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

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

September 16, 2015

Exemption No. 12860
Regulatory Docket No. FAA−2015−2085

Mr. Donald Isaac Tillotson
P.O. Box 8002
Columbus, GA 31908

Dear Mr. Tillotson:

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 20, 2015, you petitioned the Federal Aviation Administration (FAA) for an exemption. You requested to operate an unmanned aircraft system (UAS) to conduct aerial photography, videography, mapping, crop/land surveying, inspections, and data collection.

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 is a DJI Phantom 2.

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, Mr. Donald Isaac Tillotson is granted an exemption from 14 CFR §§ 61.23(a) and (c), 61.101(e)(4) and (5), 61.113(a), 61.315(a), 91.7(a), 91.119(c), 91.121, 91.151(a)(1), 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b), to the extent necessary to allow the petitioner to operate a UAS to perform aerial data collection. This exemption is subject to the conditions and limitations listed below.

Conditions and Limitations

In this grant of exemption, Mr. Donald Isaac Tillotson is hereafter referred to as the operator.

[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.

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 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 (FAA)
WASHINGTON, DC

Regulatory Docket No. _____

IN THE MATTER OF THE PETITION FOR EXEMPTION OF:
DONALD ISAAC TILLOTSON

FOR AN EXEMPTION SEEKING RELIEF FROM THE REQUIREMENTS OF TITLE 14 OF THE CODE OF FEDERAL REGULATIONS SECTIONS: PART 21, SUBPART H; SECTIONS §§45.23(B), 61.23(A) AND (C), 61.101(E)(4) AND (5), 61.113(A), 61.315(A), 91.7(A), 91.9(B)(2), 91.119, 91.121, 91.151(A), 91.203(A) AND (B), 91.405(A), 91.407(A)(1), 91.409(A)(2), AND 91.417(A) AND (B) CONCERNING COMMERCIAL OPERATION OF DJI PHANTOM 2 UNMANNED AIRCRAFT SYSTEMS (UAS) PURSUANT TO SECTION 333 OF THE FAA MODERNIZATION AND REFORM ACT OF 2012

Submitted on May 20, 2015

By:

Donald Isaac Tillotson
P.O. Box 8002, Columbus, GA 31908
Phone: 706-561-3959
Fax: 678-668-8954

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Lofty360
Isaac Tillotson
P.O. Box 8002
Columbus, GA 31908

May 20, 2015

United States Department of Transportation
Federal Aviation Administration (FAA)
800 Independence Ave, SW
Washington, DC 20591

RE: Exemption Request From Certain Title 14 CFRs About Section 333 of the FAA Modernization & Reform Act of 2012 Which Concerns Unmanned Aircraft Systems - (UAS)

Dear Sir or Madam:

I, Donald Isaac Tillotson, sole owner/operator of Lofty360 (a division of The Tillotson Group, Ltd) prepared the following exemption request and provide all supporting documents for your review and approval. Any use of terms such as "I" "My" "We" "Our" or "The Company" from here forth within this document refer to Lofty360.

SUMMARY:

Lofty360, hereafter referred to as the petitioner, requests exemptions from the following sections of Title 14, Code of Federal Regulations: Part 21, subpart H; Sections §§45.23(b), 61.23(a) and (c), 61.101(e)(4) and (5), 61.113(a), 61.315(a), 91.7(a), 91.9(b)(2), 91.119, 91.121, 91.151(a), 91.203(a) and (b), 91.405(a), 91.407(a)(1), 91.409(a)(2), and 91.417(a) and (b) to the extent necessary to allow the petitioner to operate a UAS to perform aerial data collection while keeping the documents required by regulations at the ground control station and immediately accessible to the PIC. Furthermore, the exemption will relieve Lofty360 from the airworthiness certificate standards and the requirement to have a certificate of airworthiness issued for its UAS. This exemption will also permit any required markings concerning the operational status of the UAS to be displayed on the fuselage of the unmanned aircraft.

INTRODUCTION AND INTERESTS OF THE PETITIONER:

I (Lofty360) desire to operate small unmanned aircraft systems (UAS) commercially in airspace regulated by the Federal Aviation Administration (FAA) for the purposes of aerial photography, videography, mapping, crop / land surveying, inspections and other flight operations "for hire" that could be performed safely and more cost effectively by using a small UAS at low altitude within the U.S. national airspace system rather than manned aircraft.

UAS operations will be performed only when at the request of, with the authorization of, and or permission of clients or their authorized agents in order to facilitate commerce and raise awareness of the beneficial uses of small unmanned air systems (UAS). Operations will be conducted within and under the conditions outlined herein and as is established by the FAA as required by Section 333. The conditions identified and proposed by the petitioner (Lofty360) are drawn from references to the FAA requirements.

- As found in Exemption No. 11138 (Trudeau), the FAA recently approved similar use of a PHANTOM 2 UAS. We will operate a UAS, the DJI PHANTOM 2, which is comprised of an unmanned aircraft (UAS or PHANTOM), an attached GoPro Hero 3+ camera and a transportable ground station.

- Isaac Tillotson, UAS Pilot in Command, holds a Commercial Pilot license and IFR rating with over 780 hours of flight time. PIC has substantial training and flight time in various single engine, complex, and multi engine aircraft and the knowledge and training required to ensure a high level of safety required by current regulations. All pilots who conduct flight operations with Lofty360's UAS will hold at least a FAA Private Pilot License and 3rd class FAA Airman's Medical or valid U.S. Driver's license.

- As PIC, I have been building and flying Radio Control (R/C) Aircraft since 1978 and have been flying the DJI Phantom 2 UAS since 2014. I have flown over 85 flights as a hobbyists simulating flights for future commercial use and have become familiar with the performance characteristics of the UAS under different temperature and weather conditions. PIC is very skilled, comfortable, and capable in flying UAS.

GLOSSARY OF ABBREVIATIONS

AGL - Above Ground Level	ATC - Air Traffic Control	COA - Certificate of Authorization
FAA - Federal Aviation Administration	FAR - Federal Aviation Regulation	NAS - National Airspace System
SMS - Safety Management System	UAS - Unmanned Aircraft System	VFR - Visual Flight Rules
VMC - Visual Meteorological Conditions	IFR - Instrument Flight Rules	PIC - Pilot In Command
SO - Safety Observer	GPA - Global Positioning Sys	RC - Radio Control

In accordance with 14 C.F.R. § 11.81, Lofty360 provides the following information in support of its petition for exemption:

A. Name, Address Petitioner: Lofty360, a division of The Tillotson Group, Ltd., P.O. Box 8002, Columbus, GA 31908.

The **point of contact for this petition**:

Isaac Tillotson, President
Lofty360 (a Division of The Tillotson Group, Ltd)
P.O. Box 8002, Columbus, GA 31908
Tel: (706) 561-3959
Fax: (678) 668-8954
Email: Isaac@Lofty360.com

B. The Specific Sections Of 14 C.F.R. From Which Lofty360 Seeks Exemption:

BACKGROUND: Unmanned Aircraft System: DJI Phantom 2 version 3.02 (UAS). Lofty360 seeks an exemption to operate a DJI Phantom 2 (UAS), registration number to be determined, for compensation or hire within the national airspace system ("NAS"). The DJI Phantom 2 (UAS) is comprised of an unmanned quad-rotor aircraft and a transportable ground station.

The DJI Phantom 2 (UAS) has a maximum gross weight of approximately 4.4 pounds while having a diagonal length of 13.7 inches. The DJI Phantom 2 unmanned quad-rotor is equipped with four independent electric motors turning fixed pitch rotors powered by a single Lithium Polymer battery. It is controlled primarily through an FCC certified radio control (RC) unit. Real time video and telemetry information is transmitted back to a ground control station allowing the PIC to monitor battery level, GPS signal strength, altitude (AGL), distance, camera imagery, and control the camera angle. The UAS has failsafe modes of operation for either loss of RC or GPS signal. Battery life limits flight times to approximately 25 minutes. The onboard flight controller will warn the pilot via telemetry and external lighting cues before reaching a low battery state. An automatic termination of flight and landing will be initiated when the battery reaches a predetermined low state. The UAS has an advertised maximum speed of less than 30 knots and a maximum climb rate of less than 1,200 feet per minute and it utilizes an internal inertial measuring unit (IMU) with integrated barometric sensor augmented with global positioning system (GPS) to maintain its geospatial orientation and position. More information available in User's Manual and at **www.DJI.com**. The petitioner requests an FAA exemption referencing Conditions and Limitations and believes that the procedures specified herein are reasonable and will be utilized in order to manage and mitigate risk and ensure public safety.

Proven Operational History of the DJI Phantom 2 UAS in the NAS:

The DJI Phantom 2 UAS is a common, commercially available, model of remote multi-rotor aircraft. It is currently operating safely within the NAS pursuant to Advisory Circular 91-57, June 9, 1981. The DJI Phantom family of aircraft has been operating worldwide since 2006.

Figure 1: The DJI Phantom 2 (UAS) - see attached User's Manual for complete specifications.

1) Reasons Why An Exemption From The Requirements Of Section 91.7(a) Would Not Adversely Affect Safety: Lofty360 seeks an exemption from **14 C.F.R. § 91.7(a) - -**

The equivalent level of safety established by Section 91.7(a) will be maintained because prior to every flight, PIC 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).
The petitioner seeks exemption from the aforementioned **FARs** for the following reasons; **61.113(a) & (b);** The petitioner requests relief in order to facilitate the utilization of pilots, who hold a PRIVATE PILOT (or greater) certificate. Any pilots operating under this exemption would be required to comply with any conditions as set forth and in a similar fashion to the previously granted exemptions.

2) Lofty360 seeks an exemption from 14 C.F.R. § 91.9(b). Section 91.9 entitled *Civil aircraft flight manual, marking, and placard requirements*, subsection (b) states the following: (b) No person may operate a U.S.-registered civil aircraft--

> (1) For which an Airplane or Rotorcraft Flight Manual is required by § 21.5 of this chapter unless there is available in the aircraft a current, approved Airplane or Rotorcraft Flight Manual or the manual provided for in § 121.141(b); and
>
> (2) For which an Airplane or Rotorcraft Flight Manual is not required by § 21.5 of this chapter, unless there is available in the aircraft a current approved Airplane or Rotorcraft Flight Manual, approved manual material, markings, and placards, or any combination thereof.

The equivalent level of safety will be achieved by keeping the flight manual (*see , e.g.* , User's Manual) at the ground control station where the pilot is flying the UAS and will have immediate access to it. The FAA has issued to others the following exemptions to this regulation: Exemption Nos. 8607, 8737, 8738, 9299, 9565, 10167, 10602, 32827, 10700 etc.

3) Lofty360 Seeks Exemption From The Requirements Of Sections 91.119 and 91.121:
91.119(c) As discussed in Exemption 11138 (DOUGLAS TRUDEAU), operations conducted closer than 500 feet to the ground may require that the UAS be operated closer than 500 feet to essential persons, or objects that would not be possible without additional relief. The petitioner requests modification, waiver or exemption and clarification concerning the terms "congested areas" and "densely populated". The petitioner requests waiver for this condition to allow reasonable and responsible operations in areas as required.

91.121 As discussed in Exemption 11138 (DOUGLAS TRUDEAU) is inapplicable since the UAS does not have an altimeter and instead utilizes electronic GPS with a barometric sensor for altitude information. 91.151(a) As discussed in Exemption 11136 (ADVANCED AVIATION SOLUTIONS LLC) prior relief has been granted for manned aircraft to operate at less than the prescribed minimums, including Exemption Nos. 2689, 5745, and 10650. In addition, similar UAS-specific relief has been granted an Exemption Nos. 8811, 10808, and 10673 for daytime, VFR conditions. The UAS provides battery power remaining in percent to the PIC. The UAS batteries provide approximately 25 minutes of powered flight. Information provided in operating documents discuss procedures regarding remaining battery power management. Those documents contain a condition in which the PIC will initiate a landing procedure when battery remaining reaches a specified level. Given the limitations on proposed operations and the location of those proposed operations, The FAA found that a reduced minimum power reserve for flight in daytime VFR conditions was reasonable.

4) Lofty360 Seeks Exemption From The Requirements Of Sections 91.203(a) and 91.203(b). Lofty360 seeks an exemption from **14 C.F.R. § 91.203(a) and (b).** Section 91.203entitled *Civil aircraft: Certifications required*, subsections (a) and (b) state the following: (a) Except as provided in § 91.715, no person may operate a civil aircraft unless it has within it the following: (1) An appropriate and current airworthiness certificate. Each U.S. airworthiness certificate used to comply with this subparagraph (except a special flight permit, a copy of the applicable operations specifications issued under § 21.197(c) of this chapter, appropriate sections of the air carrier manual required by parts 121 & 135 of this chapter containing that portion of the operations specifications issued under § 21.197(c), or an authorization under § 91.611) must have on it the registration number assigned to the aircraft under part 47 of this chapter. However, the airworthiness certificate need not have on it an assigned special identification number before 10 days after that number is first affixed to the aircraft. A revised airworthiness certificate having on it an assigned special identification number, that has been affixed to an aircraft, may only be obtained upon application to an FAA Flight Standards district office. (2) An effective U.S. registration certificate issued to its owner or, for operation within the United States, the second copy of the Aircraft registration Application as provided for in § 47.31(c), or a registration certification issued under the laws of a foreign

country. (b) No person may operate a civil aircraft unless the airworthiness certificate required by paragraph (a) of this section or a special flight authorization issued under § 91.715 is displayed at the cabin or cockpit entrance so that it is legible to passengers or crew. This UAS is less than 5 pounds and does not have capacity or room to carry a pilot nor certification and as a result, we request the FAA allow Lofty360 and PIC to keep the documents at the Ground Control Station of the UAS any time the UAS is operating. These documents will be made available to the Administrator or any law enforcement official upon request. Previous exemptions include Nos. 9565, 9665, 9789, 9797, 9816A, and 10700 etc.

5) Lofty360 Seeks Exemption From The Requirements Of Sections 91.405(a); 91.407(a)(1); 91.409 (a)(1) & (2); 91.417(a) & (b) As discussed in Exemption 11138 (DOUGLAS TRUDEAU), The petitioner proposes to inspect and ensure that the UAS is in a condition for safe flight in accordance with the operating documents. The FAA found that adherence to the petitioner's operating documents and the conditions and limitations specified, describing requirements for maintenance, inspection, and recordkeeping, were sufficient to ensure that safety would not be adversely affected. All required maintenance will be documented and maintained utilizing the maintenance log.

6) Lofty360 Seeks Exemption From The Requirements Of Section 45.23(b).

Lofty360 seeks an exemption from **14 C.F.R. § 45.23(b)**. Section 45.23 entitled *Display of marks; general*, subsection (b), states the following: (b) When marks include only the Roman capital letter "N" and the registration number is displayed on limited, restricted or light-sport category aircraft or experimental or provisionally certificated aircraft, the operator must also display on that aircraft near each entrance to the cabin, cockpit, or pilot station, in letters not less than 2 inches nor more than 6 inches high, the words "limited," "restricted," "light-sport," "experimental," or "provisional," as applicable.

7) Lofty360 Requests Relief To Exempt The DJI Phantom 2 UAS From The Restricted Category Airworthiness Certification Standards Specified In 14 C.F.R. §21.185.

In accordance with the FAA Modernization and Reform Act of 2012, Section 333, and 14 C.F.R. § 21.16 entitled *Special Conditions*, Lofty360 seeks to exempt the DJI Phantom 2 UAS from the restricted category airworthiness certification specified in **14 C.F.R. § 21.185**, or the requirement to have a certificate of airworthiness issued, as contemplated by **14 C.F.R. Part 21**. Section 21.185 entitled *Issue of airworthiness certificates for restricted category aircraft*, states the following, in part: a) Aircraft manufactured under a production certificate or type certificate. An applicant for the original issue of a restricted category airworthiness certificate for an aircraft type certificated in the restricted category, that was not previously type certificated in any other category, must comply with the appropriate provisions of § 21.183.

C. The Extent Of Relief Lofty360 Seeks And The Reason Lofty360 Seeks The Relief:

1) Extent Of Relief Lofty360 Seeks And The Reason Lofty360 Seeks Relief From Section 91.9(b).

Relief is requested because the DJI Phantom 2 UAS weighs approximately 4.4 pounds (2,000 grams) at its maximum gross weight and cannot carry the approved Airplane Flight Manual onboard. Furthermore, since the DJI Phantom 2 UAS is unmanned, the aircrew member is located at a ground control station. As such, Lofty360 proposes the following conditions and limitations to its request for exemption from Section 91.9(b): The approved Airplane Flight Manual will be kept at the ground control station, where it is immediately available for reference by the aircrew member (PIC) of the DJI Phantom 2 UAS any time the unmanned aircraft is operating. The approved Airplane Flight Manual will be made available within 10 days to any FAA, U.S. Department of Defense, or law enforcement official upon request.

2) The Extent Of Relief Lofty360 Seeks And The Reason Lofty360 Seeks Relief From Section 91.203(a) & (b).

Lofty360 requests relief from the requirement of Section 91.203(a) (*i.e.,* that an appropriate and current airworthiness certificate and an effective U.S. registration certificate be carried within the aircraft), and further, requests relief from the requirement of Section 91.203(b) (*i.e.,* that the airworthiness certificate be displayed at the cabin or cockpit entrance so that it is legible to passengers or crew). Since the DJI Phantom 2 UAS is unmanned, has no cabin, cockpit, pilot station, or entrances , relief seems appropriate. Furthermore, the PIC and SO are located at the ground control station and no passengers are carried at any time. As such, Lofty360 proposes the following conditions and limitations to its request for exemption from Sections 91.203(a) and (b): The documents required by Sections 91.203(a) and (b) will be kept at the ground control station, where it is immediately available to the aircrew member (PIC) of the DJI Phantom 2 UAS any time the unmanned aircraft is operating. The documents required by 91.203(a) and (b) will be made available within 10 days to any FAA, U.S. Department of Defense, or law enforcement official upon request.

3) The Extent Of Relief Lofty360 Seeks And The Reason Lofty360 Seeks Relief From 14 C.F.R. § 45.23(b). Lofty360 requests relief from the requirement of Section 45.23(b), if applicable, that the word "Restricted" be placed near each entrance to the cabin, cockpit, or pilot station. As the DJI Phantom 2 UAS is unmanned, it has no cabin, cockpit, pilot station, or entrances thereto. Lofty360 proposes that, if required, the words "Restricted" with Lofty360's company name, phone number be displayed on the top (middle section) of the UAS for clear identification purposes for all to see. If no relief is given as requested, then we Lofty360 will file for a "N" number with the FAA and mount on the DJI Phantom 2 UAS as required.

4) The Extent Of Relief Lofty360 Seeks And The Reason Lofty360 Seeks Relief From 14 C.F.R. § 21.185. Lofty360 seeks relief from the airworthiness certificate requirements of the Federal Aviation Regulations and proposes to commercially operate the DJI Phantom 2 UAS, without an airworthiness certificate, for the special purpose of conducting aerial operations over certain areas of the United States.

Lofty360 seeks relief from the airworthiness certificate requirements of 14 C.F.R. § 21.185 to the extent that the DJI Phantom 2 UAS, which has not yet been type certificated by the FAA, may be operated as if it were a restricted category aircraft for a single, defined, special purpose operation (*i.e.*, aerial videography, photography, mapping etc).

Pursuant to the FAA Modernization and Reform Act of 2012, Section 333 ("Section 333"), Lofty360 seeks relief from the airworthiness certificate requirements of the FAR because operation of the DJI Phantom 2 UAS will not create a hazard to users of the NAS, the public, or otherwise pose a threat to national security. Section 333 sets forth the requirements for considering whether a UAS will create a hazard to users of the NAS or the public or pose a threat to national security. Further, Section 333 provides the authority for such UAS to operate without airworthiness certification.

Specifically, Section 333 states the following, in part: *(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).*

As set forth below, numerous factors, including the proven safe operational history of the DJI Phantom 2 UAS in the NAS, as well as the specific parameters of Lofty360's intended operation pursuant to this exemption, demonstrate that the DJI Phantom 2 UAS has in the past, and will continue in the future, to operate safely in the NAS without creating a hazard to other aircraft or people on the ground.

Accordingly, the FAA may approve operation of the DJI Phantom 2 UAS, without an airworthiness certificate, by setting forth specific operating limitations to ensure a level of safety equivalent to what would be provided by airworthiness certification.

D. Reasons Why Granting Lofty360's Request Would Be In Public's Interest; How It Would Benefit The Public:
Granting the present Petition will further the public interest by allowing Lofty360 to safely, efficiently, and economically perform aerial photography, videography, and other services over certain areas of the United States. 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 the proposed operation of the DJI Phantom 2 UAS will be realized without implicating any privacy issues. Aerial videography and photography for geographical awareness and for real estate marketing and inspections has been around a long time through manned fixed wing aircraft and helicopters. For small business owners, the expense to conduct these operations with manned aircraft has been cost-prohibitive.

Granting this exemption to the Petitioner would allow Lofty360 to provide services at a much lower cost. Further, the small UAS being utilized in this application will pose no threat to the public given its small size and lack of combustible fuel when compared to larger manned aircraft. The operation of this UAS will minimize ecological damage and promote economic growth by providing information to businesses and individuals in the area.

1) Furthermore, The Public Will Benefit From UAS Aerial Operations:

Lofty360 submits this Petition to perform aerial photography and videography throughout certain areas of the United States. The DJI Phantom 2 UAS will provide safe, efficient, and economical operations to further each of these fields, all of which are critical to the well-being of the general public. The DJI Phantom 2 UAS can inspect larger areas, in different ways, in less time and at lower costs than manned aircraft.

In addition, more frequent regular inspections can facilitate faster problem recognition, resulting in fewer negative outcomes. The advantage of unmanned systems is that they provide overviews which normally require several cameras, and the UAS can enter narrow and confined spaces while producing very little noise as compared to other manned aircraft. The DJI Phantom 2 UAS provides a great alternative to helicopters in that they can provide images from similar altitudes, with our UAS gyro stabilized cameras and modular platforms we can do it a fraction of the cost. This solution can dramatically increase applicability, improve the quality and decrease the costs of aerial photography and videography for the public. Operations for this petition will enable service for property owners or their designees seeking an enhanced perspective for characteristics, amenities, and benefits of their desired photographic subjects that cannot be displayed through ground level videography/photography. Aerial photography is a valuable marketing tool that can lead to increased commerce and enhance personal photography. Crop surveying applications can lead to decreased use of pesticides and fertilizer and conservation of water as well as increased crop yields and decreased costs. Aerial surveying and inspections can increase work site efficiency, improve volumetric estimations and reduce risks. The petitioner will provide clients with photographic data for these purposes on a 'for hire' basis acting as an independent contractor. The petitioner is requesting this exemption for the purposes of "aerial photography, videography, mapping, crop surveying, inspections and other flight operations". The reason for such a general and broad based request is that the petitioner wishes to utilize a business strategy of horizontal integration maximize economies of scope in order to capitalize on opportunities as they may arise in the future without the long turnaround time associated with additional exemptions. The petitioner's business model is based on the idea of offering ad hoc small UAS services to individuals or companies who wish to employ these services as a safe, effective, and legal option to enhance their business, property or hobby.

2) The Public Will Benefit From Decreased Congestion Of The NAS.

The DJI Phantom 2 UAS is a battery powered UAS that serves as a safe, efficient, and economical alternative to the manned aircraft traditionally utilized to obtain aerial images. By reducing the number of manned aircraft needed to perform aerial photography and or videography, an exemption allowing the use of a DJI Phantom 2 UAS would reduce the number 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 can be reduced. The DJI Phantom 2 UAS does not require an airport to takeoff or land. Likewise, a reduction of manned aircraft conducting aerial missions would result in fewer aircraft that must be handled by ATC facilities during all phases of flight operations.

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

Conducting aerial operations 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 flight operations. By using battery power and electric motors, the DJI Phantom 2 UAS produces no air pollution and is most viable environmentally conscious alternative to piston or turbine powered rotorcraft. The DJI Phantom 2 UAS, while reducing the carbon footprint of aerial operations, also eliminates noise pollution as its battery powered electric motors are barely audible during the take-off phase and cannot be heard when operating at 80 feet AGL or higher.

By using the DJI Phantom 2 UAS to perform aerial operations, 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 aircrew members located onboard the aircraft, the DJI Phantom 2 UAS (weighing approximately 4.4 pounds) at its maximum gross weight with a diagonal length of 13.7 inches, with no fuel on board, has less physical potential for collateral damage to life and property on the ground, and in the air than compared to the manned aircraft that typically conduct aerial operations such as helicopters and small single engine aircraft that weigh over 4,000 to 6,000 pounds and carry 70-150 gallons of highly flammable fuel. Operations for this petition will enable service for property owners or their designees seeking an enhanced perspective for characteristics, amenities, and benefits of their desired photographic subjects that cannot be displayed through ground level videography and photography. As stated previously, aerial photography is a valuable marketing tool that can lead to increased commerce and enhance personal photography. Crop surveying applications could lead to decreased use of pesticides, fertilizer and conservation of water as well as increased crop yields and decreased costs. Aerial surveying and inspections can increase work site efficiency, improve volumetric estimations and reduce risks. The petitioner will provide clients with photographic data for these purposes on a 'for hire' basis acting as an independent contractor.

The petitioner is requesting this exemption for the purposes of "aerial photography, videography, mapping, crop surveying, inspections and other flight operations". The reason for such a general and broad based request is that the petitioner wishes to utilize a business strategy of horizontal integration and maximize economies of scope in order to capitalize on opportunities as they may arise in the future without the long turnaround time associated with additional exemptions. The petitioner's business model is based on the idea of offering ad hoc small UAS services to individuals or companies who wish to employ these services as a safe, effective, and legal option to enhance their business or hobby.

Safety Features: The UAS has several safety features which will minimize the potential for fly-aways and maximize the safe and efficient use of the aircraft in the NAS. The DJI Phantom 2 UAS Naza-M-V2 controller provides Intelligent Orientation control (Home Lock and Course Lock features). The Home Lock feature allows for a safe return should the operator (i.e. PIC) get disoriented as to the direction the aircraft is moving. Once activated on the remote control, the operator can simply pull back on the right control stick and the DJI Phantom 2 will return to the remote control regardless of the aircraft's location from the remote control.

The Course Lock feature will allow the operator to maintain a specific course regardless of aircraft orientation. The Naza-M-V2 controller also provides for "fail safe" and "lost-link" safeguards. The "fail safe" feature means that when the controller link is lost all outputs of the command sticks from the controller will go the center point. An example would be if the aircraft is in a climbing left turn and the communication link is lost, the aircraft would transition into a level hover position and would not continue with the last assigned controller instructions.

After 3 seconds of the "lost-link" scenario, the aircraft will climb or descent (based on altitude the "lost-link" occurs) to a pre-assigned altitude and return to the point of departure and land itself. A more detailed description of each system is attached - see attached User's Manual.

4) Performing Aerial Operations With The DJI Phantom 2 UAS Will Benefit The Economy.

In addition to being safe and efficient, the DJI Phantom 2 UAS is also an economical alternative to using manned aircraft to conduct aerial operations. As such, operation of the DJI Phantom 2 UAS will allow United States based companies, like Lofty360, to remain competitive and will most certainly 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 the use of leaded fuels, U.S. owned and operated companies will 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 also provides flexibility without the high operational cost of a traditional manned aircraft. By operating the DJI Phantom 2 UAS, companies like Lofty360 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 as many other countries are aggressively employing this technology.

5) There Are No Privacy Issues:

Like manned aerial flight operations that have been conducted for decades, the proposed operation of the DJI Phantom 2 UAS will not create nor implicate any privacy issues. Specifically, the DJI Phantom 2 will be operated over public right-of-way or above private property with the property owner/controllers consent, and in accordance with FAA Regulations.

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

In seeking this exemption, Lofty360 proposes to commercially operate the DJI Phantom 2 UAS for the special purpose of conducting aerial operations 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. 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 purposes listed herein.

3. The UAs will not be flown at an indicated airspeed exceeding 30 knots.

4. The UAS will be operated at an altitude of no more than 400 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 will be in feet AGL.

5. The UAS will 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 listed on FAA Airman's Medical certificate or Driver's License.

6. The PIC will always make use of a SO. All operations will utilize a SO and the SO will be used to satisfy the VLOS requirement as long as the PIC always maintains VLOS capability. The SO and PIC will communicate verbally at all times. Electronic messaging or texting will not permitted during flight operations. The PIC will be designated before the flight and cannot transfer his or her designation for the duration of the flight. The PIC will ensure that the SO can perform the prescribed functions.

8. During flight operations, the SO will help assist the PIC with detecting and avoiding air traffic, ground based obstacles, obstructions, and relate any other safety details to the PIC to maintain safe operations.

9. The operating documents and the "grant of exemption" will 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 will be followed. Otherwise, the operator will follow the procedures as outlined in its operating documents. The operator will update or revise its operating documents as needed. It is the operator's responsibility to track such revisions and present updated and revised documents to the Administrator upon request. The operator will 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 will petition for amendment to its grant of exemption. The FAA's UAS Integration Office (AFS-80) will be contacted if questions arise regarding updates or revisions to the operating documents.

10. Prior to each flight the PIC will conduct a pre-flight check and inspect UAS to ensure that it is in a condition for safe flight and PIC will also follow all Operations and Flight Manual training and procedures as prescribed in DJI Phantom 2 User's Manual and Pre-flight checklist etc. If an inspection reveals a condition that affects the safe operation of the UAS, the aircraft is prohibited from operating until necessary maintenance has been performed and UAS is found to be in a condition for safe flight. The Ground Control Station will be included in the preflight inspection. Any and all maintenance and alterations will be properly documented in the flight and maintenance log. **Re 91.103 -** a preflight and post flight checklist has been developed (see attached).

11. If UAS undergoes maintenance or alterations that affect the UAS operation or flight characteristics, e.g. replacement of a flight critical component, the UAS will undergo functional pre-flight and flight tests. The PIC who conducts the functional tests will make an entry in the flight and maintenance log as needed.

12. The pre-flight inspection will 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 will follow the UAS manufacturer's aircraft/component, maintenance, overhaul, replacement, inspection, and life limit requirements.

14. The operator will 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 will 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 operated under this exemption will comply with all manufacturer's Safety Bulletins.

16. The authorized person will make an entry in the aircraft records showing the corrective action(s) taken to remedy discrepancies discovered between inspections.

17. The PIC will possess a Private Pilot certificate or higher; and a current Driver's License or 3rd class FAA Airman's medical certificate.

18. The operator will not permit any PIC to operate UAS unless the PIC meets the operator's qualification criteria and demonstrates the ability to safely operate 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 and flight hours will 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 deemed by PIC as not essential for flight operations are considered nonparticipants and PIC will operate the UAS at appropriate distances from nonparticipants in accordance with 14 C.F.R. § 91.119.

19. UAS operations **will not** be conducted during night, as defined in 14 C.F.R. § 1.1. All operations will 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 UAS will not be operated within 5 nautical miles of an airport reference point as denoted on a current FAA published aeronautical chart unless a letter of agreement or authorization by airport's management is obtained, and the operation is conducted in accordance with obtaining a COA. The letter of agreement with the airport management will be made available to the Administrator if requested.

21. The operator will obtain an Air Traffic Organization (ATO) issued Certificate of Waiver or Authorization (COA) when appropriate prior to conducting any operations under the grant of exemption. All operations shall be conducted in accordance with airspace requirements in the ATO issued COA.

22. The UAS will 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.

23. If the UAS loses communications or loses its GPS signal, it will return to a pre-determined location within the planned operating area and land or be recovered in accordance with the operating documents.

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

25. The PIC will consider wind and weather conditions will not fly unless there is enough power to fly at normal cruising speed to the intended landing point and land the UAS with at least 20% battery power remaining. PIC will ensure that the "Return Home " mode is enabled on all flights to achieve maximum safety.

26. If required and no relief is given, the UAS will 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 will be as large as practicable.

27. The radio frequency spectrum used for operation and control of the UAS will comply with the Federal Communications Commission (FCC) or other appropriate government oversight agency requirements.

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

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

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

31. UAS will maintain safety and all flight operations will be conducted in accordance of required safe distance minimums from all nonparticipating persons (persons other than the PIC, SO, operator trainees or essential persons), vessels, vehicles, and structures unless:

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

b. 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, where applicable. Permission from land owner/controller or authorized representative will be obtained for each flight to be conducted to comply with FAA regulations.

33. Any incident, accident, or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA will be reported to the FAA's UAS Integration Office (AFS-80) ASAP or within 48 hours. Accidents will be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: **www.ntsb.gov.**

F. 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 Lofty360 Seeks Exemption:

1) Reasons Why An Exemption From The Requirements Of Section 91.9(b) Would Not Adversely Affect Safety.

This exemption would maintain the level of safety established by Section 91.9(b) because Lofty360 will keep the UAS User's / Flight Manual at the ground control station where the PIC will be flying the DJI Phantom 2 UAS and PIC will have immediate access to the documents. Previous exemptions granted by the FAA concerning Section 91.9(b) establish that safety is not adversely affected when the approved Aircraft Flight Manual is kept at the ground control station of a UAS, where it can be immediately accessed by the PIC. Section 91.9(b) "requires aircraft to carry the flight manual so the pilot would have ready access to the aircraft limitations while in flight." Exemption No. 8607. However, the FAA has also found that UAS will always be operated without any passengers or crew onboard, and that "requiring these special-use aircraft [UAS] to carry paper documents may present a safety hazard to the integrity of the [UAS]." The FAA has previously granted exemptions in circumstances similar, in all material respects, to those presented herein (*e.g.*, Exemption Nos. 8607, 8737, 8738, 9299, 9430, 9554, 9564, 9565, 10167, 10602, 10673, 10835, 10869, 10968).

2) Reasons Why Exemption From Requirements Of Section 91.203(a) And (b) Would Not Adversely Affect Safety.

This exemption would maintain the level of safety established by Sections 91.203(a) and (b) because Lofty360 will keep the required documents at the ground control station where the PIC flying the DJI Phantom 2 UAS will have immediate access. Previous exemptions granted by the FAA concerning Sections 91.203(a) and (b) establish that safety is not adversely affected when the Airworthiness Certificate and U.S. 18 registration certificate are kept at the ground control station of the UAS, where it can be immediately accessed by the PIC.

Specifically, the FAA has held that the intent of Sections 91.203(a) and (b) is better served by having the required documents in the control of the UAS operator (PIC), reasoning as follows: The original intent of the subject regulation was to display the airworthiness and registration documents so they would be easily available to FAA inspectors and passengers for inspection and verification of the airworthiness and registration of the aircraft. In this case, aircraft will always be operated without any passengers or crew.

The missions for which UASs are intended will prevent the aircraft from being available for the inspections normally prescribed for civil aircraft. Further, it will be operated on strictly confined missions from a known departure and arrival point, under the constant control of a pilot-in-command. We also find that requiring these special-use aircraft to carry superfluous paper documents may present a safety hazard to the integrity of the [UAS]. FAA operating limitations and special arrangements with Air Traffic Control (ATC) for surveillance of [UAS] flights adequately compensate for the requirements for carrying airworthiness and registration documents. We find the intent of the regulation is better served by having the required documents in the control of the aircraft operator and available for inspection under the special conditions prescribed in this exemption.

The FAA has previously granted exemptions in circumstances similar, in all material respects, to those presented herein (*e.g.*, Exemption Nos. 8607, 8737, 8738, 9299, 9564, 9565, 10167, 10602, 10673, 10835, 10869, 10968).

3) Reasons Why An Exemption From Requirements Of 14 C.F.R. § 45.23(b) Would Not Adversely Affect Safety.

We request an exemption from §45.23 Marking of the aircraft because the UAS will not have a cabin, cockpit or pilot station on which to mark certain words or phrases. Further, the two-inch lettering is difficult to place on such a small aircraft with dimensions smaller than the minimal lettering requirement. Regardless of this, we can mark the UAS in the largest possible lettering by placing the word "Experimental " on its fuselage as required by §45.29(f) so that everyone can see the markings. Furthermore, letters will be placed in the in most visible location possible, so that all parties will be informed of the unmanned aircraft's overall operating status. The FAA has previously granted exemptions in similar circumstances, in all material respects, to those presented. (Exemption Nos. 8737, 10167, 10167A, 10700, 10810).

4) Reasons Why An Exemption From The Requirements Of 14 C.F.R. §21.185, Including The Requirement To Have A Certificate Of Airworthiness, Would Not Adversely Affect Safety.

In seeking this exemption, Lofty360 submits that the DJI Phantom 2 UAS can operate safely in the NAS without creating a hazard to other aircraft or people on the ground. Accordingly, the FAA may approve its use without an airworthiness certificate as demonstrated by: (i) the safe operational history and current use of the DJI Phantom 2 UAS in the NAS; (2) the characteristics of the DJI Phantom 2 UAS; (2i) the limited area of Lofty360's intended operation; (iv) the Safety Management System Lofty360 has developed for DJI Phantom 2 UAS operations and maintenance; (v) the Private pilot requirement; (vi) the specific operating limitations; and (v2) any other conditions that the Administrator may prescribe.

i. The DJI Phantom 2 UAS Has A Proven History Of Operation In The NAS Pursuant To Advisory Circular 91-57, June 9, 1981.

- The DJI Phantom 2 UAS is currently operating safely in the NAS pursuant to Advisory Circular 91-57, *Model Aircraft Operating Standards*. The DJI Phantom 2 UAS has been operated worldwide since '06.

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

- The DJI Phantom 2 UAS does 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, or operational capability. The specifications of the DJI Phantom 2 UAS are as follows:

Unmanned Aircraft System - The DJI Phantom 2 is an Unmanned Aircraft System that is comprised of an unmanned quad-rotor aircraft and a transportable, ground station…. specific details are as follows:

Unmanned Aircraft Dimensions Diagonal Length:	13.7 inches (350mm)
Engine: (Propulsive Unit) (4) Multistar P/N:	2212 (Electric) FAA
Engine Type Cert:	None
Propulsive Unit Type:	(1) 11.1V 5200mAh, Lithium polymer, battery powered.
Motors:	Brushless (4) electric motors
Motor, Controller Sub-Assembly:	Manufacturer - DJI Innovations
Model:	Naza-M
Type:	Motor Controller, 3.15W (0.25A@12.6V) Max. 27 grams Wt.
Motor, Battery:	Manufacturer: DJI Innovations
Type Battery:	3S Lithium Polymer, 5200 milliamp hour, 11.1V (nominal)
Fuel:	None, except as powered by a Lithium Polymer rechargeable battery, made by DJI, Inc., 5200mAh-11.1V.
Oil Capacity:	Not Applicable.
Maximum Engine Power Output:	130 Watts
Maximum RPM:	920Kv (rpm/v)
Propeller and Propeller Limits:	(4 props) DJI Innovations
FAA Propeller Type Certificate:	None
Propeller Type:	2-blade, ABS plastic, fixed pitch
Propeller Sub-Assembly:	Manufacturer: DJI Innovations
Propeller Model / Size:	9450 (10 x 4.5mm)
Battery Command & Control:	DJI Innovations battery powers the motor, and internal battery powers the command and control ground station (remote).

Airspeed Limits:	Vne (Never Exceed Speed) 30 knots (15.5 m/s)
Vno (Maximum Structural Cruising Speed):	Not Applicable
Va (Maneuvering Speed):	Not Applicable
Landing Speed:	Not Applicable
Mean Aerodynamic Chord (MAC):	Not Applicable

Leveling Means:	Not Applicable
Maximum Weights:	Ramp 4.4 lbs (2,000 grams)
Takeoff Weight:	4.4 lbs (2,000 grams)
Landing Weight:	4.4 lbs (2,000 grams)
Empty Weight:	2.2 lbs. (1,000 grams) (weight without payload modules.)

Computer Software Ground Station software:	iOS
Frequencies:	902-928 MHz (ISM Band) 2.4 GHz (ISM Band)

NOTE: FCC license is not required to utilize the above frequencies; uplink and downlink are on the 900Mhz band. If video is utilized, uplink, downlink, and video are all on 2.4 Ghz.

Minimum Crew:	(1) DJI Phantom 2 UAS - operated by a single operator.
Number of Seats:	(0) Not Applicable.

Max. Operating Altitude:	390 ft. AGL
Control Surface Movements:	Not Applicable
Nominal Endurance:	20-25 minutes 14° - 122° F (-20° - 50° C)
Maximum Ambient Outside Air Temperature (OAT)	122° F (50° C)
Minimum OAT At Altitude:	14° F (-10° C)
Wind Limitation:	Not Applicable

Maintenance:	The DJI Phantom 2 will be maintained in accordance with its own Maintenance Operation Manual, or later FAA accepted revision. All maintenance will be entered into logbooks to maintain records.

2i. Flight Operations Pursuant To The Exemption Sought Would Be Limited To Areas That Are Not In The Proximity Of Airports Or Over Populated Areas. Lofty360 proposes not to operate in Class B, C, or D airspace without written approval from the FAA. The UAS may not operate within 5 nautical miles of the geographic center of a non-towered airport as denoted on a current FAA-published aeronautical chart unless a authorization or 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 will be made available to the Administrator upon request. Operations within 5 miles of an airport are not anticipated to be routine but the petitioner is requesting a mechanism to facilitate such activities without requesting a new and separate exemption(s) should the need arise. Operations within class B airspace are not requested due to the lack of mode C transponder and the desire maintain safe flight operations. Lofty360 proposes to conduct flight operations over certain areas of the United States only.

Additionally, we shall:

1. Not operate within 5 miles of any airport or helipad, without the consent of the affected air traffic control facility. Continuous two-way radio communication will be established and maintained at all times during flights in this area;

2. Use the UAS' global positioning system (GPS) flight safety feature whereby it hovers and then slowly lands if communication with the remote control pilot is lost; conduct all operations under the flight safety protocols (include posting warning sign: "Attention Aerial Operations in Progress – Remain Clear")

3. Fly UAS according to the "Operating Documents / User's Manual / Owner's Manual" and will actively analyze flight data and other sources of information to constantly update and enhance safety protocols.

Since this UAS platform is capable of hovering, flying laterally, and ascending/descending over a point, we consider the DJI Phantom 2 UAS a "helicopter" for the purposes of 91.119(d). Furthermore, all flight operations will be conducted in accordance with 14 C.F.R. § 91.119. *Minimum safe altitudes: General*.

In summary, Lofty360 seeks to operate its DJI Phantom 2 UAS while maintaining safe distances from any populated areas, airports, helipads, and stadiums etc.

iv. Operation Of The DJI Phantom 2 UAS Will Be Conducted Pursuant To A Safety Management System.
A Safety Management System ("SMS") will control Lofty360's operation of the DJI Phantom 2 UAS and will significantly contribute to maintaining the level of safety contemplated by the airworthiness certificate requirements from which Lofty360 now seeks relief. Pursuant to the SMS and 14 C.F.R. § 43.13, entitled *Performance Rules (general)*, each person performing maintenance, alteration, or preventive maintenance on the DJI Phantom 2 UAS, motor, propeller, or appliance shall use the methods, techniques, and practices prescribed in the current manufacturer's maintenance manual or instructions for Continued Airworthiness prepared by its manufacturer, or other methods, techniques, and practices acceptable to the Administrator. Each person shall use the tools, equipment, and test apparatus necessary to assure completion of the work in accordance with accepted industry practices.

v. Flight Operations Of The DJI Phantom 2 UAS Are Limited To The Line Of Sight Of Certificated Private Pilot in Command With A Safety Observer (SO).

Lofty360 will only utilize Private pilots and or higher rated pilots with a valid FAA issued Airman medical certificate or valid U.S. driver's license to act as PIC of the DJI Phantom 2 UAS. Additionally, all pilots will be assisted by a safety observer. The PIC and SO will meet the requirements as set forth by the SMS and Standard Operating Procedures adopted by Lofty360 for safe flight operations of the DJI Phantom 2 UAS.

The UAS will be operated within visual line of sight (VLOS) of the PIC at all times. All operations will be conducted with a Safety Observer (SO) aiding the PIC and all operations will be done within the visual line of sight (VLOS) of the PIC and SO at all times. The SO may be used to satisfy the VLOS requirement as long as the PIC always maintains VLOS capability. The SO and PIC will always be able to communicate verbally at all times and the PIC will be designated before the flight and cannot transfer designation for the duration of the flight. The PIC will ensure that the SO can perform the duties required of the SO.

The operator will be responsible for maintaining and inspecting the UAS to ensure it is in a condition for safe operation. Prior to each flight, the PIC will conduct a pre-flight inspection and determine the UAS is in a condition for safe flight. The pre-flight inspection will 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 will not operate until the necessary maintenance has been performed and the UAS is found to be ready for safe flight. The operator will follow the UAS manufacturer's maintenance, overhaul, replacement, inspection, and life limit requirements for the aircraft and aircraft components. Each UAS operated under this exemption will comply with all manufacturer safety bulletins.

vi. Flights Will Be Conducted Pursuant To Specific Operating Limitations.

In seeking this exemption, Lofty360 proposes to commercially operate the DJI Phantom 2 UAS without satisfying the restricted category airworthiness certification process specified in 14 C.F.R. § 21.185, or otherwise having a certificate of airworthiness issued by the FAA, as contemplated by 14 C.F.R. Part 21. Lofty360 proposes to operate the UAS, for the special purpose of conducting aerial operations pursuant to the following specific operating limitations:

1. Flight operations over certain areas of the United States.

2. The DJI Phantom 2 UAS will be operated below 400 ft. AGL (above ground level) except as necessary to comply with the requirements of 14 C.F.R. §91.119.

3. The DJI Phantom 2 UAS shall be operated within line of sight of the PIC and SO.
4. The DJI Phantom 2 UAS shall be operated pursuant to Day VFR in visual meteorological conditions (VMC) and as defined by American Air Almanac (*i.e.* between the end of morning civil twilight and the beginning of evening civil twilight and converted to local time).

5. Duration of each flight shall not exceed 20-22 minutes or upon reaching 20% battery power, whichever is less.

6. The DJI Phantom 2 UAS shall operate from on-site takeoff/landing locations directly next to the pilot in command and co-located safety observer. If the operation is from a watercraft, the PIC and safety observer shall remain co-located on the same watercraft.

7. Operations shall be conducted by certificated and licensed airmen as per the FAA requirements.

8. Operation of the DJI Phantom 2 UAS with any inoperative instruments or equipment shall be prohibited.

9. The DJI Phantom 2 UAS shall be maintained in accordance with the Manufacturer's Maintenance Manual.

10. The DJI Phantom 2 UAS shall be operated pursuant to 14 C.F.R. Part 91, operating requirements.

11. Where appropriate, prior to flight operations, Lofty360 shall coordinate and establish two way communications with the nearest Air Traffic Control facility.

12. For any flight operations over U.S. Government or state managed lands, Lofty360 shall coordinate with the appropriate authority to ensure that at least twelve (12) hours advance notice is given prior to the proposed flight operations. Coordination shall include anticipated periods of operation, purpose of the flights, and contact information for the operator should questions or issues arise.

v2. Any Other Conditions The FAA May Prescribe For Safe Operation.

In accordance with Section 333 of the FAA Modernization and Reform Act of 2012 and 14 C.F.R. § 21.16 entitled *Special Conditions*, Lofty360 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 Section 21.185, and which will permit safe operation of the DJI Phantom 2 UAS for the special purpose of conducting aerial operations. 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 aircraft systems 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 14C.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 Section 333 and 14 C.F.R. § 21.16, the FAA may prescribe special conditions for Lofty360'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 Section 21.185, and which will permit safe operation of the UAS for the special purpose of conducting aerial operations.

G. A Summary That Can Be Published In The *Federal Register*, stating: The Rules From Which Lofty360 Seeks Exemption: *Lofty360 seeks exemption of requirements 14 C.F.R. §§91.9(b), 91.203(a), 91.203(b), 45.23(b) and 21.185.*

A Brief Description Of The Nature Of The Exemption Lofty360 Seeks:

This exemption will permit Lofty360 to operate an Unmanned Aircraft System while keeping the documents required by the regulations at the ground control station and immediately accessible to the pilot in command. Furthermore, the exemption will relieve Lofty360 from the airworthiness certificate standards and the requirement to have a certificate of airworthiness for its Unmanned Aircraft System. This exemption will also permit any required markings concerning the operational status of the UAS to be displayed on the fuselage of the unmanned aircraft.

H. Any Additional Information, Views, Or Arguments Available To Support Lofty360's Request:

This Petition is made pursuant to the FAA Modernization and Reform Act of 2012, Section 333, which directs the Secretary of Transportation to determine if certain UAS may operate safely in the NAS. As such, Lofty360's request for exemption may be granted pursuant to the authority of Section 333 and 14 C.F.R. Part 11, as set forth above. Section 333 sets forth the requirements for considering whether a UAS will create a hazard to users of the NAS or the public or pose a threat to national security; and further, provides the authority for such UAS to operate without airworthiness certification. Section 333 states the following:

> *(a) In General.--Notwithstanding 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.* As discussed in detail above, the DJI Phantom 2 UAS has in the past, and will continue in the future, to operate safely in the NAS without creating a hazard to users of the NAS, or the public, or otherwise pose a threat to our national security.

CONCLUSION:

As set forth above, Lofty360 seeks an exemption pursuant to 14 C.F.R. § 11.61 and Section 333 of the FAA Modernization and Reform Act of 2012, which will permit safe operation of the DJI Phantom 2 UAS commercially, without an airworthiness certificate, for the special purpose of conducting aerial operation 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 Lofty360 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, Lofty360 respectfully requests that the Administrator grant this Petition for an exemption from the requirements of 14 C.F.R. §§91.9(b), 91.203(a), 91.203(b), 45.23(b), as well as the restricted category airworthiness certification standards specified in 14 C.F.R. § 21.185, including the requirement to have a certificate of airworthiness issued for the DJI Phantom 2 UAS, as contemplated by 14 C.F.R. Part 21.

Thank you for your time and consideration of this exemption request.

Sincerely,

Donald Isaac Tillotson, President
Lofty360 (dba The Tillotson Group., Ltd)

Attachments:

1) Phantom 2 - User's Manual V1.1 (34 pages)
2) Phantom 2 - Quick Start & Pilot Training Guide (2 pages)
3) Phantom 2 - Pre and Post Flight Inspection Checklist (see next page)

Pre and Post Flight Checklist and Inspections

(To include, but not be limited to the following)

1. Conduct and review weather, forecasts, flight requirements, landing and takeoff distances, flight patterns, performance data, and determine best flight paths for safety. Visualize and plan details.

2. The PIC will not fly UAS 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.

3. PIC will inspect all UAS parts and system components for proper working condition. Including, but not limited to:

    a. Actuators / Servos
    b. All Motors
    c. Wiring and Connectors
    d. Propellers: cleaned, inspected for damage, and mounted / balanced correctly
    e. Electronic Speed Controllers
    f. Batteries Levels and Condition of all power supplies determined
    g. Remote Control Functions and Settings
    h. Ground Station equipment and connections

4. Conduct preflight safety discussions and assessments with Safety Observer (SO) regarding proposed flight plan, possible areas of concern, and discuss steps to minimize or mitigate all safety risks prior to flight.

5. Obtain proper clearance of NAS, if needed and obtain proper permissions from any and all parties that will be involved.

6. Spectator, Crew and Public Safety planning, management, and discussions.

7. Will have on hand all necessary Flight Manual / User Manual, Operating documents, and any exemptions, etc.

8. Preflight inspections + operational testing recommended in UAS User & Operational manuals.

9. Flight Log kept with activities recorded, lessons learned, flight conditions, weather, purpose of flight, time flown, etc.

10. At beginning of flight, display signage indicating "flight operations" taking place.

11. Have SO engage nonparticipants so that PIC is not distracted.

12. Wear clothing that communicates Lofty360 Flight Crew - be visible - help nonparticipants understand flight operations are taking place.

13. At end of flight, collect signage.

14. PIC complete Flight entries - detailing flight operations

15. PIC complete Maintenance Log entries as needed.

16. Conduct post-flight briefing with SO and record lessons learned in Flight Log.