September 2, 2014

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

Re: Exemption Request Under Section 333 of the FAA Reform Act and Part 11 of the Federal Aviation Regulations

Dear Sir or Madam:

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (the "Reform Act") and 14 C.F.R. Part 11, Industrial Aerobotics ("IA"), the developer and operator of the SD02 Unmanned Aircraft System ("UAS" or "SD02"), seeks an exemption from the Federal Aviation Regulations ("FARs") discussed later in this section.

The requested exemption would permit commercial operation of IA's SD02, which weighs 5.5lbs to 23.5 lbs (based on variable installed sensors) and performs precision aerial surveys that consist of still photographs and moving images taken by onboard cameras. The SD02 takes a series of high quality, still digital images that are used to provide inspection data for evaluation by a client. Applications for these UAS devices and associated data processing functions include agriculture, power utility, and professional surveying. Use of the SD02 for aerial inspections and data gathering reduces the need to operate conventional aircraft for the same purpose, reduces risk to personnel, and provides very high quality imagery at a fraction of the cost of inspections and surveys using conventional aircraft. These savings result in enhanced efficiency and productivity for the affected activities, as well as environmental benefits and safety risk reductions.[1] Operations under the exemption will be subject to strict operating requirements and conditions to ensure at least an equivalent level of safety to currently authorized operations using manned aircraft and under conditions as may be modified by the FAA as required by Section 333.

As described more fully below, the requested exemption would authorize commercial operations of aerial surveys and inspections using the SD02, which at up to 22.5 lbs. is small in size.

The SD02 will be operated under controlled conditions at low altitude in airspace that is limited in scope, as described more fully herein; it will have automated control features, as described below. The SD02 also will be operated by an individual who has passed an FAA approved training exam, certifications and a required manufacturer's training program for the UAS.

Finally, the airspace in which the UAS will operate will be Class E or Class G, under 400', over privately owned, owner authorized land.

IA respectfully submits that because this small, unmanned aerial vehicle—the SD02—will be used in lieu of comparatively hazardous operations now conducted with fixed wing, and rotary conventional aircraft, the FAA can have confidence that the operations will achieve at least an equivalent level or greater level of safety. Approval of this exemption would thereby enhance safety and fulfill the Secretary of Transportation's (the FAA Administrator's) responsibilities under Section 333(c) of the Reform Act to "establish requirements for the safe operation of such aircraft systems in the national airspace system."

The name and address of the applicant are:

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The regulations from which the exemption is requested are as follows:

- 14 C.F.R. Part 21, Subpart H²Airworthiness Certificates & 14 C.F.R. § 91.203(a)(1).
- 14 C.F.R. Part 27: Airworthiness Standards: Normal Category Rotorcraft. Aircraft Marking and Identification Requirements: 14 C.F.R. §§ 91.9(c), 45.23(b) and 45.27(a).
- 14 C.F.R. § 61.113 (a) & (b): Private Pilot Privileges and Limitations: Pilot in Command.
- 14 C.F.R. § 91.9(b)(2): Civil Aircraft Flight Manual in the Aircraft.
- 14 C.F.R. § 91.7(a): Civil Aircraft Airworthiness.
- 14 C.F.R. § 91.103: Preflight Action.
- 14 C.F.R. § 91.109(a): Flight Instruction.
- 14 C.F.R. § 91.119: Minimum Safe Altitudes.
- 14 C.F.R. § 91.121 Altimeter Settings.
- 14 C.F.R. § 91.151(a): Fuel Requirements for Flight in VFR Conditions.
- 14 C.F.R. § 91.203 (a) & (b): Carrying Civil Aircraft Certification and Registration.
- 14 C.F.R. §§ 91.405(a); 91.407(a)(1); 91.409(a)(2); 91.417 (a) & (b): Maintenance Inspections.

THE APPLICABLE LEGAL STANDARD UNDER SECTION 333

IA submits that grant of this exemption application for use of the SD02 in precision aerial surveys will advance the Congressional mandate in Section 333 of the Reform Act to accelerate the introduction of UASs into the national airspace system ("NAS") if it can be accomplished safely. This law directs the Secretary of Transportation to consider whether certain UASs may operate safely in the NAS before completion of the rulemaking required under Section 332 of the Reform Act. In making this determination, the Secretary is required to determine which types of UASs do not create a hazard to users of the NAS or the public or pose a threat to national security in light of the following:

- The UAS's size, weight, speed, and operational capability;
- Operation of the UAS in close proximity to airports and populated areas; and
- Operation of the UAS within visual line of sight of the operator.

Reform Act § 333(a)(1). If the Secretary determines that such vehicles "may operate safely in the national airspace system, the Secretary shall establish requirements for the safe operation of such aircraft in the national airspace system." *Id.* §333(c)

IA submits that this provision places a duty on the Administrator to not only process applications for exemptions under Section 333, but for the Administrator, if he deems the conditions proposed herein require modification in order to allow approval, to supply conditions for the safe operation of the UAS. IA welcomes the opportunity to consult with FAA staff in order to address any issues or concerns that this proposal may raise that they believe may require modification.

The Federal Aviation Act expressly grants the FAA the authority to issue exemptions. This statutory authority, by its terms, includes exempting civil aircraft, as the term is defined under §40101 of the Act, from the requirement that all civil aircraft must have a current airworthiness certificate and those regulations requiring commercial pilots to operate aircraft in commercial service:

> The Administrator may grant an exemption from a requirement of a regulation prescribed under subsection (a) or (b) of this section or any of sections - 4 – 44702-44716 of this title if the Administrator finds the exemption is in the public interest.

49 U.S.C. §44701(f). *See also* 49 USC §44711(a); 49 USC §44704; 14 CFR §91.203(a)(1).

The grant of the requested exemption is in the public interest based on the clear direction in Section 333 of the Reform Act; the additional authority in the Federal Aviation Act, as amended; the strong equivalent level of safety surrounding the proposed operations; and the significant public benefit, including enhanced safety and cost savings associated with transitioning to UASs for aerial survey photography. Accordingly, the applicant respectfully requests that the FAA grant the requested exemption without delay.

DESCRIPTION OF PROPOSED OPERATIONS

The available SD02 Manual describes, in detail, the policies and procedures for Petitioner's proposed sUAS operations. To assist the FAA in its safety assessment of Petitioner's proposed sUAS operations, below is a summary of operational limitations and conditions which will ensure an equivalent or higher level of safety to operations conducted under current regulatory guidelines:

1. The sUAS will weigh less than 26 lbs.

2. Flights will be operated within line-of-sight of a pilot and observer.

3. Flights will be terminated at 25% power reserve.

4. Flights will be operated at an altitude of no more than 400 feet above ground level ("AGL").

5. Minimum crew for each operation will consist of the sUAS Pilot and an Observer.

6. The sUAS pilot will be an FAA licensed airman with a private and/or commercial pilot's certificate with rotorcraft rating.

7. The sUAS pilot will be Pilot in Command (PIC). If a pilot certificate holder other than the sUAS Pilot is present and possesses the necessary PIC qualifications, that person can also be designated as PIC.

8. The UAS will only operate within a confined "Sterile Area" as defined in the Manual.8

9. A briefing will be conducted in regard to the planned sUAS operations prior to each day's activities. It will be mandatory that all personnel who will be performing duties within the boundaries of the safety perimeter be present for this briefing.

10. Pilot and Observer will have been trained in operation of UAS generally and will have received up-to-date information on the particular UAS to be operated, as required in the Manual.

11. Observer and Pilot will at all times be able to communicate by voice and/or text.

12. Written and/or oral permission from the relevant property holders will be obtained.

13. All required permissions and permits will be obtained from territorial, state, county or city jurisdictions, including local law enforcement, fire, or other appropriate governmental agencies.

14. If the sUAS loses communications or loses its GPS signal, the sUAS is equipped with advanced safety features that will allow the sUAS to automatically return to a pre-determined safe location.

15. The sUAS will have the capability to abort a flight in case of unpredicted obstacles or emergencies.

REGULATIONS FROM WHICH EXEMPTION IS REQUESTED

The Federal Aviation Act expressly grants the FAA the authority to issue exemptions. By its terms, this statutory authority includes exempting civil aircraft, as the term is defined under §40101 of the Act, including sUASs, from its safety regulations and minimum standards when the Administrator decides a requested exemption is in the public interest.

Petitioner seeks an exemption from several interrelated provisions of 14 C.F.R. Parts 21, 45 and 91 for purposes of conducting aerial surveys and inspections using sUAS. Listed below are:

(1) the specific sections of 14 C.F.R. for which exemption is sought; and
(2) the operating procedures and safeguards that Petitioner has established which will ensure a level of safety equal to or better than the rules from which exemption is sought.

A. 14 C.F.R. Part 21, Subpart H²Airworthiness Certificates & 14 C.F.R. § 91.203(a)(1).

This petition seeks an exemption from 14 C.F.R. Part 21, Subpart H, which establishes the procedural requirements for the issuance of airworthiness certificates as required by 14 C.F.R. §91.203(a)(1). Given the size and limited operating area associated with the sUAS to be utilized by the Petitioner, an exemption from Part 21 Subpart H meets the requirements of an equivalent level of safety under Part 11 and Section 333 of the Reform Act.

The Federal Aviation Act (49 U.S.C.§ 44701(f)) and Section 333 of the Reform Act both authorize the FAA to exempt aircraft from the requirement for an airworthiness certificate, upon consideration of the size, weight, speed, operational capability, and proximity to airports and populated areas of the particular UAS.

In all cases, an analysis of these criteria demonstrates that the sUAS operated without an airworthiness certificate, in the restricted environment and under the conditions proposed will be at least as safe, or safer, than a conventional rotorcraft operating with an airworthiness certificate without the restrictions and conditions of the proposed sUAS operations.

Equivalent Level of Safety

The sUAS to be operated hereunder is less than 26 lbs. fully loaded, carries neither a pilot nor passenger, carries no explosive materials, and operates exclusively within a secured area as set out in the Manual. Unlike other civil aircraft, the proposed operations in this petition for exemption will be controlled and monitored by the operator, pursuant to the Manual's requirements. Moreover, the FAA will have advance notice of all operations conducted under this exemption.

These safety enhancements, which already apply to civil aircraft operated in connection with existing inspection operations, provide a greater degree of safety to the public and property owners than conventional operations conducted with airworthiness certificates issued under 14 C.F.R. Part 21, Subpart H. Lastly, application of these same criteria demonstrates that there is no credible threat to national security posed by the sUAS, due to its size, speed of operation, location of operation, lack of explosive materials, and inability to carry a substantial external load.

B. 14 C.F.R. Part 27: Airworthiness Standards: Normal Category Rotorcraft.

14 C.F.R. Part 27 sets forth the procedural requirements for airworthiness certification of normal category rotorcraft. To the extent the Petitioner's sUASs would otherwise require certification under Part 27, as a rotorcraft, Petitioner requests an exemption from Part 27’s airworthiness standards for the same reasons identified in the exemption request from 14 C.F.R. Part 21, Subpart H.

C. Aircraft Marking and Identification Requirements: 14 C.F.R. §§ 91.9(c), 45.23(b) and 45.27(a).

This petition seeks an exemption from the aircraft marking and identification requirements of 14 C.F.R. §§ 91.9(c), 45.23(b) and 45.27(a).

14 C.F.R. § 91.9(c), Civil aircraft flight manual, marking, and placard requirements, provides that:

No person may operate a U.S.-registered civil aircraft unless that aircraft is identified in accordance with part 45 of this chapter.

14 C.F.R. § 45.23(b), Markings of the Aircraft, states:

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

14 C.F.R. § 45.27(a), Rotorcraft, states:

Each operator of a rotorcraft must display on that rotorcraft horizontally on both surfaces of the cabin, fuselage, boom, or tail the marks required by §45.23.

Exemption from § 45.23(b) is warranted because the sUAV has no entrance to the cabin, cockpit, or pilot station on which the word "Experimental" can be placed. Moreover, given the size of the sUAV, two-inch lettering would be impossible. The word "Experimental" will be placed on the fuselage in compliance with § 45.29(f).

Given the nature of the specific relief sought by this exemption request, Petitioner requires relief from the associated marking and identification requirements of § 45.27(a) and § 91.9(c), which would require compliance with § 45.23(b).

Equivalent Level of Safety

An equivalent level of safety for exemptions to the aircraft marking and identification requirements of §§ 91.9(c), 45.23(b) and 45.27(a), will be provided by having the sUAV marked on its fuselage as required by §45.29(f) where the pilot, observer, and others working with the sUAV will see the identification of the UAS as "Experimental." Additionally, Petitioner will ensure compliance with any requests of sUAS marking by the FAA.

The FAA has issued the following exemptions to the aircraft marking requirements of § 45.23(b): Exemptions Nos. 10700, 8738, 10167 and 10167A.

D. 14 C.F.R. § 61.113 (a) & (b): Private Pilot Privileges and Limitations: Pilot in Command.

This petition seeks an exemption from the private pilot privileges and limitations of § 61.113 (a) & (b), which states:

Private Pilot Privileges and Limitations: Pilot in Command.

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

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

(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.

Section 61.113(a) limits private pilots to being in command of non-commercial flights. Section 61.113(b)(1) provides an exception that allows a private pilot to command an aircraft without passengers or property, in connection with business or employment if "[t]the flight is only incidental to that business or employment." That exception likely does not apply to the proposed operations under this petition for exemption, as the flights are not incidental to the proposed aerial surveys and inspections but rather essential to it. Accordingly, this petition seeks an exemption to § 61.113(a)'s commercial limitation and/or § 61.113(b)(1)'s requirement that the flight be incidental to the business to benefit from the exception.

Equivalent Level of Safety

As required by the Manual, Petitioner's sUAS operators acting as PIC will hold a commercial and/or private pilot certification and have a rotorcraft rating. Because the sUAS will not carry a pilot or passengers, the proposed operations can achieve the equivalent level of safety to § 61.113 (a) and (b), by requiring the PIC operating the sUAS to have either a commercial and/or private pilot certification with rotorcraft rating.

Unlike a conventional aircraft that carries the pilot and passengers, the sUAS is remotely controlled with no living thing on board. Moreover, the area of operation is controlled and restricted, and all flights are planned and coordinated in advance as set forth in the Manual.

The level of safety provided by the requirements included in the Manual exceeds that provided by a single individual holding a commercial pilot's certificate operating a conventional aircraft in accordance with § 61.113 (a) & (b). The risks associated with the operation of small, lightweight UAS are diminished from the level of risk associated with commercial operations contemplated by Part 61 when drafted, that allowing the proposed operations in this petition for exemption with a private pilot as the PIC exceeds the present level of safety achieved by § 61.113 (a) & (b).

E. 14 C.F.R. § 91.9(b)(2): Civil Aircraft Flight Manual in the Aircraft.

This petition seeks an exemption from the flight manual requirements of 14 C.F.R. § 91.9(b)(2), which states:

(b) No person may operate a U.S.-registered civil aircraft

(2) For which an Airplane or Rotorcraft Flight Manual is not required by §21.5 of this chapter, unless there is available in the aircraft a current approved airplane or Rotorcraft Flight Manual, approved manual material, markings, and placards, or any combination thereof.

Given its size, configuration, and load capacity, the sUAS has no ability to carry such a manual on the aircraft, not only because there is no pilot on board, but because there is simply no room or capacity to carry such an item on the aircraft.

Equivalent Level of Safety

The safety related purpose of this manual requirement can be equally satisfied by maintaining the sUAS flight manual at the ground control point where the pilot flying the sUAS will have immediate access to it. Accordingly, Petitioner requests an exemption from § 91.9(b)(2)'s flight manual requirements, on the condition that the sUAS flight manual be available at the control point during each operation.

The FAA has issued the following exemptions to this regulation: Exemption Nos. 8607, 8737, 8738, 9299, 9299A, 9565, 9565B, 10167, 10167A, 10602, 32827, and 10700.

F. 14 C.F.R. § 91.7(a): Civil Aircraft Airworthiness.

This petition seeks an exemption from 14 C.F.R. § 91.7(a), which requires that a civil aircraft be in an airworthy condition to be operated. Inasmuch there will be no airworthiness certificate issued for the sUAS, should this exemption be granted, no FAA regulatory standard will exist for determining airworthiness.

Equivalent Level of Safety

IA pilots that will be flying the sUAS have over 12,000 flight hours and a stellar safety record. Given the size of the sUAS and the requirements contained in the Manual for maintenance and use of safety checklists prior to each flight, an equivalent level of safety will be provided.

The FAA has issued the following exemptions to this regulation: Exemption Nos. 8607, 8737, 8738, 9299, 9299A, 9565, 9565B, 10167, 10167A, 10602, 32827, and 10700.

G. 14 C.F.R. § 91.103: Preflight Action

This petition seeks an exemption from m § 91.103, which requires a PIC to become familiar with specific information before each flight, including information contained in the FAA - approved Flight Manual on board the aircraft. Inasmuch as an FAA approved flight manual will not be provided for the sUAS, an exemption will be needed.

Equivalent Level of Safety

An equivalent level of safety will be provided by following the Aircraft Operations Manual comprehensive preflight checklist. The PIC will take all actions, including reviewing weather, flight battery requirements, landing and takeoff distances, and aircraft performance data, before initiation of flight.

H. 14 C.F.R. § 91.109(a): Flight Instruction.

This petition seeks an exemption from 14 C.F.R. § 91.109(a), which provides that "[n]o person may operate a civil aircraft (except a manned free balloon) that is being used for flight instruction unless that aircraft has fully functioning dual controls." sUASs and remotely piloted aircraft, by their design do not have fully functional dual controls. Instead, flight control is accomplished through the use of a control box that communicates with the sUAS via radio communications.

Equivalent Level of Safety

Given the size and speed of the sUAS, an equivalent level of safe training can still be performed without dual controls because no pilot or passengers are aboard the sUAS, and all persons will be a safe distance away should the sUAS experience any difficulties during flight instruction.

The FAA has approved exemptions for flight training without fully functional dual controls for a number of aircraft and for flight instruction in experimental aircraft. See Exemption Nos. 5778K & 9862A.

I. 14 C.F.R. § 91.119: Minimum Safe Altitudes.

This petition seeks an exemption from the minimum safe altitude requirements of 14 C.F.R. § 91.119. Section 91.119 prescribes the minimum safe altitudes under which aircraft may not operate, including 500 feet above the surface and away from any person, vessel, vehicle, or structure in non-congested areas. See 14 C.F.R. § 91.119(c). Section § 91.119(d)(1) allows for a helicopter to operate at less than those minimum altitudes when it can be operated "without hazard to persons or property on the surface," provided that "each person operating the helicopter complies with any routes or altitudes specifically prescribed for helicopters by the FAA

To provide the intended inspections, the sUAS will normally need to be operated within a range of approximately 50 feet from the utility-power generation line being inspected. Accordingly, due to the nature of the proposed operations, the PIC and the designated spotter may at times be less than 500 feet away from structures during the operation, and an exemption is therefore required.

Equivalent Level of Safety

Compared to flight operations with rotorcraft weighting far more than the maximum 26 lbs. proposed herein, any risk associated with these operations is far less than those presently presented with conventional aircraft. An equivalent level of safety will be achieved given the size, weight, speed of the UAS as well as the location where it is operated. As set forth in the Manual, the sUAS will be operated in a restricted area, where buildings and people will not be exposed to operations without their pre-obtained consent. No flight will be taken without the permission of the property owner and/or local officials. Because of the advance notice to the property owner and participants, all affected individuals will be aware of the planned flight operations as set forth in the Manual. Furthermore, by operating at such lower altitudes, the sUAS will not interfere with other aircraft that are subject to the minimum safe altitude regulations.

J. 14 C.F.R. § 91.121 Altimeter Settings.

This petition seeks an exemption from 14 C.F.R. § 91.121, which requires a person operating an aircraft to maintain cruising altitude or flight level by reference to an altimeter that is set to the elevation of the departure airport or barometric pressure. An exemption is required because the sUAS does not have a barometric altimeter, but rather a GPS altitude read out.
Equivalent Level of Safety

An equivalent level of safety will be achieved by following the procedures set forth in the Manual. As prescribed in the Manual, the operator will confirm the altitude of the launch site shown on the GPS altitude indicator before flight. Moreover, the PIC will use the GPS altitude indicator to constantly monitor the sUASs height, thus ensuring operation at safe altitudes.

K. 14 C.F.R. § 91.151(a): Fuel Requirements for Flight in V FR Conditions.

This petition seeks an exemption from 14 C.F.R. § 91.151(a)'s fuel requirements for flight in VFR conditions. Section 91.151 states:

> (a) No person may begin a flight in an airplane under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed
>
> (1) During the day, to fly after that for at least 30 minutes; or
> (2) At night, to fly after that for at least 45 minutes.

The powering source for the sUAS provides approximately 25 minutes of powered flight. An exemption from the 30 minute reserve requirement in 14 CFR §91.151 is therefore required.

Equivalent Level of Safety

An equivalent level of safety can be achieved by limiting flights to 25% of battery power, whichever happens first. This restriction would be more than adequate to return the sUAS to its planned landing zone from anywhere within its limited operating area. Operation of the sUAS with less than 30 minutes of reserve fuel does not engender the type of risks that Section 91.151(a) was intended to alleviate given the size and speed of the small UAS. Moreover, operation will be limited to controlled areas where only people and property owners, or official representatives who have signed waivers will be allowed.

This request for exemption falls within the scope of prior exemptions. See e.g. Exemption 10673 (allowing Lockheed Martin Corporation to operate without compliance with § 91.151 (a)); see also Exemptions 2689F, 5745, 10673, and 10808.

L. 14 C.F.R. § 91.203 (a) & (b): Carrying Civil Aircraft Certification and Registration.

This petition seeks an exemption from civil aircraft certification and registration requirements of 14 C.F.R. § 91.203 (a) and (b). The regulation provides in pertinent part:

(a) Except as provided in §91.715, no person may operate a civil aircraft unless it has within it the following:

(1) An appropriate and current airworthiness certificate«

(b) No person may operate a civil aircraft unless the airworthiness certificate required by paragraph (a) of this section or a special flight authorization issued under §91.715 is displayed at the cabin or cockpit entrance so that it is legible to passengers or crew.

In addition to the fact that Petitioner is seeking an exemption from the airworthiness certificate requirements, an exemption to this regulation is necessary because (a) the sUAS's load capacity and size does not allow it to carry certification and registration documents; (2) the sUAS does not have a cabin or cockpit entrance at which the documents could be displayed; and (3) there are no passengers or crew for whom the certificates need be displayed.

Equivalent Level of Safety

To the extent these regulations are applicable to the proposed sUAS operations, an equivalent level of safety will be achieved by keeping these documents at the ground control point where the pilot flying the sUAS will have immediate access to them.

The FAA has issued numerous exemptions to this regulation. A representative sample of other exceptions includes Exemption Nos. 9565, 9665, 9789, 9789A, 9797, 9797A, 9816A, and 10700.

M. 14 C.F.R. §§ 91.405(a); 91.407(a)(1); 91.409(a)(2); 91.417 (a) & (b):Maintenance Inspections.

This petition seeks an exemption from the maintenance inspection requirements of 14 C.F.R. §§ 91.405(a); 91.407(a)(1); 91.409(a)(2); 91.417 (a) & (b). These regulations specify maintenance and inspection standards in reference to 14 C.F.R. Part 43. See, e.g., 14 C.F.R. § 91.405(a) (stating that each owner or operator of an aircraft "[s]hall have that aircraft inspected as prescribed in subpart E of this part and shall between required inspections . . . have discrepancies repaired as prescribed in part 43 of this chapter"). An exemption to these regulations is needed because Part 43 and these sections apply only to aircraft with an airworthiness certificate, which the sUAS will not have.

Equivalent Level of Safety

An equivalent level of safety will be achieved because maintenance and inspections will be performed in accordance with the Aircraft Operations Manual as referenced in the available Manual. As provided in the Manual, the operator will ensure that the UAS is in working order prior to initiating flight, perform required maintenance, and keep a log of any maintenance performed. The operator is the person most familiar with the aircraft and best suited to maintain the aircraft in an airworthy condition to provide the equivalent level of safety.

If mechanical issues arise, the UAS can land immediately and will be operating from no higher than 400 feet AGL. Moreover, the UAS's small size, carrying capacity, and the fact that flight operations will only take place in restricted areas for limited periods of time, create less risk than the same factors associated with conventional fixed-wing aircraft and rotorcraft performing the same operation.

PUBLIC INTEREST

Consistent with the requirements of 14 C.F.R. §11.81(d), Petitioner offers the following reasons why granting this petition for exemption is in the public interest, i.e., how granting it would benefit the public as a whole.

Approval of exemptions allowing commercial operations of small and lightweight sUAS in the utility aerial services industry benefits the public as a whole in the following ways:

- It helps fulfill Congress' goal in passing Section 333(a) through (c) of the Reform Act, namely, the FAA Administrator's assessment of whether certain UAS may operate safely in the National Airspace System before completion of the rulemaking required under Section 332 of the Reform Act.

- The operation significantly improves safety and reduces risk by alleviating human exposure to danger associated with current aerial survey and inspection methods, namely, full size helicopters. Manned helicopters performing utility-power generation inspections and patrols have experienced an exceedingly high number of accidents and fatalities. The public's interest is furthered by reducing human exposure to death or serious injury associated with manned aircraft performing utility-power generation inspections and patrols.

- Petitioner's sUASs are battery powered and create no emissions. If Petitioner's sUAS crashes, there is no fuel to ignite and explode. Any impact of Petitioner's lightweight sUASs is, obviously, far less than a full size helicopter. The public's interest is furthered by minimizing ecological impact of an accident and by reducing human exposure to potentially harmful emissions associated with manned aircraft.

- Aerial surveys are valuable tools for utility-power generation inspections. However, problems with safety, cost, statistical integrity, and logistics continue to impede aerial surveys and inspections from conventional manned aircraft. The use of sUAS addresses these problems and is a powerful tool for performing a wide-range of utility-power generation inspection and patrol applications. The public as a whole will benefit from the safer and more cost-effective utility aerial services that sUAS operations provide.

PRIVACY

All flights will occur over Petitioner's property or the Utility Customer's property with the Utility Customer's prior consent and knowledge.

FEDERAL REGISTAR 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:

Industrial Aerobotics, LLC. seeks an exemption from the following rules:

14 CFR Part 21, Subpart H; 14 CFR Part 27; 14 CFR 45.23(b); 14 C.F.R. § 61.113 (a) & (b); 14 CFR 91.7(a); 14 CFR 91.9(b)(2); 14 CFR 91.103; 14 CFR 91.109(a); 14 CFR 91.119; 14 CFR 91.121; 14 CFR 91.151(a); 14 CFR 91.203 (a) & (b); 14 CFR 91.405(a); 14 CFR 91.407(a)(1); 14 CFR 91.409(a)(2); 14 CFR 91.417 (a) & (b).

Approval of exemptions will allow commercial operations of small and lightweight unmanned aircraft ("sUAS") in the utility-power inspection industry will enhance safety by reducing risk. Conventional operations in this industry using manned operations, rotorcraft or fixed-wing aircraft present the risks associated with vehicles that weigh in the neighborhood of several thousand pounds and carrying large amounts of fuel. Such aircraft must fly to and from the survey or inspection location and operate at low altitudes.

In contrast, a sUAS weighing fewer than 26 lbs. and powered by batteries eliminates virtually all of that risk, given the reduced mass and lack of combustible fuel carried on board. The sUAS is transported, not flown, to the designated survey area and set up. The sUAS carries no passengers or crew and, therefore, does not expose them to the risks associated with manned aircraft flights.

The operation of small UASs, weighting less than 26 lbs., provides an equivalent level of safety and thus supports the grant of the exemptions requested herein, including exempting the applicant from the requirements of Part 21 and allowing commercial operations. These lightweight sUASs operate at slow speeds, close to the ground, and in a sterile environment. As a result, they are far safer than conventional aerial survey and inspection operations conducted with fixed-wing aircraft or helicopters.

CONCLUSION

Satisfaction of the criteria provided in Section 333 of the Reform Act of 2012 - size, weight, speed, operating capabilities, proximity to airports and populated areas, and operation within visual line of sight and national security²provides more than adequate justification for the grant of the requested exemptions allowing commercial operation of Industrial Aerobotics, LLC sUAS in the utility-power transmission inspection and patrol industry in accordance with the available Manual

If additional information is required, or if you have any questions regarding this Petition for Exemption, please contact the undersigned at:

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Very truly yours,

John J. Wolcott