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

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

July 15, 2015

Exemption No. 12063
Regulatory Docket No. FAA-2015-0972

Mr. Gavin Shouppe
4K Aerial Imaging
4336 Lakewood Drive
Marianna, FL 32448

Dear Mr. Shouppe:

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 letters dated April 10 and May 27, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of 4K Aerial Imaging (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct for power line inspection and general mapping for utility companies.

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 are the 3D Robotic Iris+ and TurboAce Matrix-G quadcopter.

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, 4K Aerial Imaging 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, 4K Aerial Imaging 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 3D Robotics Iris+ and TurboAce Matrix-G 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 July 31, 2017, unless sooner superseded or rescinded.

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

Enclosures

4K Aerial Imaging Petition for Section 333 Exemption

4K Aerial Imaging would like to obtain an exemption to fly two small Unmanned Aerial Systems (UAS) commercially for powerline inspection and general mapping for utility companies. The founders, Gavin Shouppe and Jeffrey Basford have read and understood the FAA regulations thoroughly and will adhere to them. In order to minimize risk to other aircraft, persons, property on the ground, and overall NAS, we will operate our two UAS under 200 feet at speeds no greater than 30 knots. We have gone through and passed a small UAS safety training course. A formal training program will be established, preflight checks will be conducted before every flight, maintenance logs will be recorded, and flight logs recorded as well. The aircraft will not be flown beyond line of sight or within five miles of an airport.

Additionally, both of our UAS have a return-to-home feature in the event that the data link connection with the transmitter is lost. Our first UAS is a 3D Robotics Iris+ that has a flight time of 15 minutes when carrying its payload, a GoPro camera. It is a plastic shell quadcopter that requires an adequate number of satellites for a GPS lock before it can be operated. The second UAS is a TurboAce Matrix-G quadcopter. This aluminum and carbon fiber quadcopter has a flight time of approximately 20 minutes with the given battery we have. It has numerous GPS and flight safety features built in that are similar to the features on the Iris+. It also carries a GoPro camera as its payload for obtain pictures and videos. The maximum operating range of the Iris+ is 1,500 feet while the maximum operating range for the TurboAce Matrix is 1.2 miles (it will still be kept within line of sight). Protocols have been established to abort flights in the event of a potential hazard or safety breach.

Where necessary, permission will always be obtained before flight operations are initiated over questionable areas. Both UAS' transmitters have battery indicators to alert us of our remaining flight time. A visual observer will always be used to aid the pilot in command. The UAS will not be operated when visibility is poor or weather is inclimate. Both UAS have First Person View (FPV) capabilities, which streams a live video feed from the GoPro camera to a monitor on the ground. Both transmitters that are responsible for controlling the two UAS operate on the 2.4 Ghz spectrum. This 2.4 Ghz frequency used for operations as well as the GoPro cameras are in compliance with the Federal Communication Commission (FCC). While both UAS will be operated within Line of Sight and a visual observer used, the FPV capability will only be used to provide additional situational awareness to the operator. All maintenance will be conducted by the pertinent manufacturers, 3D Robotics and TurboAce.

The first pilot in command is Gavin Shouppe who graduated from Embry-Riddle Aeronautical University with a Bachelor of Science degree in Aeronautics with minors in UAS, aviation safety, airport management, and management. He is currently employed at the Family Dollar Distribution Center. He has over 7 years experience working with and operating remotely piloted aircraft and over 3 years with UAS. He has over 30 hours experience with the Iris+ and is currently training for operations with the Matrix-G. The second pilot in command is Jeffrey Basford. He graduated from the Baptist College of Florida with a Bachelors Degree in Business Leadership. He is currently employed at the Tri-County Airport in Bonifay, Florida and also a youth pastor at Eastside Baptist Church in Marianna, Florida. He has 2 years of experience working with UAS and over 12 hours of experience with the Iris+. He is currently training for operations with the Matrix-G as

well.For visual observers, each person will act as the observer when the other person is acting as pilot in command. For example, if Jeffrey is acting as pilot in command of the UAS, then Gavin will act as the visual observer.

The safety of persons, property, other aircraft, and the overall NAS will not be adversely affected by the operations carried out by 4K Aerial Imaging. In order to efficiently inspect powerline poles and map areas as required by utility and electrical companies, 4K Aerial Imaging can operate both of its UAS under 200 feet and speeds well under 30 knots. At these low altitudes and speeds, hazards can be mitigated. The maximum speed both UAS will be operated at will be 20 knots. The primary results 4K Aerial Imaging seeks to obtain when inspecting powerlines and mapping is pictures and videos. Since the UAS will be operated at altitudes less than 200 feet, the distance from the ground to the average base of the lowest cloud layer (approximately 2,000 feet) will be large. Minimum flight visibility will be evaluated beforehand based on current and forecasted weather conditions. If flight visibility is less than 500 feet horizontally and less than 200 feet vertically (the maximum altitude of operation), then operations will be postponed. Potential hazards at these low operating altitudes include powerlines and powerline poles that will be inspected, trees, and birds. Characteristics of the areas that will be largely inspected include forests where transmission lines are, country roads, and fields. We have no intention of operating our UAS within a radius of 10 miles or closer to an airport.

A preflight safety risk assessment will be conducted through the use of battery voltage checkups, telemetry tests, propeller, motor, overall UAS inspection, and examination of the transmitter and verifying its connection with the UAS. Potential

persons or bodies affected by our UAS operations will be notified beforehand to mitigate risk and promote safety for them as well as our operations. We have liability insurance coverage of up to $2,000,000 in the event something goes wrong. In closing, our goal at 4K Aerial Imaging is to adhere to FAA regulations as the FAA continues to work to facilitate the integration of UAS into the NAS without adversely affecting persons, property, and other aircraft. 4K Aerial Imaging possesses the experience and trustworthiness to build a safer NAS for both manned and unmanned aircraft, now and in the future. Thank you for taking the time to read our petition for a Section 333 exemption to conduct commercial powerline and mapping operations for utility companies. We hope you consider this petition and grant us the exemption.

Information for 4K Aerial Imaging

Sections we are seeking relief from

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (the "Reform Act") ("Section 333"), Subsection (f) of 49 U.S.C. § 44701, and 14 C.F.R. Part 11, 4K Aerial Imaging, LLC requests an exemption from the following Federal Aviation Regulations ("FARs"): 14 C.F.R. Part 21; 14 C.F.R. 61.113(a) and (b); 14 C.F.R. 91.7(a); 14 C.F.R. 91.119(c); 14 C.F.R. 91.121; 14 C.F.R. 91.151(a); 14 C.F.R. 91.405(a); 14 C.F.R. 91.407(a)(1); 14 C.F.R. 91.409(a)(1) and (2); 14 C.F.R. 91.417(a) and (b).

Public Interest

4K Aerial Imaging's use of UAS for videoing and photographing utility components (e.g., powerlines, powerline poles, and transformers) as well as survey mapping can reduce the required manpower as well as the likelihood of inspection related injuries. A small UAS can be used to safely inspect powerlines instead of a large helicopter hovering within a close proximity of powerlines carrying persons onboard with hundreds of gallons of combustible fuel. The environmental impact can also be reduced when using small UAS instead of traditional methods of utility inspection. Small UAS can inspect, photograph and collect data in hard to reach areas that otherwise would require worker inspection. Manned aircraft have a greater possibility of becoming a threat to the general public through potential catastrophic crashes resulting in loss of life. Our small UAS pose no such threat due to their small size (each weighing less than 10 pounds), no onboard pilot, and lack of combustible fuel. This alleviates a large amount of potential threats to the public. Additionally, small UAS reduce the environmental impact by dramatically decreasing the energy used for aerial imaging. Our two UAS are powered by Li-Po batteries, which are much safer than combustible aviation fuel.

Safety Precautions

1.) The UAS will weigh less than 10 pounds.
2.) Flights will be operated within visual line of sight of the pilot.
3.) Maximum total flight time for each operational flight per UAS will not exceed 30 minutes.
4.) Flights will be operated normally at approximately 25 feet AGL, never exceeding 200 feet AGL.
5.) Vertical and horizontal flight speed will not exceed 20 miles per hour (mph).
6.) Crew for each operation will consist of the UAS Pilot who will keep the UAS within his/her visual line of sight at all times and a Visual Observer who will also keep the aircraft within line of sight as well as watch for other aircraft or personnel that might enter the operations area.
7.) Pilot and Visual Observer will keep in constant verbal contact throughout the duration of each flight. If conventional aircraft or unauthorized personnel enter the flight operations area unexpectedly, the flight will be terminated immediately.
8.) The UAS pilot will be trained in flight, operations, checklists and safety procedures pertinent to each UAS.

9.) The UAS will only operate in a confined predetermined area around which a security perimeter will be established for flight operations.
10.) A briefing will be conducted in regard to the planned UAS operations prior to each flight.
11.) Written and/or oral permission from the relevant property holders will be obtained where necessary.
12.) 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 when required.
13.) The pilot will take all actions including reviewing weather, flight battery requirements, landing and takeoff distances and aircraft performance data before initiation of flight.
14.) If either of our UAS loses communications or loses its GPS signal, it will be set to automatically return to a predetermined location within the security perimeter and land.
15.) The pilot will abort a flight (return to home) in case of unpredicted obstacles or emergencies with the push of a button.
16.) UAS will not be flown within 5 miles of airports as shown on current FAA-published aeronautical charts unless authorization has been granted by the controlling ATC facility governing that airport.
17.) Pilot will preflight/inspect UAS for airworthiness prior to each flight including the Ground Control station.
18.) Pilot will maintain each UAS and properly document all maintenance and alterations as conducted by the pertinent manufacturers.
19.) Pilot will conduct a functional test flight after all maintenance prior to the next operational flight.
20.) All flights will be flown only during daylight hours under visual meteorological conditions (VMC).

UAS Information
The following links will direct you to the additional information about our two UAS.

http://www.turboace.com/turbo-ace-matrix-g-devo10-gyrox3-fpv-case.aspx

https://store.3drobotics.com/products/iris

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