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

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

September 2, 2015

Exemption No. 12708
Regulatory Docket No. FAA−2015−0975

Dr. Robert Mark, Ph.D.
Rupestrian CyberServices
3644 North Stone Crest Street
Flagstaff, AZ 86004

Dear Dr. Mark:

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 16, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Rupestrian CyberServices (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct documentation of archaeological sites.

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 DJI Phantom 2, DJI Phantom 2 Vision+, and DJI Phantom 3.

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, Rupestrian CyberServices 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)

[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.

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, Rupestrian CyberServices 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 2, DJI Phantom 2 Vision+, and DJI Phantom 3 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 September 30, 2017, unless sooner superseded or rescinded.

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

Enclosures

Application for Section 333 Exemption

Robert Mark, Ph.D. and Evelyn Billo, DBA Rupestrian CyberServices (RCS) are applying for a Section 333 Exemption to permit the use of an ultralight quadcopter (Phanton 2 Vision+) for documenting archaeological sites. RCS is a cultural resource management firm dedicated to the documentation and protection of rock art, including petroglyphs, pictographs, intaglios, geoglyphs, and rock alignments. We assist various government agencies to accomplish this.

Robert Mark holds a Private Pilot (instrument rating) Certificate, and will act as PIC of an unmodified DJI Phantom 2 Vision+ quadcopter with prop guards(specifications attached). He has 2 years experience flying Phantom quadcopters. Evelyn Billo will be visual observer and operate the camera from an iPad, so that the PIC can pay full attention to flying the UA. We intend to fly at or below 200 feet, and within 500 feet of the PIC, in remote areas without the presence of people unrelated to the project, and without modern structures. Typical speed is 4 m/s or less. The UA will be flown under direct control of the PIC, or using iPad software to fly a predetermined grid for photogrammetry. It will always remain in direct view, and any preprogrammed flight can be interrupted for manual control at any time. No flights will take place in controlled airspace. Flights typically will last between 5 and 10 minutes, and will, in any case, be terminated before 30% battery charge remains.

Prior to flight, a preflight inspection will include battery and prop status, compass calibration, and determination of adequate GPS satellite reception, as well as an evaluation of weather and GPS conditions. Firmware will be kept upgraded to the current versions.

The UA automatically returns to home if communication is lost, and return-to-home can be initiated at any time by the PIC.

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Rob J Mark

PHANTOM 2 VISION

General Features

- Lightweight, multi-functional integrated aircraft and camera
- Camera remote-control by DJI VISION APP
- Range Extender increases Wi-Fi distance to 300m
- Anti-vibration camera platform with single axis stabilisation
- Low-voltage protection
- Virtual Radar aircraft locator on mobile device
- Range of camera tilt options
- Multiple, continuous and timed capture options
- HD Video Recording (1080/p30 or 1080/60i)
- RAW and JPEG picture formats

Aircraft

Battery	5200mAh LiPo
Weight (Battery & Propellers Included)	1160g
Hover Accuracy (Ready To Fly)	Vertical: 0.8m; Horizontal: 2.5m
Max Yaw Angular Velocity	200°/s
Max Tilt Angle	35°
Max Ascent / Descent Speed	Ascent: 6m/s; Descent: 2m/s
Max Flight Speed	15m/s (Not Recommended)
Diagonal Length	350mm
Tilting Range Of Gimbal	0°-60°

Transmitter

Operating Frequency	5.728GHz – 5.8GHz
Communication Distance (Open Area)	CE: 300m; FCC: 500m
Receiver Sensitivity (1%PER)	-93dBm
Transmitter Power	CE: 25mw; FCC: 125mw
Working Voltage	80 mA@6V
Battery	4 AA Batteries

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

Re: Exemption Request Under Section 333 of the FAA Reform Act and Part 11 of the Federal Aviation Regulations **Docket No. FAA-2015-0975**

Dear Sir or Madam:

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (the "Reform Act") and 14 C.F.R. Part 11, Rupestrian CyberServices, seeks an exemption from Federal Aviation Regulations ("FARs") detailed below for the DJI Phantom 2 Vision+, DJI Phantom 2, and DJI Phantom 3.

The requested exemption would support an application for a commercial Certificate of Authorization (COA) to use the system to support; photography of archaeological features, aerial photography, and mapping and surveying. By approving these exemptions, the FAA will create benefits to industries benefiting from applications of using multi-rotor UA Systems and the environment which are ultimately in the public interest.[1]

Each DJI UAS weighs less than 55 lbs. fully loaded, will be operated at a speed no more than 87 knots, carry neither a pilot nor passenger, carry no explosive materials or flammable liquids, and operate exclusively within an approved COA airspace. All DJI UA Systems use a radio frequency spectrum for operation and control that complies with Federal Communications Commission ("FCC") requirements and has integrated safety features as described within user manuals for each DJI UAS. The UAS are equipped with redundant safety mechanisms allowing them to operate safely after experiencing certain-flight failures. If a lost-link event occurs, including the loss of ground communications and/or the loss of a GPS signal, the UAS have the ability to perform a pre-coordinated, predictable, automated flight maneuver and return to a predetermined location within a designated security parameter for landing. The UAS further have the ability to abort a flight in the event of unpredicted obstacles or emergencies.
The aircraft will be operated in the field with both a Pilot in Command (PIC) and a ground-based Visual Observer (VO) in accordance with FAA Order 8900.1, vol. 16 "Unmanned Aircraft Systems" with the following additional restrictions:

- All operations will be conducted IAW the Air Traffic Organization (ATO) Certificate of Waiver or Authorization (COA).
- All UAS operations will remain clear of manned aviation operations and activities at all times.
- All operations will occur at altitudes no more than 400' AGL

[1] We will provide an explanation of equivalent level of safety for each exemption request, but will point back to the benefits to the environment to justify why the requests are in the public interest.

- Operations will be operated over private property or public lands with the permission of the land owner
- The UAS will not be operated by a PIC from any moving device.
- The aircraft will not be operated within 5 NM of an airport or heliport unless prior coordination with ATC or airport management is made.
- Operations will be limited to day, visual meteorological conditions
- Aircraft will remain within Visual Line of Sight of the PIC and VO at all times.
- While the aircraft is airborne, the VO will be positioned within voice distance to the PIC

The PIC and VO will meet the requirements outlined in FAA Order 8900.1, volume 16, chapter 4. The PIC will hold at least a recreational or sport pilot certificate. Additionally, the PIC will perform maintenance on the system and will complete a course of maintenance instruction as part of their initial training. Due to the simplicity of the system, we do not anticipate the need for a supplemental pilot.

We submit that the combination of the aircraft's light weight, historically demonstrated flight performance, fully qualified flight crew and strict operation under the guidelines established in 8900.1, the FAA can have confidence that the operation will have an equivalent or greater level of safety of manned aircraft performing the same mission.

The name and contact information of the applicant is:

Rupestrian CyberServices
Attn: Robert Mark
Ph: 928-526-3625
Email: rmark@infomagic.net

The regulations from which the exemption is requested are as follows:

- 14 CFR Part 21
- 14 CFR 91.203
- 14 CFR 45.23, 45.29
- 14 CFR 91.9
- 14 CFR 61.113, 61.133
- 14 CFR 91.109, 91.119
- 14 CFR 91.121, 91.151
- 14 CFR Subpart E (91.401 - 91.417)
- 14 CFR 91.103(b)

We are prepared to modify or amend any part of this request to satisfy the need for an equivalent level of safety. We look forward to working with your office. Please contact us at any time if you require additional information or clarification.

Sincerely,

Robert Mark
Owner
Rupestrian CyberServices

Appendices:
A. Exemption Request and Equivalent Level of Safety
B. Privacy Issues
C. Safety Assessment
D. Maintenance Procedures
E. User Manuals
F. Public Interest
G. DJI Multi-rotor Training Program