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

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

September 3, 2015

Exemption No. 12741
Regulatory Docket No. FAA–2015–1827

Mr. Randy Cox
KCSI Aerial Patrol
410 East Planz
Bakersfield, CA 93307

Dear Mr. Cox:

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 8, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of KCSI Aerial Patrol (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial videography and photography, oil field site inspection, real-estate marketing, aerial acquisitions used for inspections of public and private structures, and search and rescue operations.

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 and DJI Inspire 1.

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[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, KCSI Aerial Patrol 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.

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[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, KCSI Aerial Patrol 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 and DJI Inspire 1 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

UNITED STATES OF AMERICA

DEPARTMENT OF TRANSPORTATION

FEDERAL AVIATION ADMINISTRATION

WASHINGTON, DC

IN THE MATTER OF THE PETITION FOR EXEMPTION OF:

KCSI Aerial Patrol

FOR AN EXEMPTION SEEKING RELIEF FROM THE REQUIREMENTS OF

TITLE 14 OF THE CODE OF FEDERAL REGULATIONS

SECTIONS 61.113(a) & (b), 91.7(a), 91.121, 91.151(b), 91.405(a), 91.407(a) (1), 91.409(a) (1) & (a) (2), AND 91.417(a) & (b) CONCERNING COMMERCIAL OPERATION OF DJI PHANTOM 2 + GoPro Hero 4 Camera AIRCRAFT SYSTEMS

PURSUANT TO SECTION 333 OF

THE FAA MODERNIZATION AND REFORM ACT OF 2012

(PUBLIC LAW 112-95)

Submitted on 5-8-2015

KCSI Aerial Patrol

410 E. Planz

Bakersfield CA, 93311

661-834-6870

FAA Airman Certificate # See KCSI UAS Operation Manual

GLOSSARY OF ABBREVIATIONS

AGL Above Ground Level

AOI Area of Interest

ATC Air Traffic Control

ATO Air Traffic Organization

AV Aerial Vehicle

CFR Code of Federal Regulations

COA Certificate of Authorization

FAA Federal Aviation Administration

FAR Federal Aviation Regulation

GCS Ground Control Station

GPS Global Positioning System

LOL Loss of Link

NAS National Airspace System

NOTAM Notice to Airman

PIC Pilot In Command

Section 333 FAA Modernization and Reform Act of 2012 (FMRA) Section 333

SO Safety Observer

SOP Standard Operating Procedures

UA Unmanned Aircraft

UAS Unmanned Aircraft System

VFR Visual Flight Rules

VLOS Visual Line of Site

VMC Visual Meteorological Conditions

VTOL Vertical Takeoff and Landing

SUMMARY

KCSI Aerial patrol seeks exemption from the requirements of 14 C.F.R. §§ 61.113(a) & (b), 91.7(a), 91.121, 91.151(b), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b), to operate an Unmanned Aircraft System pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (FMRA). This exemption will permit KCSI Aerial Patrol to operate an Unmanned Aircraft System (UAS) for the commercial purpose of conducting aerial video and photography of Oil Field sites, Construction sites and any controlled job not over any persons directly involved in the operation.

INTRODUCTION AND INTERESTS OF THE PETITIONER

KCSI Aerial Patrol is a professional aviation company specializing in surveillance of oil and gas pipeline rigt-of-ways and production fields. The company was formed in 1994. As a growing business KCSI has always been in good standing with the FAA and holds higher requirements on staff and aircraft maintenance. All KCSI's pilot and potential UAS operators will have at least a commercial pilots certificate and a minimum of 1500 PIC flight hours with at least 25 hours of UAS flight time.

- Oil Field site inspection
- Construction sites before and after
- Real-estate marketing
- Motion Picture Filming
- Aerial acquisitions used for inspections of public and private structures.
- Search and Rescue operations

BACKGROUND

Unmanned Aircraft Systems: DJI Phantom 2 + Go Pro Hero Camera

KCSI Aerial Patrol seeks an exemption to operate DJI systems for compensation or hire within the NAS. The DJI Phantom 2 is a vertical takeoff and landing (VTOL) Unmanned Aircraft (UA) with a Ground Control Station (GCS) utilizing electronic tablet or smart phone systems. The DJI Phantom 2 has a maximum gross weight of approximately 2 pounds 11 ounces, while having a length of 16, inches width of 16 inches, height of 8 inches, and a maximum speed of approximately 29 knots. The DJI Phantom 2 UAS is equipped with four main rotors; driven by Lithium Polymer battery powered electric motors. The DJI Phantom 2 UAS that will be operated by KCSI Aerial Patrol Pilots and will be registered in accordance with 49 U.S.C. 44103, Registration of Aircraft, as well as 14 C.F.R Part 47, Aircraft Registration, and marked in accordance with 14 C.F.R. Part 45, Identification and Registration Marking.

BASIS FOR PETITION

Petitioner, KCSI Aerial Patrol, pursuant to the provisions of the Federal Aviation Regulations (14 C.F.R. § 11.61) and the FAA Modernization and Reform Act of 2012 (FMRA), Section 333, Special Rules for Certain Unmanned Aircraft Systems, hereby Petitions to commercially operate the DJI Phantom 2 UAS in the National Airspace System (NAS), and for an exemption from the requirements of 14 C.F.R §§ 61.113(a) & (b), 91.7(a), 91.121, 91.151(b), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b).

In consideration of the speed, weight, size, and limited operating area associated with the aircraft and its operation, KCSI Aerial Patrol operation of DJI Phantom 2 UAS meets the conditions of FMRA Section 333 and therefore, will not require airworthiness Certificate in accordance with 14 C.F.R. Part 21, Subpart H.

Accordingly, KCSI Aerial Patrol requests relief from Sections 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b), as these sections set forth requirements for maintenance that only apply to aircraft with an airworthiness certificate.

KCSI Aerial Patrol submits that the requested relief is proper since an equivalent level of safety will be ensured. KCSI Aerial Patrol will use experienced personnel or technicians to perform maintenance, alterations, or preventive maintenance on the UAS's using the methods, techniques, and practices prescribed in the operating documents (i.e., Monthly Maintenance Log, and DJI Phantom 2 Instruction Manual). Furthermore, KCSI Aerial Patrol will document and maintain all maintenance records for the DJI Phantom 2 UAS.

Relief from certain requirements of Section 61.113(a) and (b), entitled Private pilot

privileges and limitations: Pilot in command, is requested by KCSI Aerial Patrol to the extent necessary to allow a Pilot in Command (PIC) holding a private pilot or higher level certificate, as well as an airman medical certificate, and who has demonstrated, by meeting minimum flight- hour and currency requirements, that the PIC is able to safely operate the DJI Phantom 2 UAS in a manner consistent with this exemption, including evasive and emergency maneuvers and maintaining appropriate distances from people, vessels, vehicles and structures.

KCSI Aerial Patrol seeks relief from Section 91.7(a), entitled Civil aircraft airworthiness, because the DJI Phantom UAS do not require an airworthiness certificate in accordance with 14 C.F.R. Part 21, Subpart H. As such, KCSI Aerial Patrol submits that we will ensure that the DJI Phantom 2 UAS is in an airworthy condition, prior to every flight, by determining that the UAS is in compliance with the operating documents (i.e., Monthly Maintenance Log, and DJI Phantom 2 Instruction Manual), and that the aircraft are in a condition for safe flight.

KCSI Aerial Patrol also seeks an exemption from the requirements of Section 91.121, entitled Altimeter Settings, as the DJI Phantom 2 UAS will not have a typical barometric altimeter onboard. However, altitude information of the DJI Phantom 2 UAS will be provided to the PIC via Global Positioning System (GPS) equipment and radio communications telemetry data link, which downlinks from the UA to the GCS for active monitoring of the flight path. This altitude information, combined with KCSI Aerial Patrol's operation of the DJI Phantom 2 UAS within visual line of sight, at or below 500 feet AGL, will ensure a level of safety equivalent to Section 91.121.

Additionally, KCSI Aerial Patrol seeks an exemption from the requirements of Section 91.151(b), entitled Fuel requirements for flight in VFR conditions. KCSI Aerial Patrol submits that safety will not be affected by operation of the DJI Phantom 2 UAS during daylight hours in visual meteorological conditions (VMC) under visual flight rules (VFR), with enough battery power to fly for a total duration of approximately 13.5 minutes to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 4.5 minutes.

In accordance with 14 C.F.R. § 11.81, KCSI Aerial Patrol provides the following information in support of its petition for exemption:

A. Name And Address Of The Petitioner.

The name and address of the Petitioner and point of contact is:

Randy Cox
KCSI Aerial Patrol
410 E. Planz
Bakersfield CA, 93307
661-834-6870 Email: randy@kcsiaerialpatrol.com

B. The Specific Sections Of 14 C.F.R. From Which KCSI Aerial Patrol Seeks Exemption.

1. KCSI Aerial Patrol Seeks Exemption From The Requirements Of Section 61.113(a) And (b).

Section 61.113, entitled Private pilot privileges and limitations: Pilot in command, subsections (a) and (b) prescribe the following, in relevant part:

(a) No person who holds a private pilot certificate may act as a pilot in command

(PIC) of an aircraft that is carrying passengers or property for compensation or hire; nor may that person, for compensation or hire, act as PIC of an aircraft.
(b) A private pilot may, for compensation or hire, act as PIC of an aircraft in connection with any business or employment if—

(1) The flight is only incidental to that business or employment; and
(2) The aircraft does not carry passengers or property for compensation or hire.

2. KCSI Aerial Patrol Seeks Exemption From The Requirements Of Section 91.7(a).
Section 91.7, entitled Civil aircraft airworthiness, subsection (a), states the following:
(a) No person may operate a civil aircraft unless it is in an airworthy condition.

3. KCSI Aerial Patrol Seeks Exemption From The Requirements Of Section 91.121.
Section 91.121, entitled Altimeter settings, subsection (a), states the following, in part:
(a) Each person operating an aircraft shall maintain the cruising altitude or flight level of that aircraft, as the case may be, by reference to an altimeter that is set, when operating-

(1) Below 18,000 feet MSL, to-
(i) The current reported altimeter setting of a station along the route and within 100 nautical miles of the aircraft;
(ii) If there is no station within the area prescribed in paragraph (a)(1)(i) of this section, the current reported altimeter setting of an appropriate available station; or
(iii) In the case of an aircraft not equipped with a radio, the elevation of the departure airport or an appropriate altimeter setting available before departure.

4. KCSI Aerial Patrol Seeks Exemption From The Requirements Of Section 91.151(b).
Section 91.151, entitled Fuel requirements for flight in VFR conditions, subsection (b), states the following:

(b) No person may begin a flight in a rotorcraft 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, to fly after that for at least 20 minutes.

5. KCSI Aerial Patrol Seeks Exemption From The Requirement Of Section 91.405(a).
Section 91.405, entitled Maintenance required, subsection (a), states the following:
Each owner or operator of an aircraft—

(a) Shall have that aircraft inspected as prescribed in subpart E of this part and shall between required inspections, except as provided in paragraph (c) of this section, have discrepancies repaired as prescribed in part 43 of this chapter[.]

6. KCSI Aerial Patrol Seeks Exemption From The Requirements Of Section 91.407(a)(1)
Section 91.407, entitled Operation after maintenance, preventive maintenance, rebuilding, or alteration, subsection (a)(1), states the following:
(a) No person may operate any aircraft that has undergone maintenance, preventive

maintenance, rebuilding, or alteration unless-

(1) It has been approved for return to service by a person authorized under § 43.7 of this chapter[.]

7. KCSI Aerial Patrol Seeks Exemption From The Requirements Of Sections 91.409(a)(1) And 91.409(a)(2).

Section 91.409, entitled Inspections, subsection (a), states the following:

(a) Except as provided in paragraph (c) of this section, no person may operate an aircraft unless, within the preceding 12 calendar months, it has had-

(1) An annual inspection in accordance with part 43 of this chapter and has been approved for return to service by a person authorized by § 43.7 of this chapter; or

(2) An inspection for the issuance of an airworthiness certificate in accordance with part 21 of this chapter.

8. KCSI Aerial Patrol Seeks Exemption From The Requirements Of Sections 91.417(a) And 91.417(b).

Section 91.417, entitled Maintenance records, subsections (a) and (b), state the following:

(a) Except for work performed in accordance with §§ 91.411 and 91.413, each registered owner or operator shall keep the following records for the periods specified in paragraph (b) of this section:

(1) Records of the maintenance, preventive maintenance, and alteration and records of the 100-hour, annual, progressive, and other required or approved inspections, as appropriate, for each aircraft (including the airframe) and each engine, propeller, rotor, and appliance of an aircraft. The records must include-

(i) A description (or reference to data acceptable to the Administrator) of the work performed; and

(ii) The date of completion of the work performed; and

(iii) The signature, and certificate number of the person approving the aircraft for return to service.

(2) Records containing the following information:

(i) The total time in service of the airframe, each engine, each propeller, and each rotor.

(ii) The current status of life-limited parts of each airframe, engine, propeller, rotor, and appliance.

(iii) The time since last overhaul of all items installed on the aircraft which are required to be overhauled on a specified time basis.

(iv) The current inspection status of the aircraft, including the time since the last inspection required by the inspection program under which the aircraft and its appliances are maintained.

(v) The current status of applicable airworthiness directives (AD) and safety directives including, for each, the method of compliance, the AD or safety directive number and revision date. If the AD or safety directive involves recurring action, the time and date when the next action is required.

(vi) Copies of the forms prescribed by § 43.9(d) of this chapter for each major alteration to the airframe and currently installed engines, rotors, propellers, and appliances.

(b) The owner or operator shall retain the following records for the periods prescribed:
(1) The records specified in paragraph (a)(1) of this section shall be retained until the work is repeated or superseded by other work or for 1 year after the work is performed.
(2) The records specified in paragraph (a)(2) of this section shall be retained and transferred with the aircraft at the time the aircraft is sold.
(3) A list of defects furnished to a registered owner or operator under § 43.11 of this chapter shall be retained until the defects are repaired and the aircraft is approved for return to service.

C. The Extent of Relief KCSI Aerial Patrol Seeks And The Reason KCSI Aerial Patrol Seeks The Relief.

1. Extent Of Relief KCSI Aerial Patrol Seeks And The Reason KCSI Aerial Patrol Seeks Relief From Section 61.113(a) And (b).

Relief from Section 61.113(a) and (b) entitled Private pilot privileges and limitations: Pilot in command, is requested to the extent necessary to allow a PIC holding a private pilot or higher level certificate, as well as a current and valid airman medical certificate, and who has met certain flight-hour and currency requirements, to conduct the proposed UAS flight operations for compensation or hire.

This relief is requested since the limitations set forth in Section 61.113(a) and (b) state that a private pilot may, for compensation or hire, act as PIC of an aircraft in connection with any business or employment if: (1) The flight is only incidental to that business or employment; and (2) The aircraft does not carry passengers or property for compensation or hire.

As set forth more fully below, KCSI Aerial Patrol submits that an equivalent level of safety will be maintained because no PIC will be allowed to operate the DJI Phantom 2 UAS unless that PIC has met certain flight-hour and currency requirements, demonstrating that the PIC is able to safely operate the DJI Phantom 2 UAS in a manner consistent with the operations specifications as described in this exemption, including evasive and emergency maneuvers, as well as maintaining appropriate distances from people, vessels, vehicles and structures.

Further, Aerial Patrol submits that all flights of the DJI Phantom 2 UAS, conducted by the PIC pursuant to the grant of this Petition:

(1) Will be incidental to KCSI Aerial Patrol business; and
(2) Will not carry passengers or property for compensation or hire.

2. Extent Of Relief KCSI Aerial Patrol Seeks And The Reason KCSI Aerial Patrol Seeks Relief From Section 91.7(a).

Relief from Section 91.7(a) entitled Civil aircraft airworthiness, is requested to the extent required to allow KCSI Aerial Patrol to determine that the DJI Phantom 2 UAS are in airworthy condition prior to every flight by ensuring that the UAS is in compliance with the operating documents (i.e., the KCSI Aerial Patrol Operations Manual, Monthly Maintenance Log, and DJI Phantom 2 Instruction Manual).

KCSI Aerial Patrol seeks the requested relief because the DJI Phantom 2 UAS do not require an airworthiness certificate in accordance with 14 C.F.R. Part 21, Subpart H. Therefore, KCSI Aerial Patrol will ensure that the DJI Phantom 2 UAS are in airworthy condition based upon its compliance with the operating documents (i.e., Monthly Maintenance Log, and DJI Phantom 2 Instruction Manual) prior to every flight, and further, determine that the aircraft are in condition for safe flight, as stated in the conditions and limitations below.

3. Extent Of Relief KCSI Aerial Patrol Seeks And The Reason KCSI Aerial Patrol Seeks Relief From Section 91.121.

Relief from Section 91.121, entitled Altimeter settings, may be required to allow flight operations of the DJI Phantom 2 UAS, which utilize a barometric pressure sensor, GPS equipment, and a radio communications telemetry data link to downlink altitude information from the UA to the PIC at the ground control station (GCS). Since the FAA requires that any altitude information concerning UAS operations be reported to air traffic control (ATC) in feet above ground level (AGL), KCSI Aerial Patrol seeks the requested relief because the DJI Phantom 2 UA's altimeter may be set on the ground to zero feet AGL, rather than the local barometric pressure or field altitude, before each flight. Considering the limited altitude of the proposed operations, relief from 14 CFR 91.121 is sought to the extent necessary to comply with the applicable conditions and limitations stated below. As more fully set forth herein, an equivalent level of safety will be maintained since the DJI Phantom 2 UAS are equipped with a barometric pressure sensor and GPS equipment, which automatically ensures that a ground level pressure setting will be established prior to each flight, and provides the PIC with altitude information of the UA on the heads-up display of the GCS.

4. Extent Of Relief KCSI Aerial Patrol Seeks And The Reason KCSI Aerial Patrol Seeks Relief From Section 91.151(b).

Relief from Section 91.151(b) entitled Fuel requirements for flight in VFR conditions, is requested to the extent required to allow flights of the battery powered DJI Phantom 2 UAS during daylight hours in visual meteorological conditions (VMC), under visual flight rules (VFR), for a total duration of 13.5 minutes to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 4.5 minutes. KCSI Aerial Patrol seeks the requested relief because without an exemption from Section 91.151(b), the flight time duration of the battery powered DJI Phantom 2 UAS will severely constrain the practicality of any aerial video or still photo flight operations that KCSI Aerial Patrol proposes to conduct pursuant to this Petition.

Significantly, as set forth below, the technical specifications of the DJI Phantom 2 UAS operating documents, and KCSI Aerial Patrol's proposed operating limitations, ensure that KCSI Aerial Patrol will safely operate the battery powered DJI Phantom 2 UAS during daylight hours in visual meteorological conditions (VMC), under visual flight rules (VFR), with enough battery power to fly for a total duration of 13.5 minutes to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 4.5 minutes.

5. Extent Of Relief KCSI Aerial Patrol Seeks And The Reason KCSI Aerial Patrol Seeks Relief From Sections 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), And 91.417(a) & (b). Since Sections 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b) only apply to aircraft with an airworthiness certificate, KCSI Aerial Patrol requests relief from these Sections because the DJI Phantom 2 UAS do not require airworthiness certificates. As set forth more fully below, the

DJI Phantom 2 UAS meet the conditions of FMRA Section 333 for operation without an airworthiness certificate. Accordingly, KCSI Aerial Patrol will use trained technicians to perform maintenance, alterations, or preventive maintenance on the UASs using the methods, techniques, and practices prescribed in the UAS operating documents (i.e., the KCSI Aerial Patrol Operations Manual, Monthly Maintenance Log, and DJI Phantom 2 Instruction Manual). Furthermore, KCSI Aerial Patrol will document and maintain all maintenance records for the DJI Phantom 2 UAS. **D. The Reasons Why**

Granting KCSI Aerial Patrol Request Would Be In The Public Interest; That Is, How It Would Benefit The Public As A Whole.

Granting the present Petition will further the public interest by allowing KCSI Aerial Patrol to safely and efficiently perform aerial video and photography inspection of oilfield sites and equipment, construction sites, real estate, and landscape over certain areas of the United States where before would create a significant risk to a person's wellbeing. Additionally, use of the DJI Phantom 2 UAS will decrease congestion of the NAS, reduce pollution, and provide significant benefits to the economy. Notably, the benefits of KCSI Aerial Patrol proposed operation of the DJI Phantom 2 UAS will be realized without implicating any privacy issues.

1. The Public Will Benefit From Decreased Congestion Of The NAS.

The DJI Phantom 2 Vision UAS are battery powered and serve as a safe, efficient, and economical alternative to the manned aircraft traditionally utilized to obtain aerial imagery. By reducing the amount of manned aircraft needed to perform aerial acquisitions, an exemption allowing the use of a DJI Phantom 2 UAS would reduce the amount of manned aircraft in the NAS, reduce noise and air pollution, as well as increase the safety of life and property in the air and on the ground. Furthermore, by reducing the number of manned aircraft operating in the NAS, congestion around airports caused by arriving and departing aircraft will be reduced. The DJI Phantom 2 UAS do not require an airport to takeoff or land. Likewise, a reduction of manned aircraft conducting aerial video and photography missions would result in fewer aircraft that must be handled by air traffic control during the ground, takeoff, departure, arrival, and landing phases of flight operations.

2. The Public Will Benefit From The Safety And Efficiency Of The DJI Phantom 2 UAS.

Conducting aerial acquisitions with the DJI Phantom 2 UAS, instead of manned aircraft, will greatly benefit the public by drastically reducing the levels of air and noise pollution generated during traditional aerial video and still photography flight operations. By using battery power and electric motors, the DJI Phantom 2 UAS produces no air pollution, and is the most viable environmentally conscious alternative to the cabin class, six cylinder internal combustion engine aircraft that are typically utilized for aerial video and photography, while burning approximately 20-30 gallons per hour of leaded aviation fuel. The DJI Phantom 2 UAS, while reducing the carbon footprint of aerial acquisitions, also eliminates noise pollution, as the UAS are propelled by battery powered electric motors, rather than an internal combustion engine. By using the DJI Phantom 2 UAS to perform aerial acquisitions, the substantial risk to life and property in the air and on the ground, which is usually associated with traditional manned aircraft flight operations, will be substantially reduced or completely eliminated. Aside from the lack of flight crew members located onboard the aircraft, the DJI Phantom 2 UAS (weighing approximately 2 pounds 11 ounces at its maximum gross weights with lengths of 16 inches respectively, widths of 16 inches respectively, and with no fuel on board), has less physical potential for collateral damage to life and property on the ground, and in the air, compared to the manned aircraft

that typically conduct similar operations (weighing approximately 6,000 pounds with a wingspan of approximately 42 feet, a length of 34 feet, and a fuel capacity of 180 gallons).

3. Performing Aerial Video and Photography Operations With The DJI Phantom 2 UAS Will Benefit The Economy.

In addition to being safe and efficient, the DJI Phantom 2 UAS are also an economical alternative to using manned aircraft to conduct similar aerial operations. As such, operation of the DJI Phantom 2 UAS will allow United States based companies, like KCSI Aerial Patrol, to remain competitive and contribute to growth of the U.S. economy. Specifically, with the rising cost of aviation fuel and the Environmental Protection Agency ("EPA") regulatory actions phasing out leaded aviation fuels, U.S. owned and operated companies must adopt new and alternative technology in order to remain competitive. Operating the battery powered DJI Phantom 2 UAS is one such technology that not only allows companies greater operational flexibility compared to manned aircraft, but provides such flexibility without the high operational cost of a traditional manned aircraft. By operating the DJI Phantom 2 UAS, companies such as KCSI Aerial Patrol, can remain competitive and profitable, and therefore, provide greater job stability to employees and contractors, which will ultimately contribute to growth of the U.S. economy. Improved financial performance of U.S. companies, through commercial use of the DJI Phantom 2 UAS, provides a stable workforce that increases consumer spending; improves local, state, and federal tax revenues; and allows companies to invest in research and development in order to remain competitive both in the United States and abroad.

4. There Are No Privacy Issues.

Similar to the manned aerial acquisition flight operations that have been conducted , KCSI Aerial Patrol's proposed operation of the DJI Phantom 2 UAS will not implicate any privacy issues. Specifically, the DJI Phantom 2 UAS will be operated only in compliance with operating documents (i.e., the KCSI Aerial Patrol Operations Manual, Monthly Log, and DJI Phantom 2 Instruction Manual) which requires property owner involvement as well as local law enforcement notification, and in accordance with the Federal Aviation Regulations, including the minimum altitude requirements of 14 C.F.R. § 91.119.

E. The Reasons Why Granting The Exemption Would Not Adversely Affect Safety, Or How The Exemption Would Provide A Level Of Safety At Least Equal To That Provided By The Rule From Which KCSI Aerial Patrol Seeks Exemption.

1. Reasons Why The DJI Phantom 2 UAS Meet The Conditions Of The FAA Modernization and Reform Act of 2012 (FMRA)

Section 333.

In consideration of the size, weight, speed, and limited operating area associated with the unmanned aircraft and its operation, KCSI Aerial Patrol's operation of the DJI Phantom 2 UAS meet the conditions

of FMRA Section 333, and will not require an airworthiness certificate in accordance with 14 C.F.R. Part 21, Subpart H.

Section 333 provides authority for a UAS to operate without airworthiness certification and sets forth requirements for considering whether a UAS will create a hazard to users of the NAS or the public, or otherwise pose a threat to national security. Specifically, FMRA Section 333 states the following, in part:

> (a) In General.--Not withstanding any other requirement of this subtitle, and not later than 180 days after the date of enactment of this Act, the Secretary of Transportation shall determine if certain unmanned aircraft systems may operate safely in the national airspace system before completion of the plan and rulemaking required by section 332 of this Act or the guidance required by section 334 of this Act.
>
> (b) Assessment of Unmanned Aircraft Systems.--In making the determination under subsection (a), the Secretary shall determine, at a minimum-
>
> > (1) which types of unmanned aircraft systems, if any, as a result of their size, weight, speed, operational capability, proximity to airports and populated areas, and operation within visual line of sight do not create a hazard to users of the national airspace system or the public or pose a threat to national security; and
> >
> > (2) whether a certificate of waiver, certificate of authorization, or airworthiness certification under section 44704 of title 49, United States Code, is required for the operation of unmanned aircraft systems identified under paragraph (1).
>
> (c) Requirements for Safe Operation.--If the Secretary determines under this section that certain unmanned aircraft systems may operate safely in the national airspace system, the Secretary shall establish requirements for the safe operation of such aircraft systems in the national airspace system.

In seeking this exemption, KCSI Aerial Patrol submits that the DJI Phantom 2 UAS can operate safely in the NAS pursuant to FMRA Section 333, as demonstrated by: (a) the characteristics of the DJI Phantom 2 UAS; (b) the pilot certification requirement; and (c) the specific operating limitations.

a. The Specifications Of The DJI Phantom 2 UAS Demonstrate Its Safe Characteristics.

The DJI Phantom 2 UAS do not create a hazard to users of the NAS or the public, or otherwise pose a threat to national security considering its size, weight, speed, and operational capability.

i. Technical Specifications Of The DJI Phantom 2 UAS.

The technical specifications of the DJI Phantom 2 UAS are set forth by the DJI Phantom 2 Specifications and Data Sheet, attached hereto as Appendix A.

ii. The DJI Phantom 2 UAS Autonomous Flight And Navigation Modes Enable The UASs To Remain Within A Defined Operational Area.

The DJI Phantom 2 UAS may be operated in both manual and fully autonomous flight modes. A complete description of the flight and navigational modes of the DJI Phantom 2 UAS is provided on the User Manual, attached here as Appendix B.

iii. The DJI Phantom 2 UAS Is Designed For Automatic Return To Home Point Or Hover In The Event Of Loss Of The Control Link Or Navigation.

When the Control Link is lost, the DJI Phantom 2 UAS will remain stationary, in flight, for 3 seconds or more. If, after 3 seconds, the DJI Phantom 2 UAS do not reacquire control link data from the GCS, the UAS will assume that the Control Link is lost and the UAS will return to the home position (i.e., failsafe mode) via GPS, and will descend to the takeoff position and shutdown.

A complete description of the Failsafe Functions of the DJI Phantom 2 UAS are set forth on the DJI Phantom 2 User Manual, attached here as Appendix B.

iv. The DJI Phantom 2 GCS And Its Operation.

A complete description of the operation and specifications of the DJI Phantom 2 GCS and flight control software is provided at pages 32 through 43 of the DJI Phantom 2 User Manual. DJI Phantom 2 User Manuals are attached hereto as Appendix B.

b. Flight Operations Of DJI Phantom 2 UAS Are Limited To The Line Of Sight Of A Certificated Pilot in Command With A Safety Observer.

KCSI Aerial Patrol will only utilize certificated pilots who possess a current and valid airman medical certificate to act as a pilot in command (PIC) of the DJI Phantom 2 UAS. Additionally, a safety observer will assist all pilots during flight time.

c. Flights Of DJI Phantom 2 UAS Will Be Conducted Pursuant To Specific Operating Limitations.

In seeking this exemption, KCSI Aerial Patrol proposes to commercially operate DJI Phantom 2 UAS for the special purpose of conducting aerial video and photography over certain areas of United States, pursuant to the following specific operating limitations:

1. Operations authorized by this grant of exemption will be limited to the following aircraft described in the operating documents, rotorcraft UASs weighing less than 55 pounds maximum gross weight: DJI Phantom 2 Unmanned Aircraft Systems. Proposed operations of any other aircraft will require a new petition or a petition to amend this grant.

2. UAS operations under this exemption will be limited to conducting operations for the purpose of aerial video and photography.

3. The UAs may not be flown at an indicated airspeed exceeding 20 knots.

4. The UA must be operated at an altitude of no more than 500 feet above ground level (AGL), as indicated by the procedures specified in the operating documents unless a special request is made and approved by ATC. All altitudes reported to ATC must be in feet AGL.

5. The UAS 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.

6. The use of first person view (FPV) by the PIC or safety observer (SO) is not permitted.

7. All operations must utilize a safety observer (SO). The SO may be used to satisfy the VLOS requirement as long as the PIC always maintains VLOS capability. The SO 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 SO can perform the functions prescribed in the operating documents.

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

9. The operating documents and the grant of exemption must be accessible during UAS operations and made available to the Administrator upon request. If a discrepancy exists between the conditions and limitations contained in the grant of exemption and the procedures outlined in the operating documents, the conditions and limitations contained in the grant of exemption take precedence and must be followed. Otherwise, the operator must follow the procedures as outlined in its operating documents. The operator may update or revise its operating documents. It is the operator's responsibility to track such revisions and present updated and revised documents to the Administrator upon request. The operator must also present updated and revised documents if it petitions for extension or amendment to the grant of exemption. If the operator determines that any update or revision would affect the basis upon which the FAA granted the exemption, then the operator must petition for 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.

10. Prior to each flight the PIC must inspect the UAS to ensure that it is in a condition for safe flight. 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. The Ground Control Station must be included in the preflight inspection. All maintenance and alterations must be properly documented in the aircraft records.

11. Any UAS that has undergone maintenance or alterations that affect the UAS operation or flight characteristics, e.g. replacement of a flight critical component, must undergo a functional

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

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

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

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

15. Each UAS,s operated under this exemption must comply with all manufacturer Safety Bulletins.

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

17. The PIC must possess at least a private pilot certificate and at least a current third- class medical certificate.

18. The operator may not permit any PIC to operate unless the PIC meets the operator's qualification criteria and demonstrates the ability to safely operate the UAS in a manner consistent with how the UAS will be operated under the exemption, including evasive and emergency maneuvers and maintaining appropriate distances from persons, vessels, vehicles and structures. PIC qualification flight hours must be logged in a manner consistent with 14 C.F.R. § 61.51(b). Flights for the purposes of training the operator's PICs are permitted under the terms of the 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 C.F.R. § 91.119.

19. UAS operations may not be conducted during night, as defined in 14 C.F.R. § 1.1. All operations must be conducted under visual meteorological conditions (VMC). If flight at night is required, a special request will be made at the FAA office closest to proposed area of operations. Flights under special visual flight rules (SVFR) are not authorized.

20. The UA may not operate within 5 nautical miles of an airport reference point as denoted on a current FAA-published aeronautical chart unless a letter of agreement with that airport's management is obtained, and the operation is conducted in accordance with a NOTAM as

required by the operator's COA. The letter of agreement with the airport management must be made available to the Administrator upon request.

21. The UAS 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.

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

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

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

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

26. All aircraft operated in accordance with the exemption must be identified by serial number, registered in accordance with 14 C.F.R. part 47, and have identification (N- Number) markings in accordance with 14 C.F.R. part 45, Subpart C. Markings must be as large as practicable.

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

28. The documents required fewer than 14 C.F.R. 91.9 and 91.203 must be available to the PIC at the Ground Control Station of the UAS any time the UAS is operating. These documents must be made available to the Administrator or any law enforcement official upon request.

29. The UAS must remain clear and yield the right of way to all manned aviation operations and activities at all times.

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

31. Flight operations must be conducted at least 500 feet from all nonparticipating persons (persons other than the PIC, SO, operator trainees or essential persons), vessels, vehicles, and structures unless:

a. Barriers or structures are present that sufficiently protect nonparticipating persons from the UAS and/or debris in the event of an accident. The operator must ensure that nonparticipating persons remain under such protection. If a situation arises where nonparticipating persons leave such protection and are within 500 feet of the UA, flight operations must cease immediately and/or;

b. The aircraft is operated near vessels, vehicles or structures where the owner/controller of such vessels, vehicles or structures has granted permission and the PIC has made a safety assessment of the risk of operating closer to those objects and determined that it does not present an undue hazard, and;

c. Operations nearer to the PIC, SO, operator trainees or essential persons do not present an undue hazard to those persons per § 91.119(a).

32. All operations shall be conducted over private or controlled-access property with permission from the land owner/controller or authorized representative. Permission from land owner/controller or authorized representative will be obtained for each flight to be conducted.

33. Any incident, accident, or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA must be reported to the FAA's UAS Integration Office (AFS-80) within 24 hours. Accidents must be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.ntsb.gov.

2. Reasons Why An Exemption From The Requirements Of Section 61.113(a) And (b) Would Not Adversely Affect Safety.

KCSI Aerial Patrol submits that the equivalent level of safety established by Section 61.113(a) and (b) will be maintained because no PIC will be allowed to operate the DJI Phantom 2 UAS unless that PIC has demonstrated, by meeting minimum flight-hour and currency requirements, that the PIC is able to safely operate the DJI Phantom 2 UAS in a manner consistent with the exemption, including evasive and emergency maneuvers and maintaining appropriate distances from people, vessels, vehicles and structures.

Considering KCSI Aerial Patrol's proposed area of operations, and the operating limitations set forth-above; the parallel nature of private pilot aeronautical knowledge requirements to those of commercial pilot requirements (See Exemption No. 11062); and the airmanship skills necessary to safely operate the DJI Phantom 2 UAS, KCSI Aerial Patrol submits that although the additional manned airmanship experience of a commercially certificated pilot would not correlate to the airmanship skills necessary for specific proposed flight operations, however all KCSI Aerial Patrol's pilots are commercially rated and hold a current first class medical.

The FAA has previously granted relief from Section 61.113(a) and (b) specific to UAS, in circumstances similar, in all material respects, to those presented herein (e.g. Exemption Nos. 11062, 11063, 11064,

11065, 11066, 11067, 11080, 11109, 11110, 11112, 11136, 11138, 11150, 11153, 11156, 11158, 11159, 11160, 11161).

KCSI Aerial Patrol will not allow any PIC to operate the DJI Phantom 2 UAS unless that PIC has demonstrated, by meeting minimum flight-hour requirements or the DJI Phantom 2 UAS training and currency requirements, that the PIC is able to safely operate the DJI Phantom 2 UAS in a manner consistent with this exemption, including evasive and emergency maneuvers and maintaining appropriate distances from people, vessels, vehicles and structures.

Specifically, the PIC must have accumulated and logged, in a manner consistent with 14 C.F.R. § 61.51(b), 25 hours of total time as a UAS rotorcraft pilot (with a minimum of 5 hours of those hours as a UAS pilot operating the same make and model of UAS to be used for operations under the exemption). In addition to the hour requirements, the PIC must accomplish 3 takeoffs and landings in the preceding 90 days (for currency purposes).

As in Exemption Nos. 11062, 11138, and 11153, prior documented flight experience that was obtained in compliance with applicable regulations will ensure an equivalent level of safety during KCSI Aerial Patrol's proposed operations. The Administrator has held that prior documented flight experience that was obtained in compliance with applicable regulations would ensure safe operations, stating as follows:

> In Exemption No. 11062, the FAA required that prior to conducting operations for the purpose of motion picture filming (or similar operations), the PIC must have accumulated and logged, in a manner consistent with 14 CFR 61.51(b), 25 hours of total time as a UAS rotorcraft pilot including at least 10 hours logged as a UAS pilot with a multi-rotor UAS. Prior to operations under Exemption No. 11062, the PIC must also have accumulated and logged a minimum of 5 hours as a UAS pilot operating the same make and model of UAS to be used for operations under the exemption. For clarification, the FAA considers these minimum hour requirements to be inclusive rather than additive; i.e. 5 hours make and model time may be included in the 10 hours of multi-rotor time and the 10 hours may be included in the total 25 hours of UAS rotorcraft time. In addition to the hour requirements, the PIC must accomplish 3 takeoffs and landings in the preceding 90 days (for currency purposes). The FAA finds that at a minimum, the flight-hour requirements in Exemption No. 11062 are appropriate to practice and build proficiency in the skills necessary to safely conduct the petitioner's proposed operations. The FAA also finds that prior documented flight experience that was obtained in compliance with applicable regulations would satisfy this requirement. Training, proficiency, and experience-building flights can also be conducted under the grant of exemption to accomplish the required flight time. During training, proficiency, and experience-building flights the PIC is required to operate the UA with appropriate distances in accordance with 14 C.F.R 91.119.

Exemption No. 11138 at page 15.

Accordingly, KCSI Aerial Patrol will ensure safe operations by not allowing any PIC to operate the DJI Phantom 2 UAS unless that PIC has demonstrated, by meeting minimum flight-hour and currency requirements, that the PIC is able to safely operate the DJI Phantom 2 UAS in a manner consistent with

the exemption, including evasive and emergency maneuvers and maintaining appropriate distances from people, vessels, vehicles and structures.

3. Reasons Why An Exemption From The Requirements Of Section 91.7(a) Would Not Adversely Affect Safety.

The equivalent level of safety established by Section 91.7(a) will be maintained because prior to every flight, KCSI Aerial Patrol's pilots will ensure that the DJI Phantom 2 UAS is in an airworthy condition based upon the UAS's compliance with its operating documents and as stated in the conditions and limitations herein.

Additionally, the FAA has previously granted relief from Section 91.7(a) specific to UAS, in circumstances similar, in all material respects, to those presented herein (e.g. Exemption Nos. 11062, 11063, 11064, 11065, 11066, 11067, 11080, 11109, 11110, 11112, 11136, 11138, 11150, 11153, 11156, 11157, 11158, 11159, 11160, 11161).

4. Reasons Why An Exemption From The Requirements Of Section 91.121 Would Not Adversely Affect Safety.

The equivalent level of safety established by Section 91.121 will be maintained because the altitude information of the DJI Phantom 2 UAS will be provided to the PIC via GPS equipment and a radio communications telemetry data link, which downlinks from the UA to the GCS for active monitoring of the flight path and altitude. This altitude information, combined with KCSI Aerial Patrol's operation of the DJI Phantom 2 UAS within visual line of sight, at or below 500 feet AGL, will ensure a level of safety equivalent to Section 91.121. The altitude information will be generated by GPS equipment installed onboard the aircraft. Prior to each flight, a zero altitude initiation point is automatically established by the UASs at ground level.

The FAA has previously granted relief from Section 91.121 specific to UAS, in circumstances similar, in all material respects, to those presented herein (e.g. Exemption Nos. 11062, 11063, 11064, 11065, 11066, 11067, 11080, 11109, 11112, 11136, 11138, 11150, 11153, 11156, 11157, 11158, 11159, 11160, 11161).

5. Reasons Why An Exemption From The Requirements Of Section 91.151(b) Would Not Adversely Affect Safety.

A grant of this exemption would ensure an equivalent level of safety established by 14 C.F.R. Section 91.151(b) as a result of (1) the technical specifications of the DJI Phantom 2 UAS; (2) the limitations on the proposed flight operations; and (3) the location of the proposed flight operations. Accordingly, KCSI Aerial Patrol will ensure that it will safely operate the battery powered DJI Phantom 2 UAS during daylight hours in VFR conditions, with enough battery power to fly for a total duration of 13.5 minutes to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 4.5 minutes.

Here, as in Exemption No. 11109, the technical specifications of the DJI Phantom 2 UAS; the limitations on the proposed flight operations; and the location of the proposed operations, will ensure an

equivalent level of safety established by 14 C.F.R. Section 91.151(b). Furthermore, safety will be ensured as the DJI Phantom 2 UAS provide audible and visual warnings to the PIC at the GCS when the UAS experiences low battery voltage, the first warning occurring at approximately 33% remaining battery power, and again at approximately 10% remaining battery power. At the critically low battery level, the DJI Phantom UAS will descend and land automatically.

Significantly, previous exemptions granted by the FAA concerning Section 91.151 establish that safety is not adversely affected when the technical characteristics and operating limitations of the UAS are considered. Relief has been granted for manned aircraft to operate at less than the minimums prescribed in Section 91.151, including Exemption Nos. 2689, 5745, and 10650. Moreover, the FAA has previously granted relief from Section 91.151 specific to UAS, in circumstances similar, in all material respects, to those presented herein (e.g. Exemption Nos. 8811, 10808, 10673, 11042, 11062, 11063, 11064, 11065, 11066, 11067, 11080, 11109, 11110, 11136, 11138, 11150, 11153, 11156, 11157, 11158, 11159, 11160, 11161).

6. Reasons Why An Exemption From The Requirements Of Sections 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), And 91.417(a) & (b) Would Not Adversely Affect Safety.

In seeking this exemption, KCSI Aerial Patrol submits that the equivalent level of safety with regard to the regulatory maintenance and alteration requirements established by Sections 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b) will be met because KCSI Aerial Patrol has a full aircraft maintenance crew at its disposal to perform maintenance, alterations, or preventive maintenance on the UAS using the methods, techniques, and practices prescribed in the operating documents (i.e., the KCSI Aerial Patrol Operations Manual, Monthly Maintenance Log, and DJI Phantom 2 Instruction Manual). Furthermore, KCSI Aerial Patrol's staff will document and maintain all maintenance records for the DJI Phantom 2 UAS.

Since the DJI Phantom 2 UAS will be inspected as prescribed by the operating documents, KCSI Aerial Patrol will maintain the equivalent level of safety established by Sections 91.405(a), 91.409(a)(1), and 91.409(a)(2). A copy of the DJI Phantom 2 User Manuals are attached hereto as Appendix B; a copy of the DJI Phantom 2 UAS Maintenance LOG is attached hereto as Appendix C.

Likewise, the exemption sought will not adversely affect safety because KCSI Aerial Patrol will use trained technicians to perform maintenance, alterations or preventive maintenance on the UAS using the methods, techniques, and practices prescribed by the operating documents.

Furthermore, the exemption sought would maintain an equivalent level of safety established by Sections 91.407, 91.417(a) and 91.417(b), because all maintenance of the DJI Phantom 2 UAS will be performed by trained technicians. Maintenance will be documented and maintained utilizing the monthly maintenance log. Significantly, previous exemptions granted by the FAA concerning Sections 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b) establish that safety is not adversely affected when the technical characteristics and operating limitations of the UAS are considered.

In consideration of KCSI Aerial Patrol's proposed operating limitations, the operating documents, and the technical aspects of the DJI Phantom 2 UAS, KCSI Aerial Patrol submits that safety will not be adversely affected by granting exemption from 14 C.F.R. Sections 91.405(a), 91.407(a)(1) and (a)(2), 91.409(a)(2), and 91.417(a) and (b). The FAA has previously granted relief specific to UAS in circumstances similar, in all material respects, to those presented herein (e.g. Exemption Nos. 11062, 11063, 11064, 11065, 11066, 11067, 11080, 11109, 11110, 11112, 11136, 11138, 11150, 11153, 11156, 11157, 11158, 11159, 11160, 11161).

7. The FAA May Prescribe Any Other Conditions For Safe Operation.

In accordance with Section 333 of the FAA Modernization and Reform Act of 2012 (FMRA) and 14 C.F.R. § 21.16 entitled Special Conditions, KCSI Aerial Patrol requests that the FAA prescribe special conditions for the intended operation of the DJI Phantom 2 UAS, which contain such safety standards that the Administrator finds necessary to establish a level of safety equivalent to that established by 14 C.F.R. Part 21, Subpart H, and 14 C.F.R §§ 61.113(a) & (b), 91.7 (a), 91.121, 91.151(b), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b). Such special conditions will permit safe operation of the UAS for the limited purpose of conducting aerial video and photography over certain areas of the United States for compensation or hire. FMRA Section 333 sets forth the requirements for considering whether a UAS will create a hazard to users of the NAS or the public, or otherwise pose a threat to national security; and further, provides the authority for such UAS to operate without airworthiness certification in accordance with any requirements that must be established for the safe operation of the UAS in the NAS.

Likewise, the Administrator may prescribe special conditions pursuant to 14 C.F.R. § 21.16, for operation of the DJI Phantom 2 UAS, since the airworthiness regulations of 14 C.F.R. Part 21 do not contain adequate or appropriate safety standards, due to the novel or unusual design features of the aircraft. Section 21.16, entitled Special Conditions, states the following:

> If the FAA finds that the airworthiness regulations of this subchapter do not contain adequate or appropriate safety standards for an aircraft, aircraft engine, or propeller because of a novel or unusual design feature of the aircraft, aircraft engine or propeller, he prescribes special conditions and amendments thereto for the product. The special conditions are issued in accordance with Part 11 of this chapter and contain such safety standards for the aircraft, aircraft engine or propeller as the FAA finds necessary to establish a level of safety equivalent to that established in the regulations.

See 14 C.F.R. § 21.16.

Therefore, in accordance with FMRA Section 333 and 14 C.F.R. § 21.16, the FAA may prescribe special conditions for KCSI Aerial Patol's intended operation of the DJI Phantom 2 UAS, which contain such safety standards that the Administrator finds necessary to establish a level of safety equivalent to that established by 14 C.F.R. Part 21, Subpart H, and 14 C.F.R Sections 61.113(a) & (b), 91.7(a), 91.121, 91.151(b), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b).

F. A Summary That Can Be Published In The Federal Register, stating: The Rules From Which KCSI Aerial Patrol Seeks Exemption:

KCSI Aerial Patrol seeks exemption from the requirements of 14 C.F.R Sections 61.113(a)&(b), 91.7(a), 91.121, 91.151(b), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b).

A Brief Description Of The Nature Of The Exemption KCSI Aerial Patrol Seeks:

This exemption will permit KCSI Aerial Patrol to commercially operate an Unmanned Aircraft System (UAS) for the purpose of conducting aerial video and photography over certain areas of the United States.

G. Any Additional Information, Views, Or Arguments Available To Support KCSI Aerial Patrol's Request.

This Petition is made pursuant to the FAA Modernization and Reform Act of 2012 (FMRA) Section 333, which directs the Secretary of Transportation to determine if certain UAS may operate safely in the NAS. As such, KCSI Aerial Patrol's request for exemption may be granted pursuant to the authority of FMRA Section 333 and 14 C.F.R. Part 11, as set forth above.

FMRA Section 333 sets forth the requirements for considering whether a UAS will create a hazard to users of the NAS or the public, or otherwise pose a threat to national security; and further, provides the authority for such UAS to operate without airworthiness certification.

As discussed in detail above, KCSI Aerial Patrol will operate the DJI Phantom 2 UAS safely in the NAS, without creating a hazard to users of the NAS, or the public, or otherwise pose a threat to national security.

CONCLUSION

As set forth herein, KCSI Aerial Patrol seeks an exemption pursuant to 14 C.F.R. § 11.61 and Section 333 of the FAA Modernization and Reform Act of 2012 (FMRA), which will permit safe operation of the DJI Phantom 2 UAS commercially, without an airworthiness certificate, for the limited purpose of conducting aerial video and photography over certain areas of the United States. By granting this Petition, the FAA Administrator will be fulfilling the Congressional mandate of the FAA Modernization and Reform Act of 2012, while also advancing the interests of the public, by allowing KCSI Aerial Patrol to safely, efficiently, and economically operate the DJI Phantom 2 UAS commercially within the NAS.

Wherefore, in accordance with the Federal Aviation Regulations and the FAA Modernization and Reform Act of 2012, Section 333, KCSI Aerial Patrol respectfully requests that the Administrator grant this

Petition for an exemption from the requirements of 14 C.F.R Sections 61.113(a) & (b), 91.7(a), 91.121, 91.151(b), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b), and permit KCSI Aerial Patrol to operate the DJI Phantom 2 UAS commercially for the purpose of conducting aerial video and photography over certain areas of the United States.

Dated:

Respectfully submitted,

Randy Cox

KCSI Aerial Patrol

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Bakersfield, CA 93307

661-834-6870

Appendices:

A – DJI Phantom 2 Specifications Data Sheet

B – Link to DJI Phantom 2 and Zenmuse H3-2D Gimbal Manufacturer's User Manual

C – Flight Log

APPENDIX – A

DJI PHANTOM 2 TECHNICAL SPECIFICATIONS

Model No.P330Z

S/N: PH645413822 V2.0

KCSI Aerial Patrol only utilizes safe and reliable UASs. DJI is an industry leader in small UAS production. DJI UASs are loaded with ground breaking software enabling the user to set parameters which will not allow flight into controlled airspace. Parameters can also be set to limit flight to no higher than a predetermined and set altitude as well as limit flight to a predetermined and set distance. In addition, DJI software provides real-time altitude and location information to the PIC via the linked monitor (smart phone/tablet devices)

1.1 DJI Phantom 2

1.1.1 Aircraft

1.1.1.1 Supported Battery – DJI 5200mAH LiPo Battery

1.1.1.2 Weight (Battery & Propellers Included) – 2lbs 11.810oz (1242g)

1.1.1.3 Hover Accuracy (Ready to Fly) – Vertical: .8m; Horizontal: 2.5m

1.1.1.4 Max Yaw Angular Velocity - 200°/s

1.1.1.5 Max Tilt Angel - 35°

1.1.1.6 Max Ascent Speed – 6m/s

1.1.1.7 Max Descent Speed – 2m/s

1.1.1.8 Max Flight Speed – 15m/s (NOT RECOMMENDED)

1.1.2 Gimbal

1.1.2.1 Working Current – Static: 750mA; Dynamic: 900mA

1.1.2.2 Control Accuracy - ±0.03°

1.1.2.3 Controllable Range – Pitch: -90°- 0°

1.1.2.4 Maximum Angular Speed – Pitch: 90°/s

1.1.3 Camera

1.1.3.1 Operating Temperature Range – 32°F – 104°F (0°C – 40°C)

1.1.3.2 Sensor Size – 1/2.3"

1.1.3.3 Effective Pixels – 14M

1.1.3.4 Resolution – 4384x3288

4.1.3.5 HD Video Recording – 1080p30 & 720p

4.1.3.6 Recording Field of View - 110°/85°

1.1.4 Transmitter

1.1.4.1 Operating Frequency – 5.728GHz – 5.85GHz

1.1.4.2 Communication Distance (unobstructed) – FCC Compliance: 800m

1.1.4.3 Receiver Sensitivity (1%PER) --93dBm

1.1.4.4 Transmitter Power – FCC Compliance: 100mW

1.1.4.5 Working Voltage – 120mA@3.7V

APPENDIX – B

DJI Phantom 2 Manufacturer's User Manual

http://download.dji-innovations.com/downloads/phantom_2/en/PHANTOM2_User_Manual_v1.4_en.pdf

Zenmuse H3-2D Gimbal

http://download.dji-

innovations.com/downloads/phantom_2/Zenmuse_H3_2D_Gimbal_Quick_Start_Guide.pdf