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August 14, 2014

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

Re: Petition of Wilbur-Ellis Company for Exemption Pursuant to Section 333 of the FAA Reform Act

Gentlemen:

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (“Reform Act”) and 14 C.F.R. Part 11, Wilbur-Ellis Company (“Petitioner”), an international company with a substantial agribusiness division based in San Francisco, California, hereby applies for an exemption from Federal Aviation Regulations (“FARs”) identified below, to allow commercial agricultural operation of small unmanned aerial vehicles (*i.e.*, small unmanned aircraft systems or “sUAS”).

This exemption is in accordance with protocols outlined in this petition for exemption, the enclosed Wilbur-Ellis Precision Agriculture Survey and Inspection Operations and Flight Manual (“Manual”)¹, the HoneyComb AgDrone UAS Operation Manual (“HoneyComb Manual”), and any other requirements established by the FAA pursuant to Section 333 of the Reform Act.

¹ Petitioner submits this Manual and the HoneyComb Manual as a Confidential document under 14 C.F.R. § 11.35(b), as the entire Manual and HoneyComb Manual contain confidential commercial and proprietary information that the Petitioner has not and will not share with others. The Manual and HoneyComb Manual contain operating conditions, procedures and information that are not available to the public and are protected from release under the Freedom of Information Act 5 U.S.C. § 552 *et seq.*

For your convenience, this petition is organized as follows:

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 - B.** Aircraft Marking and Identification Requirements: 14 C.F.R. §§ 91.9(c), 45.23(b) and 45.27(a).
 - C.** 14 C.F.R. § 61.113 (a) & (b): Private Pilot Privileges and Limitations: Pilot in Command.
 - D.** 14 C.F.R. § 91.9(b)(2): Civil Aircraft Flight Manual in the Aircraft.
 - E.** 14 C.F.R. § 91.7(a): Civil Aircraft Airworthiness.
 - F.** 14 C.F.R. § 91.103: Preflight Action.
 - G.** 14 C.F.R. § 91.109(a): Flight Instruction.
 - H.** 14 C.F.R. § 91.119: Minimum Safe Altitudes.
 - I.** 14 C.F.R. § 91.121 Altimeter Settings.
 - J.** 14 C.F.R. § 91.151(a): Fuel Requirements for Flight in VFR Conditions.
 - K.** 14 C.F.R. § 91.203 (a) & (b): Carrying Civil Aircraft Certification and Registration.
 - L.** 14 C.F.R. §§ 91.405(a); 91.407(a)(1); 91.409(a)(2); 91.417 (a) & (b): Maintenance Inspections.
- VI.** Public Interest
- VII.** Privacy
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- IX.** Conclusion

I. Petitioner's Description

Established in 1921, Petitioner is an international marketer and distributor of agricultural products, animal feed and specialty chemicals and ingredients. Petitioner's Agribusiness Division addresses crop challenges and individual farmer/grower needs with tailored solutions in crop protection, nutrition and seed technology.² Petitioner utilizes advanced crop production technology and has extensive experience in pest diagnosis, yield monitoring, soil analysis, water management, and agricultural nutrition.

Consistent with the requirements of 14 C.F.R. §11.81, Petitioner provides the following information in support of its petition for exemption:

The name and address of the Petitioner is:

Wilbur-Ellis Company
Attn: General Counsel
345 California Street, 27th Floor, San Francisco, CA 94104
Phone: (415) 772-4000
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II. Relevant Statutory Authority

This petition for exemption is submitted to fulfill Congress' goal in passing Section 333(a) through (c) of the Reform Act. In the Reform Act, Congress directed the FAA "to safely accelerate the integration of civil unmanned aircraft systems into the national airspace system" and, under Section 333 of that law, directed the Secretary of Transportation ("FAA Administrator" or "Secretary") to consider whether certain unmanned aircraft systems ("UAS") may operate safely in the National Airspace System ("NAS") before completion of the rulemaking required under Section 332 of the Reform Act.³

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

² Such growers and farmers are hereinafter referred to as "Agricultural Customers."

³ Reform Act § 333(a).

- Operation of the UAS within visual line-of-sight of the operator.⁴

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” (Emphasis added).⁵

In addition, the FAA Administrator has general authority to grant exemptions from its safety regulations and minimum standards when the Administrator decides a requested exemption is in the public interest. *See* 49 U.S.C. § 44701(f) (authorizing the grant of exemptions from a requirement of regulations prescribed pursuant to section 44701(a)–(b) and sections 44702–44716). A party requesting an exemption must explain the reasons why the exemption (1) would benefit the public as a whole, and (2) would not adversely affect safety (or how it would provide a level of safety at least equal to the existing rules). *See* 14 C.F.R. § 11.81; FAA, *Petition for Exemptions*.

III. Qualification for Approval Under Section 333 of the Reform Act

The proposed agricultural operations in this petition for exemption qualify for expedited approval under Section 333 of the Reform Act. Each of the statutory criterial and other potentially relevant factors are satisfied.

The proposed operations would permit the use of small and relatively inexpensive UAS under controlled conditions in airspace that is (1) limited; (2) predetermined; (3) controlled as to access; and (4) would provide an increased level of safety beyond that existing when fixed or rotor wing aircraft are used to accomplish the same purpose.

Petitioner’s sUASs are fixed-wing aircraft, weighting 6 lbs. or less, including payload. They operate under normal conditions at a speed of no more than 48 knots and have the capability to operate in either Automatic or Fly-by-wire mode as described in the HoneyComb Manual.

Petitioner’s sUASs will operate in line of sight and will operate only within a sterile area described in the enclosed Manual.⁶ Such operations will insure that the sUASs will “not create a hazard to users of the National Airspace System or the public.”

Given the small size of the sUASs involved and the restricted sterile environment within which they will operate, this petition for exemption falls squarely within that zone of safety *i.e.*, an equivalent level of safety, in which Congress envisioned that the FAA must, by exemption,

⁴ *Id.* at § 333(b)(1).

⁵ *Id.* § 333(c).

⁶ *See* Manual Section 7.

allow commercial operations of UASs to commence immediately. Also, due to the size of the sUASs and the restricted areas in which the sUASs will operate, approval of the application presents no national security issue.

Considering the clear direction in Section 333 of the Reform Act, the authority contained in the Federal Aviation Act, as amended, the equivalent level of safety surrounding the proposed operations, and the significant public benefit, including enhanced safety and reduction in environmental impacts (including reduced emissions associated with allowing sUASs for the proposed agricultural operations), the grant of the requested exemptions is also in the public interest.

Accordingly, Petitioner respectfully requests that the FAA grant the requested exemption without delay.

IV. Description of Proposed Operations

The enclosed 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. Each sUAS will weigh less than 6 lbs.
2. Flights will be operated within line of sight of a pilot and/or observer.
3. Subject to prevailing wind conditions, maximum total flight time will be 37 minutes. Flights will be terminated at 25% battery reserve should that occur prior to the 37 minute limit.
4. Flights will be operated in Class G airspace at an altitude of no more than 400 feet above ground level ("AGL").
5. Minimum crew for each operation will consist of an applicable sUAS's Pilot and a Visual Observer.
6. Each sUAS pilot will have (i) a third class medical certificate⁷ and (ii) a commercial and /or private pilot certification or will have successfully completed,

⁷ Each applicable Visual Observer will also hold a third class medical certificate. See Manual Section 6.

at a minimum, FAA private pilot ground instruction and passed the FAA private pilot written examination or FAA recognized equivalent.⁸

7. A sUAS pilot will be Pilot in Command (PIC) for each sUAS. 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. PIC will file NOTAM with appropriate Air Traffic Control facility at least 1 hour prior to conducting the scheduled sUAS survey operation.
9. A sUAS pilot will maintain an appropriate level of recent pilot experience in the UAS being operated or in a flight simulation training device. At a minimum, the PIC will have conducted three takeoffs and three landings in the specific UAS within the previous 90 days.⁹
10. The sUASs will only operate within a confined “Sterile Area” as defined in the Manual.¹⁰
11. A briefing will be conducted in regard to an sUAS’s planned 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.
12. The operator will file a FAA Form 7711-1 or its equivalent, as modified in light of the requested exemption, with the appropriate Flight Standards District Office. Petitioner proposes to file the FAA Form 7711-1 no less than 7 days prior to conducting the scheduled sUAS survey operation.
13. Each applicable Pilot and Visual Observer will have been trained in operation of sUAS generally and will have received up-to-date information on the particular sUAS to be operated, as required in the Manual.
14. Each applicable Observer and Pilot will at all times be able to communicate by voice and/or text.
15. Written and/or oral permission from the relevant property holders will be obtained.

⁸ See Order 8900.1, Volume 16, Chapter 4, Section 1, ¶ 16-4-1-3(B)(5)(a).

⁹ Order 8900.1, Volume 16, Chapter 4, Section 1, ¶ 16-4-1-3(B)(6). This does not apply when the PIC is not required to be involved in the launch and recovery of the UAS operation. *Id.*

¹⁰ See Manual Section 7.

16. 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.
17. If a sUAS loses communications or loses its GPS signal, the UAS will have capability to return to a pre-determined location within the Sterile Area and land.¹¹
18. Each sUAS will have the capability to abort a flight in case of unpredicted obstacles or emergencies.¹²

V. 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.¹³

Petitioner seeks an exemption from several interrelated provisions of 14 C.F.R. Parts 21, 45 and 91 for purposes of conducting agricultural aerial surveys and inspections using sUASs. 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.¹⁴

A. 14 C.F.R. Part 21, Subpart H—Airworthiness 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 sUASs to be

¹¹ See HoneyComb Manual at pg. 9. The AgDrone is programmed with failsafe behaviors and will automatically “Return-to-Launch” in the event that the aircraft loses communication with the ground station.

¹² *Id.* at pg. 7.

¹³ See 49 U.S.C. § 44701(f) (authorizing the grant of exemptions from a requirements of regulations prescribed pursuant to section 44701(a)—(b) and sections 44702-44716).

¹⁴ See 14 C.F.R. § 11.81(e), which requires a petition for exemption to include:

“The reasons why granting the exemption would not adversely affect safety, or how the exemption would provide a level of safety at least equal to that provided by the rule from which you seek exemption.”

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 sUASs operated without airworthiness certificates, in the restricted environment and under the conditions proposed will be at least as safe, or safer, than a conventional fixed-wing aircraft or rotorcraft operating with an airworthiness certificate without the restrictions and conditions of the proposed sUASs' operations.

Equivalent Level of Safety

Each sUAS to be operated hereunder weighs less than 6 lbs. fully loaded, carries neither a pilot nor passenger, carries no explosive materials or flammable liquid fuels, and operates exclusively within a secured area as set out in the Manual.¹⁵ 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 sUASs, due to their size, speed of operation, location of operation, lack of explosive materials or flammable liquid fuels, and inability to carry a substantial external load.

B. 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:

¹⁵ See Manual Section 7.

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 sUASs have no entrance to the cabin, cockpit, or pilot station on which the word “Experimental” can be placed. Moreover, given the size of the HoneyComb AgDrone, 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 each sUAS marked on its fuselage as required by §45.29(f) where the pilot, observer, and others working with such sUAS 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.

C. 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]he 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

Petitioner’s proposed UAS pilot qualification and operational requirements ensure that petitioners sUAS operators acting as PIC will be qualified and capable of controlling sUASs to the same standards as the pilot of a manned aircraft. Petitioner’s sUAS operators acting as PIC will hold a third class medical certificate, commercial and /or private pilot certification or will have successfully completed, at a minimum, FAA private pilot ground instruction and passed the FAA private pilot written examination or FAA recognized equivalent.¹⁶ Each applicable PIC

¹⁶ Order 8900.1, Vol. 16, Ch. 4, Sec. 1, ¶16-4-1-3 (B)(5)(a).

will also have an appropriate level of recent pilot experience in the UAS being operated or in a flight simulation training device. At a minimum, the PIC will have conducted three takeoffs and three landings of the specific sUAS within the previous 90 days.¹⁷

Moreover, unlike a conventional aircraft that carries the pilot and passengers, the sUASs are remotely controlled with no living thing on board. Additionally, 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 in the Manual exceeds that provided by the FARs for a single individual holding a commercial pilot's certificate operating a conventional aircraft in accordance with § 61.113 (a) & (b). The level of risk associated with the operation of small, lightweight UAS is less than the level of risk associated with commercial operations contemplated by Part 61 when drafted — that is, allowing the proposed operations in this petition for exemption exceeds the present level of safety achieved by § 61.113 (a) & (b).

D. 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 their size, configuration, and load capacity, the sUASs have no ability to carry such a manual on the aircraft, not only because there are no pilots on board, but because there is simply no room or capacity to carry such an item on such aircraft.

Equivalent Level of Safety

The safety related purpose of this manual requirement can be equally satisfied by maintaining the HoneyComb Manual at the ground control point where the pilot flying a sUAS will have immediate access to it. Accordingly, Petitioner requests an exemption from

¹⁷ *Id.* at ¶ 16-4-1-3(B)(6).

§ 91.9(b)(2)'s flight manual requirements, on the condition that the applicable 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.

E. 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 as there will be no airworthiness certificate issued for the sUASs, should this exemption be granted, no FAA regulatory standard will exist for determining airworthiness.

Equivalent Level of Safety

The HoneyComb AgDrone has a stellar safety record, demonstrating that the sUAS is airworthy. Moreover, the size of the sUASs and the requirements contained in the Manual for maintenance and use of safety checklists prior to each flight; ensure that an equivalent level of safety will be provided.¹⁸

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. § 91.103: Preflight Action.

This petition seeks an exemption from § 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 sUASs, an exemption will be needed.

Equivalent Level of Safety

An equivalent level of safety will be provided by following the Manual's 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.

G. 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

¹⁸ See also Preparation & Setup Procedures at pg. 31 in the HoneyComb Manual.

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 aircraft via radio communications.

Equivalent Level of Safety

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

H. 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). To provide the intended aerial surveys and inspections, the sUASs are normally operated 400 feet AGL. In addition, 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.

Equivalent Level of Safety

Compared to flight operations with conventional fixed-wing aircraft and rotorcraft weighting far more than the maximum 6 lbs. proposed herein, and the lack of flammable fuel, 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 sUASs as well as the location where they will be operated. As set forth in the Manual, the sUASs will be operated in a restricted area, where buildings and people will not be exposed to operations without their pre-obtained consent.¹⁹ 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 sUASs will not interfere with other aircraft that are subject to the minimum safe altitude

¹⁹ *See* Manual Section 7.

regulations. Finally, the successful safety record of the HoneyComb AgDrone demonstrates that the sUASs can be safely used at these lower altitudes and closer operating environments.²⁰

I. 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 sUASs does not have barometric altimeters, but rather GPS altitude read outs.

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 applicable sUAS's height, thus ensuring operation at safe altitudes.

J. 14 C.F.R. § 91.151(a): Fuel Requirements for Flight in VFR 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

...

Maximum powered flight time provided by the battery powering the sUAS will vary based on wind and forecast weather conditions. Subject to prevailing wind conditions, the maximum total flight time for the HoneyComb AgDrone is:

- 50 minutes with 0 mph wind;
- 37 minutes with 10 mph wind;

²⁰ The HoneyComb AgDrone is also equipped with advance safety features that will ensure an equivalent level of safety. One such feature is the ability to fly in automatic mode, in which heading, altitude, and speed are all controlled by autopilot. See "Operation Overview" at pg. 37 in the HoneyComb Manual. See also "Return-to-Launch" at pg. 9 in the HoneyComb Manual.

- 25 minutes at 20 mph wind.

Under ideal operating conditions, the battery powering the sUAS provides approximately 50 minutes of powered flight. To meet the 30 minute reserve requirement in 14 CFR §91.151, sUASs flights would be limited to less than 20 minutes in length, depending on wind and forecast conditions. Given the limitations on the sUASs' proposed flight area and the location of its proposed operations within a predetermined area, a longer time frame for flight may be necessary

Equivalent Level of Safety

An equivalent level of safety can be achieved by limiting flights to 37 minutes or 25% battery power, whichever happens first. Taking into account variable wind and forecast weather conditions, maximum total flight time with 10 mph wind would be limited to approximately 27 minutes, or 25% battery, whichever happens first. Maximum total flight time at 20 mph wind would be limited to approximately 18 minutes, or 25% battery, whichever happens first.

These proposed fuel restrictions would be more than adequate to return a sUAS to its planned landing zone from anywhere within its limited operating area. Operation of an 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 sUASs. Moreover, operation will be limited to controlled areas where only people and property owners, or official representatives who have signed waivers will be allowed.²¹

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.

K. 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

²¹ *See* Manual Section 7.4.1.

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: (1) each sUAS's load capacity and size does not allow it to carry certification and registration documents; (2) each 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 operations of an sUAS, an equivalent level of safety will be achieved by keeping these documents at the ground control point where the pilot flying such 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.

L. 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 sUASs 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 HoneyComb Manual as referenced in the Manual.²² As provided in the Manual, the operator will ensure that each 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.

²² *See* Manual Section 12.

If mechanical issues arise, an sUAS will automatically return to the launch site and will circle above the launch location until instructed to land.²³ Moreover, the UASs' 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.

VI. 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 agricultural aerial survey 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 and emissions associated with current aerial survey and inspection methods, namely, full size fixed-wing aircraft and helicopters. Petitioner's sUASs are battery powered and create no emissions. If one of Petitioner's sUASs 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 and crash impacts by permitting agricultural aerial survey and inspection through Petitioner's lightweight sUASs.
- Aerial surveys and inspections are valuable tools for agricultural research and management. 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 with wide-ranging agricultural applications. The public as a whole will benefit from the safer and more cost-effective utility aerial services that sUAS operations provide.

²³ See HoneyComb Manual at pg. 9.

VII. Privacy

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

VIII. Federal Register 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:

Wilbur-Ellis Company seeks an exemption from the following rules:

14 CFR Part 21, Subpart H; 14 CFR 91.9(c); 14 CFR 45.23(b); 14 CFR 45.27(a); 14 CFR 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 allowing commercial operations of small and lightweight unmanned aircraft ("sUAS") in the agricultural aerial survey and inspection industry will enhance safety by reducing risk. Conventional operations in this industry using 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 less than 6 lbs. and powered by batteries eliminates virtually all of that risk, given the reduced mass and lack of combustible fuel carried on board. The sUASs are transported, not flown, to the designated survey area set up. The sUASs carry no passengers or crew and, therefore, do not expose them to the risks associated with manned aircraft flights.

The operation of small UASs, weighting less than 6 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.

IX. 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 security—provides more than adequate justification for

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the grant of the requested exemptions allowing commercial operation of Wilbur-Ellis in the agricultural aerial survey industry in accordance with the Manual appended hereto.

If additional information is required, do not hesitate to contact the undersigned.

Very truly yours,

/s/ Mark A. Dombroff

Mark A. Dombroff
Matthew J. Clark
Counsel for Wilbur-Ellis Co.

Attachments (All Subject to Non-Disclosure Under the Freedom of Information Act, 5 U.S.C. § 552 *et seq.*):

Attachment A: Wilbur-Ellis Co. Precision Agriculture Survey and Inspection Operations and Flight Manual

Attachment B: HoneyComb AgDrone UAS Operation Manual

cc: Timothy Nestler
Matthew Richmond
Craig Bair
David Granoff
Mike Wilbur
Mike Karasiewicz

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ATTACHMENT A

This document is withheld as proprietary and confidential and is subject to non-disclosure under Freedom of Information Act, 5 U.S.C. § 522 *et. seq.*

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ATTACHMENT B

This document is withheld as proprietary and confidential and is subject to non-disclosure under Freedom of Information Act, 5 U.S.C. § 522 *et. seq.*