CFR Part 21, Subpart H, and the requirement for an airworthiness certificate in general, citing the equivalent level of safety outlined in the previous paragraph.

14 CFR 45.23 Display of marks; general and 45.29 Size of marks

These regulations provide that each aircraft must display N and the aircraft's registration number in letters at least 3 inches high. Additionally, the aircraft must display the word EXPERIMENTAL in letters at least 2 inches high near the entrance to the cabin, cockpit, or pilot station. The sUAV does not have an entrance in which the word EXPERIMENTAL can be placed, and may not have a registration number assigned to it by the FAA. We propose to achieve an equivalent level of safety by including the word EXPERIMENTAL in the placard on the top of the aircraft, as shown above, where the PIC, VO and others in the vicinity of the aircraft while it is preparing for launch will be able to see the designation. Additionally, we feel that the permanent placard discussed in the previous paragraph will provide the aircraft's registration information at the ground station. Finally, we will display at the ground station a high contrast flag or banner that contains the words Unmanned Aircraft Ground Station in letters 3 inches high or greater. Since the aircraft will operate within VLOS or approx. 1500 feet of the ground station, the banner should be visible to anyone that observes the aircraft and chooses to investigate its point of origin.

14 CFR 61.113 Private pilot privileges and limitations: Pilot in Command and 61.133 Commercial pilot privileges and limitations. The regulation provides that no person who holds a Private Pilot certificate may act as pilot in Command of an aircraft for compensation or hire. Subparagraph (b) allows a private pilot to act as pilot in command of an aircraft in connection with any business or employment if: (1) The flight is only incidental to that business or employment; and (2) The aircraft does not carry passengers or property for compensation or hire. Our proposed operations require that the PIC must hold at least a Private Pilot Certificate issued

by the FAA and since the aircraft cannot carry passengers or property, we feel we meet the intent of 61.113 Subparagraph (b) even though the intent of this application is to conduct a business.

14 CFR 91.7 Prohibits the Operation of an aircraft without an airworthiness certificate.

As no such certificate will be applicable in the form contemplated by the FARs, this Regulation is inapplicable.

14 CFR 91.9 Civil aircraft flight manual, marking, and placard requirements.

This regulation provides that no person may operate an aircraft unless a current, approved flight manual is in the aircraft. We assume that the intent of this requirement is to ensure that flight manual information is available to the aircrew while operating the aircraft. We request an exemption to this requirement since the aircraft is not only too small to carry documentation, the documentation would not be available to the crew during flight operations. To obtain an equivalent level of safety and meet the intent of 91.9, we propose that a current, approved sUAS Flight Manual must be available to the crew at the ground station anytime the aircraft is in, or preparing for, flight.

14 CFR 91.109 Flight Instruction; Simulated instrument flight and certain flight tests.

The regulation states, "No person may operate a civil aircraft that is being used for flight instruction unless that aircraft has fully functioning dual controls". The sUAS System ground-based control station consists of a hand-held radio transmitter and while it does not offer a second set of controls, both the student and instructor can, and will, operate the single set of controls simultaneously. With both student and instructor having hands-on the controls during flight, this technique meets the intent 91.109 and provides an equivalent level of safety.

91.119 Minimum safe altitudes: General.

The regulation states that over sparsely populated areas the aircraft cannot be operated closer than 500 feet to any person, vessel, vehicle, or structure. Since the typical mission of the sUAS would be inspection, photography or survey at close range it would be necessary to operate closer than 500 feet to the items listed. Operations will only be flown over property or persons where permission has been obtained and careful pre-planning has been performed. The aircraft will be operated at a low altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface. Therefore we maintain that due to the small size of the UAS, the hazard to persons, vehicles and structures is minimal compared to manned aircraft, which should be considered in granting the exemption.

CFR 91.121 Altimeter settings.

The regulation requires that aircraft shall maintain cruising altitudes by reference to an altimeter setting available within 100 NM of the aircraft. The sUAS will always fly below 400 feet AGL and will not need to maintain cruising altitudes in order to prevent conflict with other aircraft. An Above Ground Level altimeter measurement above the takeoff point is transmitted via radio from the sUAS on-board computer to the display screen held by the PIC, providing a constantly updated AGL readout.

14 CFR 91.151 Fuel requirements for flight in VFR conditions.

The regulation provides that no person may begin a flight in an airplane under day- VFR conditions unless there is enough fuel to fly to the first point of intended landing and to fly after that for at least 30 minutes. We feel the intention of this paragraph is to provide an energy reserve as a safety buffer for delays to landing. The sUAV is battery operated and the maximum duration of flight from a single battery charge is 12 minutes with a 20% reserve. Since the aircraft will never fly more than 1500 feet from the point of intended landing, a full battery charge at launch

will ensure that we meet the reserve energy requirement of this paragraph. We request an exemption to the word fuel and ask for an equivalent interpretation with the word energy.

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

The regulation provides that an airworthiness certificate, with the registration number assigned to the aircraft and a registration certificate must be aboard the aircraft. Additionally, subparagraph (b) provides that the airworthiness certificate be displayed at the cabin or cockpit entrance so that it is legible to passengers or crew. At a maximum gross weight of 25 pounds, the sUAS is too small to carry documentation, does not have an entrance, and is not capable of carrying passengers or crew. To obtain an equivalent level of safety and meet the intent of 91.203, we propose that documents deemed appropriate for this aircraft by the FAA will be co-located with the crew at the ground control station and available for inspection upon request. In order to identify the aircraft, we propose that the information found on airworthiness and registration certificates be permanently affixed to the aircraft via placard containing the following information plus the word EXPERIMENTAL to satisfy the requirement of 14 CFR 45.23.

14 C.F.R. 91.205(b) Required Instruments.

This regulation provides for a minimum set of operational instruments for all powered aircraft operating VFR. The Command and Control station for the sUAS fulfills the operational equivalent.

14 CFR Subpart E 91.401- 91.417 - Maintenance, Preventive Maintenance, Alterations

The regulation provides that the operator is primarily responsible for maintaining the aircraft in an airworthy condition, including compliance with part 39 and 43. Paragraphs 91.407 and 91.409 require that the aircraft be approved for return to service by a person authorized under 43.7,after maintenance and inspection. It is our intention that the PIC performs maintenance and inspection of the aircraft and be authorized to approve the aircraft for return to service. The PIC will ensure that the aircraft is in an airworthy condition prior to every flight and in addition conduct detailed inspections after every two hours of flight. Maintenance performed by the PIC is limited to repairing small cracks, replacing a propeller, checking electrical connections and updating software and firmware for the on-board computer. All other maintenance will be performed by the manufacturer or their designated repair facility. The PIC will document work performed in accordance with 91.417. We feel that due to the size, construction, and simplicity of the aircraft, the PIC can ensure an equivalent level of safety.

PUBLISHABLE SUMMARY

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

Applicant seeks an exemption from the following rules:

14 C.F.R. Part 21
14 C.F.R. 45.23(b)
14 C.F.R. 61.113(a) & (b)
14 C.F.R. 91.7(a)
14 C.F.R. 91.9(b) (2)
14 C.F.R. 91.109
14 C.F.R. 91.119
14 C.F.R. 91.121
14 C.F.R. 91.151(a)
14 C.F.R. 91.203(a) & (b)
14 C.F.R. 91.205(b)
14 C.F.R. 91.401 – 91.417

US Drone Aviation proposes to operate commercially a small unmanned aircraft system (sUAS) (25lbs or less).

Approval of exemptions for US Drone Aviation LLC a Wyoming Corporation will allow commercial operations of sUAS' in the oil and natural gas well inspection industry, and other commercial activities, enhancing safety by removing the risk of physical harm to inspectors otherwise exposed to potentially dangerous conditions at the well heads. In contrast, a sUAS weighing fewer than 25lbs. and powered by batteries eliminates virtually all of that risk to the personnel involved and provides a maintenance record for review by experts remotely, if required.

The operation of small UASs, weighting less than 25lbs., conducted in the strict conditions outlined, will provide an equivalent level of safety supporting the grant of the exemptions requested herein. These lightweight aircraft operate at slow speeds, close to the ground, and in a low risk, low population environment and, as a result, are far safer than conventional operations conducted with helicopters and fixed-wing aircraft operating in close proximity to the ground and people. The intended use of the sUAS operations contemplated by this petition is in the public interest because it clearly satisfies exemplary uses of sUAS to replace work by humans that is potentially dangerous, and at the same time provides an equivalent or greater level of safety.