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

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

August 3, 2015

Exemption No. 12292
Regulatory Docket No. FAA–2015–1291

Mr. Kent A. Cunningham
Director of Operations
Texas Unmanned Aerial Systems
831 CR 428
Uvalde, TX 78801

Dear Mr. Cunningham:

This letter is to inform you that we have granted your request for exemption. It transmits our decision, explains its basis, and gives you the conditions and limitations of the exemption, including the date it ends.

By letter dated April 3, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Texas Unmanned Aerial Systems (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial photography, videography, inspections, and UAS training .[1]

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 a Yuneec Electric Aviation Q500 Typhoon, Sensefly eBee, and DJI Phantom 2.

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,

[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.

delegated to me by the Administrator, Texas Unmanned Aerial Systems 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.

Conditions and Limitations

In this grant of exemption, Texas Unmanned Aerial Systems 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 Yuneec Electric Aviation Q500 Typhoon, Sensefly eBee, and DJI Phantom 2 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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Texas Unmanned Aerial Systems
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March 30, 2015

April 3, 2015

Re: Petition of Texas Unmanned Aerial Systems' for Exemption Request Pursuant to Section 333 of the FAA Reform Act and Part 11 of the Federal Aviation Regulations 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). Texas Unmanned Aerial Systems' (TUAS) hereby applies for an exemption in order to conduct commercial use operations with the Yuneec Electric Aviation Q500 Typhoon, Sensefly eBee, and DJI Phantom 2 unmanned aerial systems ("UAS"). In accordance with the requirements of the Federal Aviation Administration ("FAA"), TUAS operations have been designed to achieve a level of safety matching that required by the FAA regulations from which an exemption is requested. In support of its exemption request, Texas Unmanned Aerial Systems' provides the following information.

Dear Sir:
Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (the "Reform Act") and 14 CFR Part 11, Texas Unmanned Aerial Systems (TUAS), operator of an Unmanned Aircraft System (UAS), hereby applies for an exemption from the listed Federal Aviation Regulations to allow commercial operation of UAS, so long as operations are conducted under the conditions outlined herein or may be established by the FAA as required by Section 333.
The reason for relief from these regulations is to provide commercial operation of a UAS, as described herein, which are equipped with camera(s) and sensors, would be used in the following operations:

- Aerial video/photography for public and/or private use including real estate, architecture, land surveying, engineering, and other related commercial and professional activities.
- Aerial video/photography supporting agricultural and wildlife operations.
- Aerial video/photography supporting insurance company operations including insurability and adjustments.
- Aerial video/photography for public and/or private use including television, public events, cinematography and news gathering.

- Aerial inspection/photography of residential/commercial structures under contract with the owners or local government authority.
- Aerial inspection/photography of industrial structures under contract with the owners.
- Aerial inspection/photography of residential/commercial utility infrastructure including but not limited to electrical power lines, wind turbines and cell towers.
- Aerial video/photography or providing live video feed to assist with public agencies search and rescue operations in cases of an emergency or natural disaster when the government authorities request it.
- To offer training to both private and/or public organizations that have interests in the use and application of a UAS for the purpose of the safe operation of a UAS to enhance the safety of the NAS and for the safety of the persons and property.

The extent of relief TUAS seeks is:

1. To conduct flight operations with the Yuneec Electric Aviation Q500 Typhoon, Sensefly eBee, and DJI Phantom 2 unmanned aerial systems. All weigh less than 55 pounds including payload and carry no fuel and will not exceed 87K (100mph) in accordance with manufacturer's recommended operating procedures.
2. All flight operations will be conducted in Class G airspace and below 400' AGL, except with permission from airport management and NOTAM requirements. Flights will maintain VFR.
3. A Pilot in Command (PIC) and Visual Observer (VO) will maintain visual line of sight with UAS for duration of flight. The PIC and VO will be in constant communication audibly or by hands free radio.
4. PIC will hold airline transport, commercial, private, recreational, or sport pilot certificate with FAA-issued airman medical certificate or U.S. driver's license and meet the flight review requirements.
5. To conduct flight operations less than 500' from participating persons and structures.
6. All TUAS crew will be trained on respective aircraft. Flight hours and maintenance will be logged. All incidents and accidents, including equipment failure will be reported to FAA and NTSB as required.
7. All flight operations will undergo mission and flight planning, pre and post flight checks.
8. UAS flights will always give way to manned flight for safety.
9. Each and every operation will be conducted consistent with safety, property owner permissions and public privacy.
10. Aircraft will be on a maintenance schedule for inspected and repair and be recorded. All significant repairs will be completed with a functional test flight.
11. The ground control radio link uses 2.4 GHz Spread Spectrum on the ISM band, the video downlink is 5.8 GHz on the ISM band, and the telemetry downlink is 900MHz on the ISM band has been approved by the FCC.
12. PIC will have a minimum of 200 flight cycles {landings and takeoffs) and 25 hours of total flight time as a UAS pilot and must have logged at least 10 hours as a PIC with a UAS aircraft similar to the aircraft used for the commercial operation. PIC will also

have a minimum of 5 hours as pilot of the make and model UAS aircraft and have performed three takeoffs and landings within the preceding 90 days.

13. The VO will have completed the qualification process outlined in Texas Unmanned Aerial Systems' UAS Operations Manual.
14. All flight crews will comply with TUAS Operations Manual.

The reason for relief TUAS seeks is:

61.23(a) and (c) PIC to operate with 3rd class medical.

61.101(e)(4) and (5) Recreational pilot to act as pilot in command for compensation or hire, in furtherance of a business.

61.113(a) Private pilot certificate may act as pilot in command of an aircraft (UAS) for compensation or hire and act as pilot in command of an aircraft.

61.315(a) Sport Pilot certificate may act as pilot in command of an aircraft (UAS) for compensation or hire and act as pilot in command of an aircraft.

91.7(a) Operate UAS without airworthiness certificate.

91.119(c), To operate below Minimum safe altitudes, and under safe conditions operated closer than 500 feet to any person, vessel, vehicle, or structure.

91.121, Operate without and altimeter.

91.151(a)(1), Fuel requirements for flight in VFR conditions. UAS has no fuel. Terminate flight with at least 5 minutes battery power or operators manual recommendations, whichever is greater.

91.405(a), PIC will perform inspections to UAS according to manufacturer's operations manual.

91.407(a)(1), PIC will perform functional check flight prior to UAS return to service.

91.409(a)(1) and (2) Annual inspections are replaced with manufacturer's guidelines.

91.417(a) and (b). Company will keep UAS maintenance records including accidents and incidents.

The FAA has recently found that the enhanced safety achieved operating an unmanned aircraft Systems (UAS) weighing less than 55 lbs, carrying no passengers or crew, and no flammable fuel that would be enabled by this exemption is in the public interest. It should also

be noted that UAS complete operations without large amounts of fossil fuel but with pennies worth of electricity.

The exemption would not adversely affect safety and would provide a level of safety at least equal to the existing rules. The above information combined with the included documents state the evidence for this statement.

List of documents submitted in support of exemption request:

1. · TUAS Mission Statement.pdf
2. · TUAS Operations Manual 2_1.pdf
3. · Q500 Typhoon Instruction Manual v2.1.pdf
4. · DJI PHANTOM2_User_Manual_v1.4_en.pdf
5. · Sensefly eBee manuals
   FCCID.NET-2499469.pdf
   FCCID.NET-2499470.pdf
   FCCID.NET-2499471.pdf

Summary
Advancing technology has produced a new form of aircraft that will provide society with great benefits. It does however challenge the current operating standards. While the current U.S. ATC system is designed to handle a few thousand aircraft, UAS will number in the tens of thousands. The FAA is proposing to amend its regulations to adopt specific rules to allow the operation of small unmanned aircraft systems in the National Airspace System. These will address the operation of unmanned aircraft systems, certification of their operators, and registration. The airworthiness certification must be changed to accommodate small unmanned aircraft systems. Finally, the proposed rules should prohibit UAS from endangering the safety of the National Airspace System while allowing Americans to take advantage of what the UAS have to offer.

Please advise if you require any additional information regarding TUAS request for an exemption to conduct commercial UAS operations. Thank you for your service.

Respectfully submitted,

Kent A Cunningham
Director of Operations
Texas Unmanned Aerial Systems