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

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

August 10, 2015

Exemption No. 12383
Regulatory Docket No. FAA–2015–1822

Mr. Michael D. Curran
Curran and Curran Law
Counsel for Formation Environmental, LLC
90 North Coast Highway 101
Encinitas, CA 92024

Dear Mr. Curran:

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 May 11, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Formation Environmental, LLC (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial photography and inspection.

See Appendix A for the petition submitted to the FAA describing the proposed operations and the regulations that the petitioner seeks an exemption.

The FAA has determined that good cause exists for not publishing a summary of the petition in the Federal Register because the requested exemption would not set a precedent, and any delay in acting on this petition would be detrimental to the petitioner.

Airworthiness Certification

The UAS proposed by the petitioner is a Sensefly eBee.

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, Formation Environmental, LLC is granted an exemption from 14 CFR §§ 61.23(a) and (c), 61.101(e)(4) and (5), 61.113(a), 61.315(a), 91.7(a), 91.119(c), 91.121, 91.151(a)(1), 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b), to the extent necessary to allow the petitioner to operate a UAS to perform aerial data collection. This exemption is subject to the conditions and limitations listed below.

[1] Aerial data collection includes any remote sensing and measuring by an instrument(s) aboard the UA. Examples include imagery (photography, video, infrared, etc.), electronic measurement (precision surveying, RF analysis, etc.), chemical measurement (particulate measurement, etc.), or any other gathering of data by instruments aboard the UA.

Conditions and Limitations

In this grant of exemption, Formation Environmental, 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 Sensefly eBee 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 August 31, 2017, unless sooner superseded or rescinded.

Sincerely,

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

Enclosures

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MICHAEL D. CURRAN, ESQ., ATP
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May 11, 2015

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

Re: Exemption Request; Section 333 of the FAA Modernization & Reform Act and Part 11 of the Federal Aviation Regulations from 14 C.F.R. 45.23(b);14 CFR Part 21;14 CFR 61.113 (a) & (b); 91.7 (a); 91.9 (b) (2); 91.103(b); 91.109; 91.119; 91.121; 91.151 (a); 91.203(a) & (b); 91.405 (a); 91.407(a) (1); 91.409 (a) (2); 91.417 (a) & (b).

Dear Sir or Madam:

Petitioner Formation Environmental, LLC hereby petitions the Secretary of Transportation and Federal Aviation Administration ("FAA") for exemption to the above referenced and below more fully described Federal Aviation Regulations, ("FARs") that currently may, or may not apply to the recreational/commercial operations of model aircraft/small unmanned aerial vehicles/ systems ("SUAV").

1. Prefatory Statement to Petition

In June, 1981, the FAA published an advisory circular, AC 91-57, (an advisory publication giving non-regulatory information/guidance. Advisory circulars do not create or change regulations and are not binding on the public.) AC 91-57 was entitled "Model Aircraft Operating Standards" and gave non-regulatory suggestions to model aircraft operators on suggested procedures for operating their models. This was the sole publication by the FAA which addressed SUAV for the next nearly 25 years.

In September 2005, the FAA appeared to turn its' attention toward unprecedented attempts at regulating model aircraft specifically the more modern SUAV. The FAA, for the first time in history now termed these devises as Unmanned Aerial Systems ("UAS") seemingly to align with their attempts at enforcement. The FAA published "AFS-400 UAS POLICY 05-01 - Unmanned Aircraft Systems Operations in the U. S. National Airspace System - Interim Operational Approval Guidance." This interim internal FAA memo expressly confirms that "[t]his policy is not meant as a substitute for any regulatory process." Still, it purported to "require" a Certificate of Authorization ("COA") or Waiver to use SUAVS. The new FAA policy relied for legal/regulatory "authority" on the non-regulatory, AC 91-57.

In February, 2007 the FAA, published a 2007 "policy statement" in the Federal Register. The 2007 Policy Statement started by defining "unmanned aircraft" as "a device that is used or intended to be used, for flight in the air with no onboard pilot" and it purported to include "a remotely controlled model airplane used for recreational purposes." The FAA termed these devices "UAS" and then purported to articulate the new FAA "policy" for "UAS" operations was that "no person may operate a "UAS" in the National Airspace System without specific authority." For the first time ever, the 2007 Notice purported to articulate two new alleged "rules": (1) Model aircraft can no longer be operated for a "business" purpose; and (2) a Model aircraft operated for a business purpose requires a COA, or special Certificate of Operating Authority and therefore is subject to the FAR's.

Thereafter beginning in 2007 and continuing to present based on these two new FAA internal "policies" and without citing to any actual federal law, or FARs, the FAA then sent various cease and desist notices to model aircraft/SUAVS operators indicating their activity was not authorized and describing the COA process and threatening to impose a $10,000 fine if they did not comply with the new FAA policies which the FAA indicated created a "ban" on using SUAVS for a "business/commercial purpose." The FAA's current position is the business/commercial use of SUAVS is "not authorized."

In 2012, following the FAA's attempts to regulate using internal policy memos, Congress enacted the Federal Aviation Administration Reform and Modernization Act, ["FRMA"]. The FRMA allows the Secretary of Transportation to "exempt" SUAVS from existing Federal Law, FARs to the extent any federal law or FAR actually currently apply to SUAVS.

Recently, on February 15, 2015 in Washington, D.C. at just after 10 a.m. EST, the FAA released their proposed rules for small SUAVS incorporating them into the National Airspace System ["NAS"]. These are proposed rules that have yet to go through the statutory Federal Rule making process to actually become law, but at present they are instructive for current model aircraft/SUAV recreational and commercial operators. They include staying below 500 ft. AGL, below 100 mph, staying out navigable airspace, staying away from airspace surrounding airports, seeing and avoiding other aircraft, taking a FAA knowledge test and a number of other common sense proposed rules, that this firm believes will ultimately govern SUAVS operations. See, http://www.faa.gov/regulations_policies/rulemaking/ media/021515_ sUAS_Summary.pdf

Most recently, Petitioner is aware the FAA has granted similar exemptions across the country for aerial photography and other uses that benefit the public and enhance aviation safety.

Petitioner at all times has and currently operates their SUAVS following the safety guidelines of AC 91-57.

Petitioner respectfully makes this request as suggested by the FMRA and the FAA.

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2. Petition for Exemption

With the above preface, pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 ("FMRA") and 14 C.F.R. Part 11, Petitioner Formation Environmental, LLC operator of actual manned aircraft as well as SUAV, requests exemption to allow commercial operation of its SUAVS, so long as such operations are conducted within and under the conditions outlined herein, or as may be established by the FAA, or as required by Section 333 to conduct aerial photography/inspection/mapping including but not limited to the following;

Petitioner offers a wide-range of environmental engineering consulting services. Their Sacramento Office has two clients in California which have project needs which may benefit immediately from UAV mapping technologies as described below.

Los Angeles Dept of Water & Power (LADWP) is responsible for controlling dust emissions off of Owens Lake dry lakebed in the Eastern Sierra. Formation Environmental is part of the Science and Regulatory Team providing services to LADWP and is tasked with monitoring a water-less dust-control pilot project (4 sq. miles of area on the 110 sq. mile lake-bed) on a weekly basis for an extended period of time which, in this time of drought in the Western US, is very much in the public's interests.

The Formation Environmental team includes remote sensing and photogrammetry experts who routinely use aerial (manned aircraft) and satellite-acquired imagery for quantifying land surface features. The UAV platform would allow extremely high resolution (~1.5 cm spatial resolution) imagery products to be obtained and subsequently used to derive highly-accurate terrain characteristics in these pilot project areas, identifying erosion and deposit of material and effectiveness of the techniques under evaluation. This area of the Eastern Sierra is sparsely populated with nearest towns of Keeler and Lone Pine. China Lake Naval Air Base is 30-40 miles south of Owens Lake.

3. Name and Address of the Petitioner

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Contact person:

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4. Public Interest

As described more fully below, the requested exemption would permit the operation of SUAV under controlled conditions in airspace that is 1) limited 2) predetermined; and 3) controlled as to access. The exemption would also provide safety enhancements to the already safe operations within the aerial mapping/photography industry presently using conventional aircraft by using small, unmanned and relatively inexpensive SUAV.

Approval of this exemption would thereby enhance safety and fulfill the Secretary of Transportation's (the FAA Administrator's) responsibilities to "...establish requirements for the safe operation of such aircraft systems in the national airspace system." Section 333(c) of the FMRA. By authorizing Sensefly eBee, the FAA would advance the public interest by reducing the number of manned aircraft in the NAS; reducing air and noise pollution; reducing the risk to life and property on the ground; lead to development of water-saving dust/pollution-control techniques; and increasing agricultural economic growth.

Petitioner asserts that allowing eBee operations would reduce the burden on air traffic controllers; would reduce air and noise pollution from the manned aircraft that would otherwise be used; would reduce fuel use, as the eBee is battery-powered unlike the manned aircraft it would replace; and would reduce the risk to life and property on the ground, as the eBee contains no pilot and is constructed of a small, lightweight foam airframe.

Finally, the petitioner asserts that the high-resolution image data generated from eBee would provide their with important information that would assist efforts in aerial mapping including but not limited to the following; aerial mapping services as well as aerial mapping for vegetative coverage and health assessment, project site infrastructure mapping, soil wetness assessment, roads, pipelines and pipeline corridors, and for general land management all in non-navigable airspace, using non-intrusive recording devices.

The petitioner asserts that all of this would result in a major increase in safety, minimization of public resources/funding and economic growth, all of which which would be in the public interest.

5. Precedent for Granting Exemption for Sensefly eBee

There are numerous other grants across the country using the Sensefly eBee. There is also other precedent for the requested exemption using a very similar SUAV, the E384 in the matter of the petition of PRAVIA, LLC On January 29, 2015 the FAA granted/issued Exemption No. 11166, Regulatory Docket No. FAA–2014–0790.

CHARACTERISTICS OF THE AIRCRAFT

The Sensefly eBee is a small (37.8 inches wingspan) and ultra-light (maximum take-off weight of 1.7 pounds) platform made of flexible foam that performs pre-programmed precision aerial mapping missions thanks to the on-board GPS and the related flight management software (eMotion) that allows the operator to plan safely and efficiently a mission in 3D, and

then monitor it in real-time. Thanks to the embedded camera, protected by a foam envelope, the eBee takes a collection of high-definition still images that are used later to generate maps and contour lines of the surveyed area.

The four main characteristics of the Sensefly eBee are:

a. Very light weight

The eBee is so light that the operator can launch it by hand and let it land on almost any surface without requiring a parachute or landing net (belly land). Its low impact energy (38 J in case of a controlled emergency landing) also significantly reduces the risk of hazardous situations. Finally, the wings of the eBee are detachable and made of flexible foam with no sharp or hard edges and almost no internal strengthening structure.

b. Electric-powered

The eBee is electric powered. A brushless engine technology makes it silent and reliable. The propeller is attached with a rubber band to the body of the plane so that it can easily flex away in case of contact with any object.

c. Semi-automatic flight

The artificial intelligence incorporated within the eBee autopilot system continuously analyzes data from the Inertial Measurement Unit and from the onboard GPS and takes care of all the aspects of the flight under the supervision of the operator.

d. Option for Manual control

Additionally, the eBee provides an override capability that allows the operator to take manual actions during the flight (Go to Home, Go Land, Hold and Resume the mission) and also suspend automated operations and take manual control of the aircraft should it become necessary to respond emergent circumstances, thanks to the remote controller provided with the system.

For Formation Environmental checklists please see Ex. 1 Attached. For additional information on the eBee, reference Ex. 2 (eBee Extended user manual) which specify manufacturing information, aircraft performance, operating limits, normal and emergency procedures, fail-safe features, and maintenance and inspection procedures.

6. Regulations Petitioner Petitions for Exemption, If Such Regulations Apply to SUAVS

14 CFR Part 21 14 C.F.R. 45.23(b) 14 CFR 61.113 (a) & (b) 14 C.F.R. 91.7 (a) 14 CFR 91.9 (b) (2) 14 C.F.R. 91.103	14 C.F.R. 91.109 14 C.F. R. 91.119 14 C.F.R. 91.121 14 CFR 91.151 (a) 14 CFR 91.203 (a) & (b)	14 CFR 91.405 (a) 14 CFR 407 (a) (1) 14 CFR 409 (a) (2) 14 CFR 417 (a) & (b)

This exemption application is expressly submitted to fulfill Congress' goal in passing Section 333 (a) through (c) of the Reform Act. This law directs the Secretary of Transportation to consider whether certain unmanned aircraft systems may operate safely in the national airspace system ("NAS") before completion of the rulemaking required under Section 333 of the FMRA. In making this determination, the Secretary is required to determine which types of SUAVS/UAS 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:

A. The SUAV size, weight, speed, and operational capability;
B. Operation of the SUAVS in close proximity to airports and populated areas; and
C. Operation of the SUAVS within visual line of sight of the operator. FMRA § 333 (a).

Lastly, 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) (emphasis added). The Petitioner interprets this provision to place the duty on the Secretary/FAA Administrator to not only process applications for exemptions under section 333, but for the Secretary/Administrator to affirmatively craft conditions for the safe operation of the SUAVS, if it should be determined that the conditions set forth herein do not fulfill the statutory requirements for approval.

The Federal Aviation Act expressly grants the Secretary/FAA Administrator 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, which currently may or hereafter may include SUAVs, from the requirement that all civil aircraft must have a current airworthiness certificate.

The Secretary/FAA Administrator may grant an exemption from a requirement of a regulation prescribed under subsection (a) or (b) of this section or any sections 44702-44716 of this title if the Secretary/FAA Administrator finds the exemption 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).

They will operate in line of sight and will operate only within the areas described herein. Such operations will insure that the SUAVS will "not create a hazard to users of the NAS or the "public" as described in the FMRA §333(b).

Given the small size of the SUAV involved, and the limited environment within which they will operate, the Petitioner falls squarely within that zone of safety (an equivalent level of safety) in which Congress envisioned that the FAA must, by exemption, allow commercial operations of SUAV to commence immediately. Also, due to the size of the SUAVS and the restricted areas in which the relevant SUAV will operate, approval of the application presents no national security issue.

Given the clear direction in FMRA §333, the authority contained 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, reduction in environmental

impacts (including reduced emissions associated with allowing SUAV for filming operations rather than full-sized aircraft, the grant of the requested exemptions is in the public interest.

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

7. Limitations and Conditions

The Petitioner proposes that the exemption requested herein be issued pursuant the limitations and conditions listed herein. These conditions/limitations provide for an even higher level of safety to operations under the current regulatory structure which apply to actual certificated aircraft because the proposed operations represent a safety enhancement to the already very safe SUAV aerial mapping/filming operations conducted by recreational SUAVS and conventional aircraft.

Petitioner's primary missions include but are not limited to aerial mapping services for engineering project sites such as Owens Lake Dust Control Monitoring as well as aerial mapping for vegetative coverage and health assessment, project site infrastructure mapping, soil wetness assessment, roads, pipelines and pipeline corridors, and for general land management all in non-navigable airspace, using non-intrusive recording devices, operation in otherwise unrestricted US States/Territories; hereby applies for an exemption from the listed Federal Aviation Regulations ("FARs") to allow commercial operation of its SUAVs, so long as such operations are conducted within and under the conditions outlined herein or as may be established by the FAA as required by Section 333.

Petitioner's primary operational locations shall be as indicated above and in the continental United States.

These limitations and conditions to which Formation Environmental, LLC agrees to be bound when conducting business/commercial operations under this FAA issued exemption are consistent with the Administrators grant of Exemption to the MPAA, include:

1) Operations authorized by this grant of exemption are limited to the following aircraft described in the operating documents which are both a fixed wing eBee weighing about 1.7 pounds, any other aircraft will require a new petition or a petition to amend this grant.

2) UAS operations under this exemption are limited to conducting operations for the purpose of aerial mapping for various land-monitoring applications.

3) The UA may not be flown at an indicated airspeed exceeding 50 knots.

4) The UA must be operated at an altitude of no more than 400 feet above ground level (AGL), as indicated by the procedures specified in the operating documents. All altitudes reported to ATC must be in feet AGL.

5) The UA must be operated within visual line of sight (VLOS) of the pilot in command (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.

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 functions prescribed in the operating documents.

7) The VO must not perform any other duties beyond assisting the PIC with seeing and avoiding other air traffic and other ground based obstacles/obstructions, and is not permitted to operate the camera or other instruments.

8) The operating documents and this grant of exemption 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 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.

9) Prior to each flight, the PIC must inspect the UAS to ensure it is in a condition for safe flight. If the inspection reveals a condition that affects the safe operation of the UAS, the UAS is prohibited from operating until the necessary maintenance has been performed and the UAS is found to be in a condition for safe flight. The Ground Control Station must be included in the preflight inspection. All maintenance and alterations must be properly documented in the aircraft records.

10) 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. The PIC who conducts the functional test flight must make an entry in the aircraft records.

11) The pre-flight inspection section in the operating documents must account for all potential discrepancies (e.g., inoperable components, items, or equipment, not already covered in the relevant sections of the operating documents).

12) The operator must follow the UAS manufacturer's aircraft/component, maintenance, overhaul, replacement, inspection, and life limit requirements.

13) The operator must carry out its maintenance, inspections, and record keeping requirements, in accordance with the operating documents. Maintenance, inspection, alterations, and status of replacement/overhaul component parts must be noted in the aircraft records, including total time in service, description of work accomplished, and the signature of the authorized person returning the UAS to service.

14) Each UAS operated under this exemption must comply with all manufacturer Safety Bulletins.

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

16) The PIC must possess at least a recreational pilot airman certificate and at least a current third class medical certificate. 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.

17) The operator may not permit any PIC to operate unless the PIC meets the operator's qualification criteria and 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). The PIC must ensure that the VO is trained appropriately in order to fulfill her or her duties. A record of training must be documented and made available upon request by the Administrator. Flights for the purposes of training the operator's PICs and VOs (training, proficiency, and experience-building) are permitted under the terms of this exemption. However, training 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.

18) 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.

19) The UA may not operate within 5 nautical miles of an airport reference point as denoted on a current FAA-published aeronautical chart unless a letter of agreement with that airport's management is obtained, and the operation is conducted in accordance with a Notice to Airmen (NOTAM), as required by the operator's Certificate of Waiver or Authorization (COA). The letter of agreement with the airport management must be made available to the Administrator upon request.

20) 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.

21) If the UA loses communications or loses its GPS signal, it must return to a predetermined location within the planned operating area and land or be recovered in accordance with the operating documents.

22) The PIC must abort the flight in the event of unpredicted obstacles or emergencies in accordance with the operating documents.

23) The PIC is prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough power to fly at normal cruising speed to the intended landing point and land the UA with 25% battery power remaining.

24) The operator must obtain an Air Traffic Organization (ATO) issued COA prior to conducting any operations under this grant of exemption. This COA will require the operator to request a NOTAM not more than 72 hours in advance, but not less than 48 hours prior to the operation. All operations shall be conducted in accordance with airspace requirements in the ATO issued COA including class of airspace, altitude level and potential transponder requirements.

25) 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.

26) Before conducting operations, the radio frequency spectrum used for operation and control of the UA must comply with the Federal Communications Commission (FCC) or other appropriate government oversight agency requirements.

27) The operator is required to keep a copy of the UAS manufacturer's operating/flight manual and all other operating documents in a location accessible to the PIC, during flight operations. These documents must be made available to the Administrator or any law enforcement official upon request.

28) The UA must remain clear and yield the right of way to all other aviation operations and activities at all times.

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

30) The UA may not be operated over congested or densely populated areas.

31) 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 and/or; b. The aircraft is operated near vessels, vehicles or structures where the owner/controller of such vessels, vehicles or structures has granted permission 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, and; c. Operations nearer to the PIC, VO, operator trainees or essential persons do not present an undue hazard to those persons per § 91.119(a).

32) 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 prior to the beginning of every flight.

33) 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.

8. Description of Regulations Which May Apply From Which Petitioner Requests Exception 14 C.F.R. Part 21, Subpart H: Airworthiness Certificates 14 C.F.R. §91.203 (a) (1)

Subpart H, entitled Airworthiness Certificates, establishes the procedural requirements for the issuance of airworthiness certificates as required by FAR §91.203 (a) (1). Given the size and limited operating area associated with the SUAVS 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 FMRA. The Federal Aviation Act (49 U.S.C.§44701 (f)) and Section 333 of the FMRA 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 SUAVS. In all cases, an analysis of these criteria demonstrates that the UAS 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 aircraft (fixed wing or rotorcraft) operating with an airworthiness certificate without the restrictions and conditions proposed.

The SUAV's to be operated hereunder is less than 55 lbs. fully loaded, is by definition unmanned and carries neither a pilot nor passenger, carries no explosive materials or flammable liquid fuels, and operates exclusively within a limited flight area. Unlike other civil aircraft, operations under this exemption will be tightly controlled and monitored by the PIC/Operator and will also remain within the requirements of, and in compliance with, local public safety requirements. These safety enhancements, which already apply to civil aircraft

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 UAS due to its size, speed of operation, location of operation, lack of explosive materials or flammable liquid fuels, and inability to carry a substantial external load.

14 C.F.R. § 45.23 (b). Marking of the Aircraft

The regulation requires; 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.

Even though the SUAV will have no airworthiness certificate, an exemption may be needed as the SUAV will have no entrance to the cabin, cockpit or pilot station on which the word "Experimental" can be placed. Given the size of the SUAVS, two-inch lettering will be impossible. The word "Experimental" will be placed on the fuselage in compliance with §45.29 (f). The equivalent level of safety will be provided by having the SUAVS marked on its fuselage as required by §45.29 (f) where the pilot, observer and others working with the SUAVS will see the identification of the SUAV as "Experimental." The FAA has issued the following exemptions to this regulation to Exemptions Nos. 10700, 8738, 10167 and 10167A.

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

Sections 61.113 (a) & (b) limit private pilots to non-commercial operations. Because the SUAVS is unmanned and will not carry a pilot or passengers, the proposed operations can achieve the equivalent level of safety of current operations by requiring the PIC operating the aircraft to have a FAA ground school rather than a commercial pilot's license to operate this small SUAVS. Unlike a conventional aircraft that carries the pilot and passengers, the SUAVS is remotely controlled with no living thing on board. The area of operation is controlled and restricted, and all flights are planned and coordinated in advance. The level of safety provided by the requirements included herein exceed that provided by a single individual holding a commercial pilot's certificate operating a conventional aircraft. The risks associated with the operation of the SUAVS are so diminished from the level of risk associated with commercial operations contemplated by Part 61 when drafted, that allowing operations of the SUAVS as requested with a private pilot as the PIC exceeds the present level of safety achieved by 14 C.F.R. §61.113 (a) & (b).

14 C.F.R. §91.7(a): Civil aircraft airworthiness.

The regulation requires that no person may operate a civil aircraft unless it is in airworthy condition. As there will be no airworthiness certificate issued for the aircraft, should

this exemption be granted, no FAA regulatory standard will exist for determining airworthiness. Given the size of the aircraft and the requirements contained herein for the use of safety check lists prior to each flight, an equivalent level of safety will be provided.

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

Section 91.9 (b) (2) provides: 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.

The SUAVS, given its size and configuration has no ability or place to carry such a flight manual on the aircraft, not only because there is no pilot on board, but because there is no room or capacity to carry such an item on the aircraft.

The equivalent level of safety will be maintained by keeping the SUAVS operation manual and appropriate checklists at the ground control point where the pilot flying the SUAVS will have immediate access to it. 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.

14 C.F.R. § 91.103: Pre-flight action

This regulation requires each pilot in command to take certain actions before flight to insure the safety of flight. As FAA approved rotorcraft flight manuals will not be provided for the aircraft an exemption will be needed. An equivalent level of safety will be provided as set forth hereinabove. The PIC will take all actions including reviewing weather, flight battery requirements, landing and takeoff distances and aircraft performance data before initiation of flight using appropriate checklists.

14 C.F.R. §91.109: Flight instruction:

Section 91.103 provides that no 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.

SUAV's and remotely piloted aircraft, by their design do not have fully functional dual controls. Flight control is accomplished through the use of a radio transmitter that communicates with the aircraft via a receiver in the SUAVS. 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. The equivalent level of safety provided by the fact that neither a pilot nor passengers will be carried in the aircraft and by the size and speed of the aircraft.

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14 C.F.R. §91.119: Minimum safe altitudes

Section 91.119 establishes safe altitudes for operation of civil aircraft. Section 91.119 (d) allows helicopters to be operated at less than the minimums prescribed, provided the person operating the helicopter complies with any route or altitudes prescribed for helicopters by the FAA. This exemption is for a SUAVS and the exemption requests authority to operate at altitudes up to 400 AGL underneath navigable airspace and in class E and G airspace maintaining safe separation from actual aircraft, an exemption may be needed to allow such operations.

The equivalent level of safety will be achieved given the size, weight, speed of the UAS as well as the location where it is operated. No flight will be taken without the permission of the property owner or local officials. Because of the advance notice to the property owner and participants in the filming activity, attempts will be made to contact all affected individuals regarding the planned flight operations. Compared to flight operations with aircraft or rotorcraft weighting far more than the maximum 55lbs. proposed herein, and the lack of flammable fuel, any risk associated with these operations is far less than those presently presented with conventional aircraft. In addition, the low-altitude operations of the SUAVS will ensure separation between these SUAVS operations and the operations of conventional aircraft that must comply with Section 91.119.

14 C.F.R. §91.121 Altimeter Settings

This regulation requires each person operating an aircraft to maintain cruising altitude by reference to an altimeter that is set "...to the elevation of the departure airport or an appropriate altimeter setting available before departure." As the SUAVS may not have a barometric altimeter, but instead a GPS altitude read out, an exemption may be needed. An equivalent level of safety will be achieved by the operator, pursuant to the Manual and Safety Check list, confirming the altitude of the launch site shown on the GPS altitude indicator before flight.

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

Section 91.151 (a) prohibits an individual from beginning "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 battery powering the eBee SUAV provides approximately between 45 minutes of powered flight. To meet the 30 minute reserve requirement in 14 CFR §91.151, eBee flights would be limited to approximately 15 minutes in length. Given the limitations on the SUAV proposed flight area and the location of its proposed operations within a predetermined area, a longer time frame for flight in daylight or night VFR conditions is reasonable.

Petitioner believes that an exemption from 14 CFR §91.151(a) falls within the scope of prior exemptions. *See* Exemption 10673 (allowing Lockheed Martin Corporation to operate without compliance with FAR 91.151 (a)). Operating the SUAVS in controlled area where only people and property owners or official representatives who have signed waivers will be allowed, with less than 30 minutes of flight operation time, does not give rise to the type of risks that Section 91.151(a) was intended to alleviate particularly given the size and speed of the SUAVS. Additionally, limiting SUAVS flights to 20 minutes would greatly reduce the utility for which the exemption will be granted.

Petitioner believes that an equivalent level of safety can be achieved by limiting flights to landing with no less than 25% of battery power remaining. This restriction would be more than adequate to return the SUAVS to its planned landing zone from anywhere within its limited operating area. Similar exemptions have been granted to numerous other operations.

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

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.

The SUAV fully loaded weighs no more than 55 lbs and typically less than 20 lbs. And is operated without an onboard pilot. As such, there is no ability or place to carry certification and registration documents or to display them on the SUAVS.

An equivalent level of safety will be achieved by keeping these documents at the ground control point where the pilot flying the SUAVS will have immediate access to them, to the extent they are applicable to the SUAVS. 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.

14 C.F.R. §91.405 (a); 407 (a) (1); 409 (a) (2); 417(a) & (b): Maintenance Inspections

These regulations require that an aircraft operator or owner "shall have that aircraft inspected as prescribed in subpart E of this part and shall between required inspections, except as provided in paragraph (c) of this section, have discrepancies repaired as prescribed in part 43 of this chapter...," and others shall inspect or maintain the aircraft in compliance with Part 43.

Given that these section and Part 43 apply only to aircraft with an airworthiness certificate, and the requirements of pre-flight inspection required herein, these sections will not apply to the applicant. Routine and pre-flight maintenance will be accomplished by the operator. An equivalent level of safety will be achieved because these SUAVS are very limited in size and will carry a very small payload and operate only in restricted areas for limited periods of time. If mechanical issues arise the SUAVS can land immediately and given its small size poses very little risk to persona or property. The operator will ensure that the SUAVS is in working order prior to initiating flight, perform required maintenance, and keep a log of any maintenance performed. Moreover, 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.

9. Publication 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:

Petitioner seeks an exemption from the following rules:

14 C.F.R. §21, subpart H; 14 C.F.R 45.23(b);14 C.F.R. §§ 61.113(a) & (b);91.7 (a); 91.9 (b) (2);91.103(b);91.109; 91.119; 91.121; 91.151(a);91.203(a) and (b); 91.405 (a); 91.407 (a) (1); 91.409 (a) (2); 91.409 (a) (2) and 91.417 (a) & (b) to operate commercially a SUAVS vehicle (55lbs or less) for Aerial Photography Operations.

Approval of exemptions allowing commercial operations of SUAV for aerial photography/Inspection for the following; Business Operations: over land, water-ways, and oceans; operation over/in non restricted National Parks, National Forests, flight in non-navigable airspace, using non-intrusive recording devices, operation in otherwise unrestricted US States/Territories will enhance safety by reducing risk. Conventional film operations, using jet or piston power aircraft, operate at extremely low altitudes, just feet from the subject being filmed, and in extreme proximity to people and structures; and present the risks associated with vehicles that weigh in the neighborhood of 4,000lbs, carrying large amounts of jet A or other fuel. In addition such actual certificated aircraft must fly to and from the film location. In contrast, a SUAV weighing fewer than 55 lbs., and powered by batteries rather than fuel, eliminates virtually all of that risk. The SUAV is driven/carried to the filming location not flown. The SUAV will carry no passengers or crew and, therefore, will not expose any crew to the risks associated with manned aircraft flights.

The operation of SUAV, weighing less than 55 lbs., conducted in the strict conditions outlined above, will provide at least an equivalent level of safety supporting the grant of the exemptions requested herein, including exempting the Petitioner from the requirements of Part 21 and allowing commercial operations. These lightweight aircraft operate at slow speeds, close to the ground, and in a line of sight, relatively sterile environment and are, as a result, far safer than conventional operations conducted with actual aircraft/helicopters operating in close proximity to the ground and people.

10. Privacy

All business/commercial flights which occur over private or controlled access property will be with the property owner's prior consent and knowledge. Filming will be of people who have also consented to being filmed or otherwise have agreed to be in the area where filming will take place. Petitioner will not infringe on any individual or landowner privacy rights.

Limited nighttime operations may be conducted. Nighttime as defined FAR's in Section is as follows 1.1. "Night means the time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the American Air Almanac, converted to local time." Night operations may be conducted by the SUAVS following the guidelines above and provided such operations have sufficient lighting so that Petitioner/Operator maintains visual line of sight. Allowing SUAVS this exemption will provide a far safer nighttime filming alternative to the current full size aircraft operations.

11. Conclusion

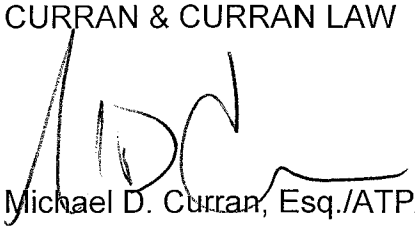
The FAA's purported "ban" on business/commercial SUAV operations has actually had the current effect of causing American skies to be less safe. There are many actual certificated pilots who are exceptionally qualified to fly SUAV with their SUAV experience, private, commercial or ATP pilot training, licenses and instructor ratings. However, these experienced operators and licensed pilots familiar with the FARs, airspace and safe operating procedures are currently reluctant to commercially operate model aircraft/SUAVS or be involved, for fear of the FAA seeking an enforcement action against them or their actual pilot's licenses.

Presently, during the pendency of these issues, it defies safety or regulatory logic that according to the FAA's current alleged "ban" on business operations of SUAVS, your average enthusiastic 12 year old, who's well meaning Father bought him a quadcopter SUAV equipped with a camera, can operate his SUAVS wherever he wants and take whatever recreational video/pictures subject only to the suggestions of FAA AC 91-57 and yet an FAA certificated private/commercial/ATP pilot cannot be paid to use a far higher quality and equipped SUAVS to take an aerial photo or aerially inspect a farmer's field, despite the significant improvement in safety over non-pilots operating SUAVS recreationally and real aircraft used for aerial photography.

Satisfaction of the criteria provided in Section 333 of the FMRA of 2012, and requiring the SUAV PIC to have or obtain medical certificate and a actual pilots license and considering the small size, weight, speed, operating capabilities, limited operations in proximity to airports and populated areas and operation within visual line of sight and national security – all of which provide more than adequate justification for the grant of the requested exemptions allowing business /commercial operation of applicant's SUAVS for aerial photography/ Inspection as requested herein.

If this firm can be of any further assistance in processing this request, or you have any other questions or concerns, please do not hesitate to contact me directly, in writing.

CURRAN & CURRAN LAW



Michael D. Curran, Esq./ATP/CFII/MEI

cc: James Williams, FAA
Les Dorr, FAA, Allison Duquette, FAA

Ex. 1.

Formation Environmental, LLC Checklists

Preflight Checklists

Inspect Vehicle

1. Check props
2. Check screws
3. Check Radio
4. Check body/arms for cracks
5. Prepare log book
6. Review mission/Check review weather
7. Check/test batteries record voltages
8. Prepare nav/gps system
9. Radio RX/TX distance test/Check timers
10. Satellite localization/lock

Narrative Descriptions. Inspect the vehicle for previous damage like cracked chassis, loose props, motors and wires, this will ensure the safe operation of the vehicle and not a catastrophic failure of parts. Tighten all screws and record which ones are becoming loose over time. This will indicate problems with the vehicle structure and you should use more CA or thread locking liquid to keep this problem to a minimal. If you are repeatedly tightening the screws in the same spot then there is a problem with the screw hole and should be tapped or corrected. Prepare a logbook, this will ensure that you are recording the proper flight times and will indicate battery health, saving you from a failure and possible loss of vehicle. Pull out the document you use for logging your flight fill out the information that is most important: date, time, and mission information. Weather affects the performance of a vehicle and should be calculated to ensure proper weights given to your flight and battery time totals. Weather information to include as follows: Temperature, wind speed, maximum gusts, ambient temperature, humidity, dew point, barometric pressure, and any solar information that can effect your GPS. Review your mission so that you know exactly what you plan to do and what data you will gather. Check and test your batteries so that you have sufficient power for your mission. If you followed this checklist your batteries should have been charged the last time you put your vehicle away. Turn on the navigation system if applicable and verify the appropriate settings to localize the satellite signal. Check for solar flare information and gps outages in your area connected to your mission.

II. Before Flight

1. Turn on transmitter; Check set flight mode
2. Set throttle down
3. Clear flight area
4. Connect battery on the vehicle
5. Verify indicator lights for proper indications/GPS locks

6. Start motors
7. Throttle up slowly
8. Maintain visual separation from all obstructions

Narrative Descriptions: You should always be near your transmitter so that in the case of a failure you can control the vehicle to the best of your abilities and get the vehicle safely to the ground. First turn the transmitter on, with the throttle turned all the way down. Next walk over to the vehicle that you plan to fly clear area and connect the battery. You should connect the battery in a way that does not disturb the vehicle from sitting on the ground, when you plug the vehicle up it is calibrating the flight system and powering up safely. When the lights give proper indications it is safe to either pick up the vehicle safely and move it or walk away from it with your controller in your hand. To begin your flight move the sticks up slowly until the vehicle leaves the ground maintain visual separations from people, buildings, obstructions, other UAV/aircraft.

III. Post Flight/After Landing

1. Unplug battery on vehicle while near the controller
2. After battery is unplugged turn off the controller
3. Fill out log books

Narrative Descriptions: Once the vehicle has returned to the ground, walk over with your controller and disconnect the wire to the vehicle battery, this will essentially kill the power and render the vehicle in the safe to transport mode. Next you can power the controller off to save the battery life. Return the vehicle to a safe place and then locate your logbooks and recover your data.

IV. Debrief

1. Fill out logs
2. Complete calculations for batteries and flight times
3. Put away gear, vehicle and log books