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

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

September 17, 2015

Exemption No. 12896
Regulatory Docket No. FAA−2015−2551

Mr. Henry W. Bauer
President
Guardian Group, Inc.
2350 West 205th Street
Torrance, CA 90501-1460

Dear Mr. Bauer:

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 June 8, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Guardian Group, Inc. (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial photography and videography to survey areas of buildings, rooftops, and building exterior envelopes.

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 3 Professional.

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

[1] Aerial data collection includes any remote sensing and measuring by an instrument(s) aboard the UA. Examples include imagery (photography, video, infrared, etc.), electronic measurement (precision surveying, RF analysis, etc.), chemical measurement (particulate measurement, etc.), or any other gathering of data by instruments aboard the UA.

Conditions and Limitations

In this grant of exemption, Guardian Group, Inc. 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 3 Professional 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

Guardian Group, Inc.

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June 8, 2015

U.S. Department of Transportation, Docket Operations
West Building Ground Floor, Room W12-140
1200 New Jersey Avenue, SE
Washington, DC 20590

Subject: Request for Issuance of Exemption under Section 333

Dear Sir or Madam:

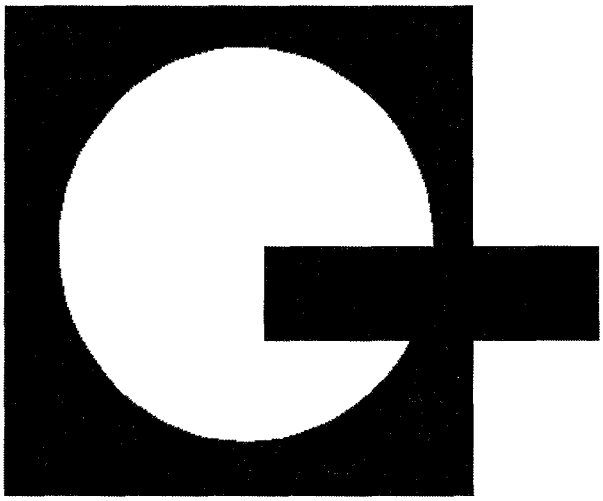
By the present letter, Guardian Group, Inc. ("GGI") requests an exemption from the requirements of Title 14 of the Code of Federal Regulations ("CFR") as allowed under Section 333 of the Federal Aviation Administration ("FAA") Modernization and Reform Act of 2012, with regard to the operation of an Unmanned Aircraft System ("UAS") for commercial use in the United States.

Please find enclosed GGI's petition demonstrating that the intended UAS operations will not adversely affect the safety of persons or property in the air or on the ground and meet the level of safety to the rules from which GGI seeks the exemptions. GGI's petition also shows why granting the exemption is in the public interest.

Sincerely,

Guardian Group, Inc.

Henry W. Bauer
President
HWB/cd



Guardian Group, Inc.

Petition for Exemption under Section 333

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DJI PHANTOM 3 Pro User Manual
DJI PHANTOM Advanced Manual
DJI PHANTOM Flying Flowchart
DJI PHANTOM Pilot Training Guide
DJI PHANTOM Quick Start Manual
GGI UAS Flight Operations Manual (V1.0)
GGI UAS Pre-Flight & Maintenance Operations Log (V1.0)

I. GLOSSARY OF ABBREVIATIONS

AGL	Above Ground Level
CFR	Code of Federal Regulations
COA	Certificate Of Authorization
DJI	DJI Phantom 3 Pro
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
GCS	Ground Control Station
GGI	Guardian Group, Inc.
GPS	Global Positioning System
PIC	Pilot In Command
UAS	Unmanned Aircraft System
VFR	Visual Flight Rules
VLOS	Visual Line of Sight
VMC	Visual Meteorological Conditions
VO	Visual Observer

II. INFORMATION SUPPORTING THIS PETITION AS SPECIFIED IN TITLE 14 CFR PART 11.81

A. Mailing Address and Contact Information

Guardian Group, Inc.
2350 W. 205th Street
Torrance, CA 90501-1460
Phone: (310) 320-0320
Fax: (310) 320-0120

B. Sections of Title 14 CFR from which GGI Seeks an Exemption

Title 14 CFR Part	Summary of Regulation
Part 21 Airworthiness Certification	
21 Subpart H	Certification procedures for products and parts, Airworthiness Certificates
Part 45 Identification and Registration Marking	
45.23(b)	Display of marks; general
45.27(a)	Location of marks on nonfixed-wing aircraft
Part 61 Certifications: Pilots, Light Instructors, and Ground Instructors	
61.113(a) and (b)	Private pilot privileges and limitations: Pilot in command
Part 91 General Operating and Flight Rules	
91.7(a)	Civil aircraft airworthiness
91.9(b)(2) and (c)	Civil aircraft flight manual, marking, and placard requirements
91.103	Preflight action
91.119	Minimum safe altitudes
91.121	Altimeter settings
91.151(a)(1)	Fuel requirements for flights in VFR conditions
91.203(a) and (b)	Carry civil aircraft certification and registration
91.405(a)	Maintenance required
91.407(a)(1)	Operation after maintenance
91.409(a)(2)	Inspections
91.417(a) and (b)	Maintenance records

C. Extent of Relief GGI's Seeks

GGI seeks exemption from several provisions of Title 14 CFR Parts 21, 45, 61, and 91 to the extent necessary to engage in commercial operations of a small UAS on sites where GGI conducts building inspections. If these exemptions are granted, GGI would operate the UAS with the permission of the property owner. GGI intends to use a UAS for the following:

- Surveying hard-to-reach areas of building,
- Rooftop inspection,
- Building exterior envelope inspection.

Sections III to VIII detail the measures GGI will be taking during the UAS operations to meet or exceed the level of safety authorized by the FAA, and demonstrate that GGI's operations will not adversely affect the safety of persons or property in the air or on the ground and do not pose a threat to national security.

D. The Reasons why Granting GGI's Request Would Be in Public Interest

The proposed UAS operations in this petition significantly improve safety and reduce risk by alleviating the public's exposure to danger associated with traditional inspection methods.

GGI will use the UAS as an alternative to large and inherently dangerous high-reach equipment such as lifts or scaffolds.

Moreover, by using a UAS, GGI will reduce the risk of harm to employees by avoiding accident-prone, dangerous situations such as rooftop inspections or building envelope inspections above ground level. This would have a positive trickledown effect to families of GGI's employees which ultimately benefits the public.

The UAS that GGI intends to use is battery powered and does not release greenhouse gas emissions.

GGI's UAS will be capable of documenting conditions that may have been otherwise inaccessible using traditional inspection and survey methods.

E. The Reasons why Granting GGI's Request Would Not Adversely Affect Safety

GGI's UAS operations will provide a level a safety that meet or exceed the level of safety authorized by the FAA. The operating procedures that will be implemented by GGI are detailed in sections III to VIII of the petition.

F. Summary

GGI seeks exemption from the requirements of Title 14 CFR Parts: 21 Subpart H, 45.23, 45.27(a), 61.113(a) and (b), 91.7(a), 91.9(b)(2) and (c), 91.103, 91.119, 91.121, 91.151(a)(1), 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 operate a UAS to perform aerial inspections of buildings within the United States.

G. Additional Information Supporting GGI's Request

Sections III to VIII provide additional information supporting GGI's request.

III. DESCRIPTION OF PETITIONER

For over twenty years, GGI has served the surety, insurance, construction, legal, and banking industries with distinction. Our demonstrated proficiency with surety claims consulting, property claims consulting, construction claims, and construction consulting includes many of the world's most challenging projects. GGI's construction management and construction defect service value is grounded in that same surety claims and surety consulting experience.

GGI provides clients a complete suite of construction defect services including, but not limited to:

- Field investigative inspection and testing,
- Defective construction analyses,
- Architectural and engineering failure analyses,
- Remedial repair scope and strategies.

GGI seeks to use UAS—assisted photography and video to survey hard-to-reach areas of building, inspect rooftops, and building exterior envelopes. The use of a UAS would allow GGI to better address its client's needs. It will provide a safer and more efficient mean to perform field investigative inspections.

IV. UNMANNED AIRCRAFT SYSTEM

The UAS proposed by GGI is the DJI Phantom 3 Pro ("DJI"). The DJI Phantom 3 Pro is a battery-operated lightweight quadcopter with on-board equipment and controlled via radio transmission from a separate Ground Control Station ("GCS") used. *See Figure 1.*

The on-board flight computer is in constant communication with the GCS and transmits live data such as speed, compass direction of flight, and altitude levels.

The UAS contains a Global Positioning System ("GPS") tracking device and an on-board gimbal-mounted camera capable of capturing full color high definition photos and videos.

The UAS is also equipped with a set of LEDs and aircraft status indicators which not only provide an enhanced visual from the ground but also assist the Pilot In Command ("PIC") to confirm battery, GPS, and other functionalities of the UAS.

Figure 1: DJI Phantom 3 Pro

A. UAS Performance

Below are the DJI Phantom 3 Pro Aircraft specifications:

	Metric	*Imperial*
Weight (Including Battery and Propellers)	1280 g	2.8 lb
Diagonal Size (Including Propellers)	590 mm	23.2 in
Max Ascent Speed	5 m/s	9.7 knots (11.2 mph)
Max Descent Speed	3 m/s	5.8 knots (6.7 mph)
Hover Accuracy	Vertical: +/- 0.1 m (when Vision Positioning is active) or +/- 0.5 m	Vertical: +/- 4 in (when Vision Positioning is active) or +/- 20 in
	Horizontal: +/- 1.5 m	Horizontal: +/- 59 in
Max Speed	16 m/s (ATTI mode, no wind)	31.1 knots (35.8 mph) (ATTI mode, no wind)
Max Altitude Above Sea Level	6000 m	3.73 mi
Operating Temperature	0°C to 40°C	32°F to 104°F
GPS Mode	GPS/GLONASS	

Ref.: http://www.dji.com/product/phantom-3/spec

DJI Phantom 3 Pro is equipped with the FAILSAFE feature: If the aircraft battery is running low, or if the DJI loses the connection with your remote controller for any reason, the aircraft will automatically return to the takeoff point and land safely.

Operation Conditions and Limitations – UAS Performance

- The DJI Phantom 3 Pro will weigh less than 3 pounds including payload.
- The speed of the DJI Phantom 3 Pro will not exceed 87 knots (100 miles per hour). The DJI Phantom 3 Pro will be operated at airspeeds greater than the maximum Unmanned Aircraft operating airspeed recommended by the manufacturer.
- If the UAS loses communications or loses its GPS signal, the DJI Phantom 3 Pro will return to a pre-determined location within the private or controlled-access property.

B. Pre-Flight Inspections, Maintenance, and Repair

GGI will implement all necessary procedures, such as pre-flight inspections, maintenance, and repair to ensure that the DJI Phantom 3 Pro is in a condition for safe flight.

Operation Conditions and Limitations – Pre-Flight Inspections, Maintenance, and Repair
[Continued on next page]

- If the DJI Phantom 3 Pro is to undergo maintenance or alterations that affect the UAS operation or flight characteristics, e.g. replacement of a flight critical component, the UAS will undergo a functional test flight prior to conducting further operations. Functional test flights will only be conducted by a PIC with a Visual Observer ("VO") and must remain at least 500 feet from people. The functional test flight will be conducted in such a manner so as to not pose an undue hazard to persons and property.

Operation Conditions and Limitations – Pre-Flight Inspections, Maintenance, and Repair

- GGI will be responsible for maintaining and inspecting the DJI Phantom 3 Pro to ensure that 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 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 will not be operated until necessary maintenance has been performed and the UAS is found to be in a condition for a safe flight.
- GGI will follow the DJI Phantom 3 Pro manufacturer's maintenance, overhaul, replacement, inspection, and life limit requirements for the aircraft and aircraft components.

Please find attached GGI UAS Flight Operations Manual (V1.0) and GGI UAS Pre-Flight & Maintenance Operations Log (V1.0).

C. Radio Frequency

The operating frequency of the Remote Controller (i.e. GCS) ranges from 2.400 GHz to 2.483 GHz.

The radio frequency used for control of the UAS associated equipment (camera, sensors, etc.) is 2.4 GHz ISM.

The DJI Phantom 3 Pro complies with the Federal Communications Commission ("FCC") regulations.

V. UNMANNED AIRCRAFT PILOT IN COMMAND

A designated pilot will be operating the DJI Phantom 3 Pro. GGI designated pilot will:

- Hold a private pilot's license,
- Hold a current third-class medical certificate,
- Have a deep knowledge and thorough understanding of the UAS and its operation,
- Have experience in operating the DJI Phantom 3 Pro.

The PIC will be assisted by a VO at all times during the DJI Phantom 3 operations.

Operation Conditions and Limitations – PIC Qualifications and Training
[Continued on next page]

- The PIC will be designated before the flight and will not transfer his or her designation for the duration of the flight.
- The PIC will hold a private pilot certificate and a FAA airman medical certificate.

Operation Conditions and Limitations – PIC Qualifications and Training

- GGI will not permit any PIC to operate unless the PIC demonstrates 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 will be logged in a manner consistent with Title 14 CFR Part 61.51(b). Training operations will be conducted during dedicated training sessions.
- All operations will utilize a visual observer (VO).

VI. OPERATION OF THE UNMANNED AIRCRAFT

A. Intended UAS Operations

GGI intends to use the DJI Phantom 3 Proto perform forensic evaluations and building condition assessments.

GGI's operations will provide a superior level of safety. Please refer to sections *VI.B: Limitations of UAS Operations*, and *VII: Discussion Of Requested Exemption*, and attached document: GGI UAS Flight Manual (V1.0).

B. Limitations Of UAS Operations

Operation Conditions and Limitations – UAS Operations *[Continued on next page]*

- *The speed of the DJI Phantom 3 Pro will not exceed 87 knots (100 miles per hour). The DJI Phantom 3 Pro will be operated at airspeeds greater than the maximum Unmanned Aircraft operating airspeed recommended by the manufacturer. [Section IV.A]*
- *The DJI Phantom 3 Pro will not be operated at an altitude of no more than 400 feet Above the Ground Level ("AGL"). [Section IV.A]*
- The DJI Phantom 3 Pro will be operated at an altitude of no more than 400 feet AGL.
- The DJI Phantom 3 Pro will be operated within the visual line of sight ("VLOS") of the PIC and VO at all times. The VO and PIC will be able to communicate verbally at all times. The PIC will ensure that the VO can perform the duties required of the VO.
- UAS operations will not be conducted during night, as defined in 14 CFR § 1.1. All operations will be conducted under visual meteorological conditions ("VMC").
- The DJI Phantom 3 Pro will not operate within 5 nautical miles of an airport having an operational control tower unless a letter of agreement with that airport's management is obtained or otherwise permitted by a Certificate Of Waiver or Authorization ("COA") issued to GGI.
- The DJI Phantom 3 Pro 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.
- The PIC will abort the flight in the event of unpredicted obstacles or emergencies.

Operation Conditions and Limitations – UAS Operations

- The PIC will be prohibited from flying unless (considering wind and forecast weather conditions) there is enough available power for the UAS 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.
- The DJI Phantom 3 Pro will remain clear and give way to all manned aviation operations and activities at all times.
- The UAS will not be operated by the PIC from any moving device or vehicle.
- 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 UAS and/or debris in the event of an accident. GGI will 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 UAS, flight operations will 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.
- All operations will 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.

VII. DISCUSSION OF REQUESTED EXEMPTIONS

A. Title 24 CFR Part 21, Subpart H: Certification Procedures for Products and Parts, Airworthiness Certificates

The FAA has stated that no exemption is needed from this section if a finding is made under the Reform Act that the UAS selected provides an equivalent level of safety when compared to aircraft normally used for the same application. *See granted exemption to Astraeus Aerial, Docket No. FAA-2014-0352 at 13-14, 22.* If, however, the FAA determines that there are some characteristics of the chosen UAS that fail to meet the requirements of the Reform Act, an exemption is requested.

The UAS operated will have a gross weight less than 55 pounds and will be flown at speeds less than 87 knots (100 miles per hour). It will not carry a pilot or passengers, or flammable fuels and will be operated in well-defined locations using a PIC and a VO. All operations will be conducted in compliance with the limitations and conditions stated in this petition for exemption.

The characteristics and conditions under which the UAS will be operated, as outlined in this petition, given the size, weight, speed, operation capability and proximity to airports and populated areas, achieve or exceed the equivalent level of safety over a manned aircraft with an airworthiness certificate used for the purposes outlined in this petition.

B. Title 14 CFR Parts 45.23(b) and 45.27(a): Aircraft Marking and Identification Requirements

GGI seeks an exemption from the aircraft marking and identification requirements contained in Title 14 CFR Parts 45.23(b) and 45.27(a). In a previous grant of exemption, the FAA determined that exemption from these requirements was warranted, under the following conditions: the aircraft shall "*have identification (N-Number) markings in accordance with 14 C.F.R Part 45, Subpart C if the markings are as large as practicable.*" FAA Docket No. FAA-2014-0352.

C. Title 14 CFR Parts 61.113(a) and (b): Private Pilot Privileges and Limitations: Pilot in Command

GGI seeks exemption from Title 14 CFR Parts 61.113(a) and (b) which restricts private pilot certificate holders from flying aircraft for compensation or hire and would also require a Class II medical certificate. The purpose of Part 61 is to ensure that the skill and competency of any PIC matches the airspace in which the PIC will be operating, as well as requiring certifications if the private pilot is carrying passengers or cargo for hire. In this case, while the UAS will be operated as part of a commercial operation, it carries neither passengers nor cargo.

In the Grant of Exemption to Astraeus Aerial, the FAA determined that the unique characteristics of UAS operation outside of controlled airspace did not warrant the addition cost and restrictions attendant with requiring a the PIC to have a Commercial Pilot Certificate and Class II medical certificate. The fulfillment of the additional requirements for a private pilot to become qualified as a commercial pilot would not lead to any additional safety benefits when UAS operations are involved. Furthermore, while helpful, a pilot license will not ensure remote control piloting skills. The risks associated with the operation of small UAS are far less than the risks associated with the commercial activities outlined in Title 14 CFR Parts 61.113 (a) and (b).

D. Title 14 CFR Part 91.7(a): Civil Aircraft Airworthiness

GGI seeks an exemption from Title 14 CFR Part 91.7(a), which requires that a civil aircraft be in airworthy condition to be operated. The FAA has stated that no exemption is required for Title 14 CFR Part 91.7(a) to the extent that the requirements of Part 21 are waived or found inapplicable. *See Docket No. FAA-2014-0352 at 13-14, 22.*

E. Title 14 CFR Part 91.9(b)(2) and (c): Civil Aircraft Flight Manual in the Aircraft

GGI seeks exemption from Title 14 CFR Part 91.9(b)(2) and (c). Given the small size and configuration of the UAS, it would be impossible to keep airworthiness documents and other aircraft manuals on board because there is simply no room, and the UAS has no cabin or cockpit.

The UAS flight manual, registration certificate, and other documentation will be kept at the control station with the operator during flight. This alternate method constitutes full compliance with the regulations.

F. Title 14 CFR Part 91.103: Preflight Action

GGI seeks an exemption from Title 14 CFR Part 91.103, which requires the PIC to become familiar with specific information before each flight, including information contained in the FAA-approved Flight Manual on board the aircraft.

The PIC will review information prior to flight to maintain the safety of the operation, including but not limited to, the weather, battery levels, landing and takeoff distances, and aircraft performance data. The PIC will refer to the manufacturer supplied UAS manual and GGI Flight Operations Manual for technical data and information as provided. The manual will be kept at the GCS during operations.

While the PIC will be familiar with all information necessary to safely conduct the flight, an exemption is requested to the extent that an FAA-approved Flight Manual is required.

G. Title 14 CFR Part 91.119: Minimum Safe Altitudes

GGI seeks an exemption from the minimum safe altitude requirements of Title 14 CFR Part 91.119. This section prescribes the minimum safe altitudes under which aircraft may not operate, including 500 feet above the surface and away from any person, vessel, vehicle, or structure in non-congested areas. *See Title 14 CFR Part 14 C.F.R. 91.119(c).*

Title 14 CFR Part 91.119(d) allows for a helicopter to operate at less than those minimum altitudes when it can be operated "*without hazard to persons or property on the surface*" provided that "*each person operating the helicopter complies with any routes or altitudes specifically prescribed for helicopters by the FAA.*" An exemption is required because the proposed UAS operations will occur below 400 feet AGL. Additionally, due the nature of the proposed operations, the PIC and/or VO may need to be less than 500 feet away from the UAS.

The UAS operated by GGI are far smaller than manned aircraft, such as rotorcraft and fixed winged aircraft. Additionally, the UAS do not carry a pilot or passengers, weigh less than 55 pounds, do not carry flammable fuel, will not exceed 87 knots (100 mph), and it will not be operated over non-participating persons. The UAS will be operated below 400 feet AGL with the use of a PIC and a VO to avoid risk to aircraft, persons and property. This provides an equivalent or greater level of safety than achieved with conventional aircraft currently performing similar operations.

H. Title 14 CFR Part 91.121: Altimeter Settings

GGI seeks an exemption from Title 14 CFR Part 91.121, which requires a person operating an aircraft to maintain cruising altitude or flight level by reference to an altimeter that is set to the elevation of the departure airport or barometric pressure. An exemption is required to the extent that the UASs do not have a barometric altimeter but rather GPS altitude display.

The operator will confirm the elevation of the launch site prior to launch. This will be compared to the GPS sensor or barometric sensor derived altitude as displayed on the UAS reading at the GCS. The operator will then determine the maximum permissible altitude to maintain flight below 400 feet AGL and will not exceed this altitude. The maximum permissible altitude will also be monitored and estimated by visual means through the use of the PIC and VO. This provides a level a safety equal to or exceeding the regulation.

I. Title 14 CFR Part 91.151(a)(1): Fuel Requirements for Flight in Visual Flight Rules Conditions

GGI seeks an exemption from Title 14 CFR Part 91.151(a)(1): Fuel Requirements for Flight in Visual Flight Rules ("VFR") Conditions. The technological limitations on UAS battery power means that no meaningful flight operations can be conducted while still maintaining a 30-minute battery reserve. An exemption from the fuel requirements of Title 14 CFR Part 91.151(a) is therefore required.

The UAS flight will be terminated with at least 20% reserve power. This allows the UAS to return to its landing zone with adequate power remaining to conduct a safe and controlled landing. Given the UAS's size, weight, and speed, the UAS when operated with this limitation provides an equivalent or greater level of safety than manned aircraft represented by this regulation.

J. Title 14 CFR Parts 91.203(a) and (b): Civil Aircraft: Certifications Required

Title 14 CFR Part 91.203(a) states that: "*No person may operate a civil aircraft unless it has [...] an appropriate and current airworthiness certificate.*" Furthermore, Title 14 CFR Parts 91.203(b) states that: "*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.*"

In regard to Title 14 CFR Part 91.203(a), an equivalent level of safety is achieved through the methods and characteristics as outlined in the request for exemption from Title 14 CFR Part 21, Subpart H.

In regard to Title 14 CFR Part 91.203 (b), the UAS does not carry a pilot or passengers, does not have a cabin or cockpit entrance, and does not have on-board storage in which to carry certification and registration documents. An equivalent level of safety will be achieved by maintaining the proper documentation at the GCS readily available. This alternate method constitutes full compliance with the regulations.

K. Title 14 CFR Parts 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), 91.417(a) and (b): Maintenance and Inspections

GGI seeks an exemption from the maintenance inspection requirements contained in Title 14 CFR Parts 91.405(a), 91.407(a)(1) and (2), 91.417(a) and (b). These regulations specify maintenance and inspection standards in reference to Title 14 CFR Part 43. An exemption from these regulations is needed because Part 43 and these sections only apply to aircraft with an airworthiness certificate, which the UAS to be operated under this grant of exemption will not have.

The UAS will be maintained and inspected in accordance with the manufacturer-supplied manual and GGI UAS Pre-Flight & Maintenance Operations Log. This includes maintenance, overhaul, replacement and inspection requirements for the UAS. The PIC, prior to the first flight of the day and as deemed necessary otherwise, will undertake preflight inspection procedures in order to ensure the UAS is in a condition for safe operation. Discrepancies that may affect the safety of flight will be addressed and repaired if required. The PIC and GGI will maintain the UAS in a condition for safe operation.

Given the size, characteristics, and operating limitations of UAS as described herein, this provides a level of safety equivalent to or greater than manned aircraft performing similar operations.

VIII. PRIVACY

GGI's UAS operations will be conducted in accordance with applicable federal, state, or local laws regarding privacy. All operations shall be conducted over private or controlled-access property with permission from the land/building owner/controller or authorized representative. Permission from land owner/controller or authorized representative will be obtained for each flight to be conducted. Notification of inspection activities (including UAS operations) will be delivered via land/building owner/controller or authorized representative a minimum of 24 hours prior to inspection day/UAS operations.