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

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

August 11, 2015

Exemption No. 12425
Regulatory Docket No. FAA–2015–1968

Mr. Cody Shahane
Pinnacle Unmanned Aerial Systems, LLC
500 Throckmorton Street #3007
Fort Worth, TX 76102

Dear Mr. Shahane:

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 14, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Pinnacle Unmanned Aerial Systems, LLC (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct sUAS flight training[1], education, general photography and videography, real estate photography and videography, film and movie production, wildlife surveys, pipeline patrols, infrastructure and industrial inspections, news gathering, agricultural surveys, and demonstration flights.

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.

[1] The petitioner also requested authority to conduct UAS training. At this time, the FAA is unable to authorize UAS operations for training until a further assessment is completed. When the FAA completes its review, we will proceed accordingly and no further action will be required by the petitioner. However, the petitioner is permitted to train its own pilot in commands and visual observers in accordance with condition no. 14 and the other conditions and limitations in this exemption.

Airworthiness Certification

The UAS proposed by the petitioner are the DJI Phantom 3, DJI Inspire 1, and Sensefly eBee.

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

The Basis for Our Decision

You have requested to use a UAS for aerial data collection[2] . 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, Pinnacle Unmanned Aerial Systems, 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),

[2] 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.

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.

Conditions and Limitations

In this grant of exemption, Pinnacle Unmanned Aerial Systems, LLC is hereafter referred to as the operator.

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

1. Operations authorized by this grant of exemption are limited to the DJI Phantom 3, DJI Inspire 1, and 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

PINNACLE
UNMANNED AERIAL SYSTEMS

May 14, 2015

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

RE: Petition of Pinnacle Unmanned Aerial Systems, LLC, for Exemption Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012.

To Whom It May Concern:

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 and 14 CFR Part 11, Pinnacle Unmanned Aerial Systems, LLC, (hereinafter referred to as "Pinnacle") hereby applies for an exemption from Federal Aviation Regulations (FARs) identified below, to allow commercial operations of small-unmanned aerial system (sUAS).

The exemption is based upon information outlined in this document, Pinnacle's enclosed Operations Manual, the DJI and Sensefly UAS manufacturers manuals and guides, and any other requirements established by the FAA pursuant to Section 333 of the Reform Act.

This exemption would permit commercial operations by Pinnacle, which will use the DJI Phantom 3, DJI Inspire 1, and Sensefly eBee to conduct sUAS flight training, education, general photography and videography, real estate photography and videography, film and movie production, wildlife surveys, pipeline patrols, infrastructure and industrial inspections, news gathering, agricultural surveys, demonstration flights, and any other related entities/activities that can utilize the safe and efficient operation of sUAS aircraft. Pinnacle's operation under the exemption will be subject to strict operating requirements and conditions to ensure a level of safety equivalent to that of currently authorized operations using manned aircraft and under conditions as may be modified by the FAA as required by Section 333.

Pinnacle will operate under controlled visual flight rules (VFR) conditions at low altitude in airspace that is permitted in accordance with the approved Certificate of Authorization (COA). Pinnacle will operate the sUASs with pilots who possess an FAA Pilot Certificate and have met Pinnacle's pilot requirements as detailed in the provided Operations Manual. Finally, the FAA Air Traffic Control (ATC) will approve in advance the airspace in which the sUAS will operate.

Pinnacle respectfully submits this request for an exemption due to its operation of sUASs. In its current form, the operations Pinnacle will be conducting replace comparatively hazardous operations now conducted with both fixed and rotary winged aircraft. The FAA can have confidence that Pinnacle's operations will be conducted at an equivalent level or greater level of safety than that of sUASs counterparts of larger manned aircraft. Approval of this exemption

would therefore enhance safety and fulfill the Secretary of Transportation's (the FAA Administrator's) responsibilities under Section 333(c) of the Reform Act to "establish requirements for the safe operation of such aircraft systems in the national airspace system."

For your convenience, Pinnacle has organized this Exemption request as follows:

I. Petitioner's Description

Pinnacle Unmanned Aerial Systems, LLC, is headquartered in Fort Worth, Texas. Their core competencies are providing services of sUAS in flight training, education, general photography and videography, real estate photography and videography, film and movie production, wildlife surveys, pipeline patrols, infrastructure and industrial inspections, news gathering, agricultural surveys, and demonstration flights in a compliant and safe environment. Pinnacle plans on providing a wide range of services as the sUAS market expands.

The executive management at Pinnacle has over 15 years experience in aviation and more than five years experience working with unmanned aerial systems. The President of the company has worked both military and civilian manned and unmanned aircraft supporting maintenance and flight operations. The Vice President has over five years experience managing large-scale projects and developing processes to make business operations safe and efficient. The Chief Pilot possesses a Private Pilot Rotorcraft (Helicopter) certificate. He has flown piston and turbine powered aircraft without incident in controlled and uncontrolled airspace for more than 8 years. That time and experience has provided the knowledge and tools necessary to ensure safe operations within the National Airspace System (NAS).

Pinnacle's goal is to operate in an accident-free environment by:

- Ensuring all employees are trained on the latest safety procedures for the sUAS they operate as well as Pinnacle's safety procedures outlined in the Operations Manual.
- Being proactive when performing pre-flight operations and identifying any potential safety hazards
- Demonstrating the ability to identify and appropriately eliminate hazards and risks to the aircraft as well as persons involved in the flight.

The contact information for Petitioner is as follows:

Pinnacle Unmanned Aerial Systems, LLC
500 Throckmorton Street #3007
Fort Worth, Texas 76102

Member Managers:

Cody Shehane
Cell: 817-888-0723

Katherine Shehane
Cell: 817-889-7413

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. Congress has directed the FAA "to safely accelerate the integration of civil unmanned aircraft systems into the national airspace system." Pursuant to Section 333 of the Reform Act, the FAA Administrator is to consider whether certain unmanned aircraft systems may operate safely in the National Airspace (NAS) before completion of the formal UAS rulemaking, based on the following considerations:

- The weight, speed, and operational capability of the UASs

- Operating the UAS in a relatively close proximity to airports or other populated areas
- UAS will be in direct visual line-of-sight with the observer and pilot

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".

Additionally, 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. 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).

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

> **The Administrator may grant an exemption from a requirement of a regulation prescribed under subsection (a) or (b) of this section or any of sections.**

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

The proposed operations in this petition for exemption qualify for expedited approval under Section 333 of the Reform Act. Each of the statutory criteria and other relevant factors are satisfied. The proposed operations would permit Pinnacle the use of sUAS under controlled conditions in airspace that is: (1) predetermined; (2) exercises controlled access; and that (3) provides an increased level of safety beyond existing comparable operations when fixed or rotary winged aircraft are used.

Pinnacle uses sUASs that are multi-rotor, weighing less than 25 pounds including payload. They operate, under normal conditions, at speeds not to exceed 45 mph. They have the capability to hover in a location and move in the vertical and horizontal plane. Pinnacle's sUASs will operate in line-of-sight, under VFR flight conditions, and within the guidelines of a sterile environment which is outlined in the enclosed Operations Manual. Pinnacle will operate at or below 500 feet Above Ground Level (AGL) and will file a Notice to Airmen (NOTAM) for each flight operated in controlled airspace. 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 prior to operating a sUAS. Given the small size of the UASs involved and the restricted sterile environment that they will operate in, this exemption falls within the zone of safety and demonstrates an equivalent level of safety, in which Congress desired the FAA to permit commercial UAS operations by exemption pending completion of formal

rulemaking. Also, due to the aforementioned conditions, approval of the application presents no hazard in the NAS.

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, the grant of the requested exemptions is also in the public interest.

IV. Description of Proposed Operations

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

1. The sUAS will weigh less than 25 pounds.
2. Pinnacle Unmanned Aerial Systems will designate a Pilot in Command (PIC) for each mission.
3. Flights will be operated within line-of-sight of the PIC and observer.
4. Maximum total flight time for each operational flight will be limited to the amount of time the sUAS can be flown and still maintain a reserve battery power of no less than 20%.
5. Flights will be operated at an altitude of no more than 500 feet AGL.
6. Flights will be operated at a lateral distance of least 100 feet from any inhabited structures, buildings, vehicles, vessels, people not associated with the operation or who have not signed a waiver in advance of the operation.
7. Minimum crew for each operation will consist of the sUAS PIC and a Visual Observer.
8. The sUAS PIC will be an FAA licensed airman with at least a private pilot's certificate, third class medical, and a current check required by14 CFR Part 61.56 in an aircraft in which the PIC is rated on his or her pilot certificate.
9. The sUAS will operate only within a confined "Sterile Area" as defined in the Operations Manual.
10. A site inspection will be conducted prior to the operations at a particular location. On the day of the mission, the management person with operational control and the PIC will concur on dispatching of the mission.
11. In accordance with Operations Manual, a briefing will be conducted regarding the planned sUAS operations prior to each mission. It is mandatory that all personnel who will be performing duties within the boundaries of the sterile area be present for this briefing.
12. Pinnacle's crew will use the checklist and callouts required in the Operations Manual.
13. All sUASs will be maintained in accordance with inspection program specified in the Pinnacle's Operations Manual and in compliance with the manufacturer's guidelines.

14. In the event of an accident involving Pinnacle's sUAS, that mission's operations will cease and the accident reported to the NTSB and AFS-80.
15. PIC and Visual Observer will at all times be able to communicate by voice.
16. PIC, Visual Observer, and any additional required operational personnel will possess the required minimum skills and education outlined in Pinnacle Unmanned Aerial System's Operations Manual.
17. 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.
18. If the sUAS loses communications signal, the sUAS will have the capability to return and land at a pre-determined location within the Sterile Area.
19. Contingency plans will be in place to safely terminate flight if there is a loss of communication between the PIC and the observer.
20. The sUAS has the capability to abort a flight in case of unpredicted obstacles or emergencies.
21. Pinnacle Unmanned Aerial Systems, by following procedures listed in the Operations Manual, will assure no individuals' privacy is violated.
22. In accordance with Pinnacle's Operations Manual, the PIC will contact the Air Traffic Control (ATC) facility or appropriate airspace controlling authority prior to operating in airspace other than Class G.

V. Regulations From Which Exemption is Requested

A. 14 CFR § Part 61.113 (a) and (b) Private Pilot Privileges and Limitations; Pilot in Command
B. 14 CFR § 91.103: Preflight Action
C. 14 CFR § 91.109(a): Flight Instruction
D. 14 CFR § 91.113: Right-of-Way Rules
E. 14 CFR § 91.119 (c): Minimum Safe Altitudes
F. 14 CFR § 91.121: Altimeter Settings
G. 14 CFR § 91.151(b): Fuel Requirements for Flight in VFR Conditions
H. 14 CFR § 91.405(a), 91.407(a)(1), 91.409(a)(2); 91.417(a) and (b): Maintenance Inspections

A. 14 CFR § Part 61.113 (a) and (b) Private Pilot Privileges and Limitations; Pilot in Command

Section 61.113 (a) & (b) limit private pilots to non-commercial operations. Conventional aircraft carry a pilot, passengers, and cargo during their operations. Having this rule in place ensures the skill and competency of the pilots. However, the DJI and Sensefly sUASs are controlled remotely and do not carry any passengers or cargo. Pinnacle Unmanned Aerial Systems respectfully proposes that the FAA take into account the characteristics and procedures of the particular UAS in reference to requirements for PIC. Pinnacle Unmanned

Aerial Systems proposes that their operations of the DJI and Sensefly sUAS in commercial use not require the Pilot to hold a commercial pilot certificate but rather a private pilot certificate. Pinnacle Unmanned Aerial Systems proposes the following requirements for a PIC:

1. The PIC must possess a Private Pilot's Certificate and a valid third-class medical certificate.
2. The PIC must have accumulated and logged a minimum of 200 flights and 25 hours of total time as a UAS pilot and at least ten hours logged as a UAS pilot with a similar UAS type (fixed wing or multi-rotor) and five hours in type of UAS aircraft he/she will operate (DJI or Sensefly models).
3. The PIC must have accumulated and logged a minimum of five hours as UAS pilot with the make and model of UAS to be utilized for operations under the exemption and three takeoffs and landings all within the preceding 90 days.
4. The PIC must successfully display the competencies as specified in the Pinnacle Unmanned Aerial Systems Operations Manual.
5. The PIC must also meet the flight review requirements specified in 14 CFR Part 61.56 in an aircraft in which the PIC is rated on his or her pilot certificate.

Equivalent Level of Safety

Pinnacle Unmanned Aerial Systems utilizes both a PIC and a Visual Observer to increase safety during flight operations. While the PIC is concentrating on flying the UAS, the Visual Observer has the ability oversee safety of the entire operation. The Visual Observer will always remain within 10 feet of the PIC when the UAS is airborne to quickly communicate any observations if an emergency should happen. Procedures developed by Pinnacle far exceed the current safety requirements established by the FAA. Pinnacle respectfully requests the option to use a PIC and Visual Observer crew and the second crewmember not having to possess a private pilot certificate.

B. 14 CFR § 91.103: Preflight Action

Pinnacle requests an exemption from the preflight actions requirements of 14 CFR 91.113 that prescribes the preflight actions under which aircraft may operate:

Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight.

(a) Flight under IFR or a flight not in the vicinity of an airport, weather reports and forecasts, fuel requirements, alternatives available if the planned flight cannot be completed, and any known traffic delays of which the pilot in command has been advised by ATC;

(b) For any flight, runway lengths at airports of intended use, and the following

takeoff and landing distance information:

> (1) For civil aircraft for which an approved Airplane or Rotorcraft Flight Manual containing takeoff and landing distance data is required, the takeoff and landing distance data contained therein; and

(2) For civil aircraft other than those specified in paragraph (b)(1) of this section, other reliable information appropriate to the aircraft, relating to aircraft performance under expected values of airport elevation and runway slope, aircraft gross weight, and wind and temperature.

Equivalent Level of Safety

Pinnacle will only operate under VFR conditions within line of sight of its designated takeoff and landing zones. Located in Pinnacle's Operations Manual are procedures describing steps the PIC and additional personnel must follow to assure that the weather will be adequate to complete the mission under VFR conditions. In addition, the PIC will adhere to all manufacture required preflight checks of the aircraft, review aircraft performance data, and become familiarized with their sterilized area of operations prior to conducting any flights.

C. 14 CFR 91.109(a): Flight Instruction

Pinnacle requests an exemption from 14 CFR 91.109(a) Flight Instruction, in which "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". Small-unmanned aerial systems by design allow only a single remote to control the aircraft during flight. Should control need to be passed from one pilot to another during sUAS flight instruction, it would take place by physically handing off the remote control. Pinnacle respectfully requests to conduct flight instruction with the use of a single handheld remote control.

Equivalent Level of Safety

Unlike manned aircraft that are used for pilot instruction, sUAS have an added level of safety due to their size, weight, and speed while not having to carry fuel or passengers. The flight of a sUAS will only take place within the confines of a sterilized area of operation. During times of flight training, the sterilized area will contain no personnel other than the instructor pilot and student who will remain vigilant and side-by-side during all portions of flight. The sterilized area will be open and free of buildings or obstacles that could present hazards during times of instruction. Should the student begin to lose control, the instructor will be within reach to promptly take the remote control and right the aircraft. For an additional measure of safety, each aircraft Pinnacle operates for flight instruction possesses a RTH (Return To Home) function that, when commanded, will instruct the aircraft to safely return to its takeoff point and land under its own control.

D. 14 CFR 91.113: Right-of-Way Rules

Pinnacle requests an exemption from 14 CFR 91.113 Right-of-Way rules, requiring vigilance by each person operating an aircraft so as to see and avoid other aircraft. When a rule of this section gives another aircraft the right-of-way, the pilot shall give way to that aircraft and may not pass over, under, or ahead of it unless well clear. Pinnacle operates pilotless sUASs and cannot comply with these rules as they have been written.

Equivalent Level of Safety

Pinnacle Unmanned Aerial Systems operates sUASs at or below an altitude of 500 feet AGL; well below the normal operating altitude of other, larger aircraft. Pinnacle's Operations Manual specifies that a PIC with experience will oversee each mission and has knowledge of the see-and-avoid rules. A Visual Observer will assist the PIC in looking for aircraft entering the operations area. It is the responsibility of the PIC to cease operations and land the sUAS immediately whenever an aircraft comes into the vicinity creating a potential threat. Operations cannot resume until the threat is clear.

E. 14 CFR. § 91.119: Minimum Safe Altitudes

Pinnacle requests an exemption from the minimum safe altitude requirements of 14 CFR 91.119 that details the minimum safe altitudes under which aircraft may operate:

- Over any congested area of a city, town, or settlement, or over any open air assembly of persons, an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft.
- Over other than congested areas at an altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure.

Section 91.119 (d) allows for a helicopter to operate at less than those minimum altitudes when it can be operated "without hazard to persons or property on the surface," provided that "each person operating the helicopter complies with any routes or altitudes specifically prescribed for helicopters by the FAA." With Pinnacle's intended operations, the sUAS is normally operated at or below 500 feet AGL. Additionally, due to the nature of the proposed operations, the sUAS will maintain a lateral distance of at least 100 feet from inhabited structures, buildings, vehicles, and vessels, and from people not associated with the operation.

Equivalent Level of Safety

Compared to the flight of normal aircraft, Pinnacle's sUAS aircraft weigh less than 25 pounds, and, given the lack of flammable fuel, pose far less risk to persons or property than with conventional aircraft. An equivalent level of safety will be achieved given the size,

weight, and speed of the sUAS, as well as the location where it is operated. As set forth in the Operations Manual, the sUAS will be operated in a sterile area, where buildings and people will not be exposed to operations without their pre-obtained consent. Because of the advance notice to the property owners and participants, all knowingly affected individuals will be well aware of the planned flight operations as set forth in the Operations Manual. Furthermore, by operating at low altitudes, the sUAS will not interfere with aircraft that are subject to the minimum safe altitude regulations. Finally, the sUAS that Pinnacle operates has safeguards built into its design that warns pilots when approaching areas designated by the manufacture as "no fly zones". This causes the sUAS to initiate a descent to safe altitude or landing.

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

Pinnacle is seeking an exemption from 14 CFR 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 have GPS altitude readouts as opposed to barometric altimeters

Equivalent Level of Safety

An equivalent level of safety will be achieved by following the procedures set forth in Pinnacle's Operations Manual during the pre-flight routine. Prior to operations, Pinnacle will confirm the altitude of the launch site shown on the GPS altitude indicator. Moreover, the PIC will use the GPS altitude indicator to constantly monitor the sUASs height, thus ensuring operation at safe altitudes.

G. 14 CFR 91.151(a): Fuel Requirements for Flight in VFR Conditions

Pinnacle requests an exemption from 14 CFR § 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 25 minutes; or
>
> (2) At night, to fly after that for at least 45 minutes.

The batteries powering Pinnacle's sUASs provide approximately 18 minutes of powered flight for the DJI airframes and approximately 30 minutes of powered flight for Sensefly's airframe. To meet the 30 minutes reserve requirement in 14 CFR 91.151, sUAS flights could not be conducted. Given the limitations on the sUASs proposed flight area and the location of its proposed operations within a predetermined area, a safety margin based on a reserve

amount of battery life is needed.

Equivalent Level of Safety

An equivalent level of safety will be achieved because the operations will be conducted on-site without significant transit time by the sUAS. All flights will be planned to terminate with no less than 20% reserve battery power still available. This restriction would be more than adequate to safely return the sUAS to its planned landing zone from anywhere in the area of operation. The fuel requirement guidelines of Section 91.151(a) were intended to alleviate risks for larger manned aircraft that could operate great distances from suitable landing areas. Due to the limited distance the sUASs can fly, the small size of the operations area, and all operations being conducted within visual line-of-site, the sUASs maintain the ability to quickly return to their point-of-origin when necessary.

H. 14 CFR § 91.405(a), 91.407(a)(1), 91.409(a)(2); 91.417(a) and (b): Maintenance Inspections

Pinnacle is seeking an exemption from the maintenance inspection requirements contained in 14 CFR 91.405(a), 91.407(a)(1), 91.409(a)(2), 91.417(a) and (b). These regulations specify maintenance and inspection standards in reference to 14 CFR Part 43. 14 CFR 91.405(a) states that each owner or operator of an aircraft "shall have the 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". Part 43 and these sections only apply to aircraft with an airworthiness certificate; therefore an exemption to these regulations is needed, as the sUASs Pinnacle operates will not posses an airworthiness certificate.

Equivalent Level of Safety

Maintenance and inspections will be performed in accordance with the enclosed Pinnacle Operations Manual and the sUASs User's Manuals, therefore ensuring an equivalent level of safety. As provided in the Operations Manual, Pinnacle will perform required maintenance, keep a log of any maintenance performed, and the operator will confirm that the sUAS is in working order prior to initiating flight. 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. Due to the sUASs size and carrying capacity, and the fact that flight operations will only take place in restricted areas for limited periods of time, if a mechanical issue arises it creates less risk than that associated with conventional aircraft performing the same operation.

VI. Public Interest

Public interest is furthered with granting Pinnacle's exemption request. Congress's national

policy favors early integration of UAS into the national airspace in controlled, safe working environments such as those proposed in this petition. Pinnacle's goals are to help facilitate and promote the safe integration of sUASs into the NAS, while providing education and awareness of sUAS operations and capabilities. The following is not an exhaustive list of areas of interest:

- **Movies and Videography**

Small-unmanned aerial systems provide unparalleled capability in their ability to quickly adapt to any situation. Unlike traditional filming methods that can require excessive amounts of time to change camera angles for different views, sUASs are light, stabilized platforms that can quickly maneuver through the air into position for capturing every angle in high definition video.

- **Newsgathering**

Helicopters have been utilized in newsgathering for many years. They have provided the ability to easily maneuver into positions that allow for multiple viewing angles of a scene. However, the technology has now progressed to allow for much smaller, cost effective sUAS aircraft to capture breaking news with much less risk to persons or property. Since sUAS are dramatically smaller in size and weight in comparison to manned aircraft, carry no fuel, and operate within sterilized areas, they provide an increased margin of safety that is unrivaled.

- **Real Estate**

Real estate is an area that sUAS platforms have grown in popularity. Whether the real estate professional is listing commercial or residential properties, the sUAS enables them to capture dramatic shots for each property that would otherwise require costly and noisy helicopter operations. In addition to being able to capture spectacular exterior photos and video, Pinnacle's sUAS platforms possess internal sensors for stabilization while operating in areas where a GPS signal is not available. This adaptability gives real estate professionals a high quality, cost effective, safe, and simple solution to an otherwise costly and neighborhood-disrupting endeavor.

- **Search and Rescue/First Responders**

Search and rescue/first responder personnel will also benefit from sUASs capabilities of real-time video and surveys that Pinnacle provides. The sUASs ability to inspect dangerous or unstable areas without placing personnel at risk is monumental in saving lives. In addition, the sUASs can survey large areas of land to identify areas of interest at an expedited rate when compared to search and rescue personnel on foot. The sUAS excels over traditional manned aircraft during these instances in both cost and the safety of personnel on the ground.

- **Law Enforcement**

Small-unmanned aerial systems are designed for rapid deployment and covering specific areas of interest; these are key components for law enforcement officers. Recent developments in sUAS platforms are allowing for easy transition between HD photos and video. Utilizing a sUAS would prove useful by increasing officer safety when identifying areas of interests with potential threats as well as accident scene investigations and monitoring undercover operations from greater distances.

- **Agriculture and Conservation**

Pinnacle will demonstrate to farmers the advancements in agriculture analysis that a sUAS can provide in soil property and moisture analysis, plant counting, crop stress analysis, erosion analysis, 3D mapping, and other areas of agricultural land management. The sUAS can fly pre-programmed missions that allow the operator to gather precise data. While the sUAS is in flight, the pilot can assume full control to inspect areas of interest. Once it has been examined, the sUAS will resume its flight plan from the last point analyzed. Equipped with an IR camera, the sUAS can also provide farmers with real time video of locations of wildlife that potentially threaten their crops.

VII. Privacy

All flights will be conducted in accordance with any state, federal, or local laws regarding privacy. Pinnacle has inserted a section into its Operations Manual to protect the public privacy. There is great concern to maintain an expected level of public privacy during the use of sUASs. Guidelines in the Operations Manual outline Pinnacle's policy in notification of residential property owners, businesses, and other organizations when sUAS operations will be conducted in their area.

VIII. Federal Registry Summary

Pursuant to 14 CFR Part 11, the following summary is provided for publication in the Federal Register, should it be deemed that publication is needed:

Pinnacle Unmanned Aerial Systems, LLC, seeks an exemption from the following rules:

14 CFR Part 61.113 (a) and (b); 14 CFR 91.103; 14 CFR 109(a); 14 CFR 91.113; 14 CFR 91.119; 14 CFR 91.121; 14 CFR 91.151 (a); 14 CFR 91.405 (a); 14 CFR 91.407 (a)(1); 14 CFR 91.409 (a)(2); 14 CFR 91.417 (a) and (b).

IX. Conclusion

In meeting the criteria provided in Section 333 of the Reform Act of 2012, considering the size, speed, capabilities, utilization of visual line-of-sight, and operating constraints around controlled airspace and populated areas, Pinnacle has demonstrated justification for the grant of the requested exemptions to operate sUASs in the defined areas. Approval of this exemption request will allow Pinnacle Unmanned Aerial Systems, LLC, to conduct commercial operations with small-unmanned aerial systems. Due to each of the sUASs size, weight, lack of flammable fuel, and lack of passengers or crew on board, the risk to the general public and property owners are virtually eliminated.

If you have any questions or require any additional information, please do not hesitate to call.

Regards,

Cody Shehane, President
Pinnacle Unmanned Aerial Systems, LLC
Cell Phone: 817-888-0723
Email: Cody@PinnacleUAS.com

Attachments:

Pinnacle Unmanned Aerial Systems Operations Manual
DJI Inspire 1 Quick Start Guide V1.2
DJI Inspire 1 User Manual V1.2
DJI Phantom 3 Quick Start Guide V1.0
DJI Phantom 3 Professional User Manual V1.0
eBee Sensefly Technical Specifications

The above are submitted as Confidential Documents under 14 C.F.R. § 11.35(b) and exempt from disclosure under the Freedom of Information Act, 5 U.S.C. § 552 et seq., and any other **requirements established by the FAA pursuant to Section 333 of the Reform Act.**