



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

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

April 16, 2015

Exemption No. 11323
Regulatory Docket No. FAA-2015-0025

Mr. Michael Klarenbeek
M-Kopter Aerials
708 Felton Avenue
Gregory, SD 57533

Dear Mr. Klarenbeek:

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.

The Basis for Our Decision

By letter posted to the public docket on January 7, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of M-Kopter Aerials (hereinafter petitioner or operator) for an exemption. The exemption would allow the petitioner to operate an unmanned aircraft system (UAS) to conduct aerial videography for geographical awareness/mapping and real estate marketing.

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 Inspire 1.

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, 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 imaging. 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, M-Kopter Aerials 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 for the purpose of aerial imaging. This exemption is subject to the conditions and limitations listed below.

Conditions and Limitations

In this grant of exemption, M-Kopter Aerials 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 Inspire 1 when weighing less than 55 pounds including payload. Proposed operations of any other aircraft will require a new petition or a petition to amend this exemption.
2. Operations for the purpose of closed-set motion picture and television filming are not permitted.
3. The UA may not be operated at a speed exceeding 87 knots (100 miles per hour). The exemption holder may use either groundspeed or calibrated airspeed to determine compliance with the 87 knot speed restriction. In no case will the UA be operated at airspeeds greater than the maximum UA operating airspeed recommended by the aircraft manufacturer.
4. The UA must be operated at an altitude of no more than 400 feet above ground level (AGL). Altitude must be reported in feet AGL.
5. The UA must be operated within visual line of sight (VLOS) of the PIC at all times. This requires the PIC to be able to use human vision unaided by any device other than corrective lenses, as specified on the PIC's FAA-issued airman medical certificate or U.S. driver's license.
6. All operations must utilize a visual observer (VO). The UA must be operated within the visual line of sight (VLOS) of the PIC and VO at all times. The VO may be used to satisfy the VLOS requirement as long as the PIC always maintains VLOS capability. The VO and PIC must be able to communicate verbally at all times; electronic messaging or texting is not permitted during flight operations. The PIC must be designated before the flight and cannot transfer his or her designation for the duration of the flight. The PIC must ensure that the VO can perform the duties required of the VO.
7. This exemption and all documents needed to operate the UAS and conduct its operations in accordance with the conditions and limitations stated in this grant of exemption, are hereinafter referred to as the operating documents. The operating documents must be accessible during UAS operations and made available to the Administrator upon request. If a discrepancy exists between the conditions and limitations in this exemption and the procedures outlined in the operating documents, the conditions and limitations herein take precedence and must be followed. Otherwise, the operator must follow the procedures as outlined in its operating documents. The operator may update or revise its operating documents. It is the operator's responsibility to track such revisions and present updated and revised documents to the Administrator or any law enforcement official upon request. The

operator must also present updated and revised documents if it petitions for extension or amendment to this grant of exemption. If the operator determines that any update or revision would affect the basis upon which the FAA granted this exemption, then the operator must petition for an amendment to its grant of exemption. The FAA's UAS Integration Office (AFS-80) may be contacted if questions arise regarding updates or revisions to the operating documents.

8. Any UAS that has undergone maintenance or alterations that affect the UAS operation or flight characteristics, e.g. replacement of a flight critical component, must undergo a functional test flight prior to conducting further operations under this exemption. Functional test flights may only be conducted by a PIC with a VO and must remain at least 500 feet from other people. The functional test flight must be conducted in such a manner so as to not pose an undue hazard to persons and property.
9. The operator is responsible for maintaining and inspecting the UAS to ensure that it is in a condition for safe operation.
10. Prior to each flight, the PIC must conduct a pre-flight inspection and determine the UAS is in a condition for safe flight. The pre-flight inspection must account for all potential discrepancies, e.g. inoperable components, items, or equipment. If the inspection reveals a condition that affects the safe operation of the UAS, the aircraft is prohibited from operating until the necessary maintenance has been performed and the UAS is found to be in a condition for safe flight.
11. The operator must follow the UAS manufacturer's maintenance, overhaul, replacement, inspection, and life limit requirements for the aircraft and aircraft components.
12. Each UAS operated under this exemption must comply with all manufacturer safety bulletins.
13. Under this grant of exemption, a PIC must hold either an airline transport, commercial, private, recreational, or sport pilot certificate. The PIC must also hold a current FAA airman medical certificate or a valid U.S. driver's license issued by a state, the District of Columbia, Puerto Rico, a territory, a possession, or the Federal government. The PIC must also meet the flight review requirements specified in 14 CFR § 61.56 in an aircraft in which the PIC is rated on his or her pilot certificate.
14. The operator may not permit any PIC to operate unless the PIC demonstrates the ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption, including evasive and emergency maneuvers and maintaining appropriate distances from persons, vessels, vehicles and structures. PIC qualification flight hours and currency must be logged in a manner consistent with 14 CFR § 61.51(b). Flights for the purposes of training the operator's PICs and VOs

(training, proficiency, and experience-building) and determining the PIC's ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption are permitted under the terms of this exemption. However, training operations may only be conducted during dedicated training sessions. During training, proficiency, and experience-building flights, all persons not essential for flight operations are considered nonparticipants, and the PIC must operate the UA with appropriate distance from nonparticipants in accordance with 14 CFR § 91.119.

15. UAS operations may not be conducted during night, as defined in 14 CFR § 1.1. All operations must be conducted under visual meteorological conditions (VMC). Flights under special visual flight rules (SVFR) are not authorized.
16. The UA may not operate within 5 nautical miles of an airport reference point (ARP) as denoted in the current FAA Airport/Facility Directory (AFD) or for airports not denoted with an ARP, the center of the airport symbol as denoted on the current FAA-published aeronautical chart, unless a letter of agreement with that airport's management is obtained or otherwise permitted by a COA issued to the exemption holder. The letter of agreement with the airport management must be made available to the Administrator or any law enforcement official upon request.
17. The UA may not be operated less than 500 feet below or less than 2,000 feet horizontally from a cloud or when visibility is less than 3 statute miles from the PIC.
18. If the UAS loses communications or loses its GPS signal, the UA must return to a pre-determined location within the private or controlled-access property.
19. The PIC must abort the flight in the event of unpredicted obstacles or emergencies.
20. The PIC is prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough available power for the UA to conduct the intended operation and to operate after that for at least five minutes or with the reserve power recommended by the manufacturer if greater.
21. Air Traffic Organization (ATO) Certificate of Waiver or Authorization (COA). All operations shall be conducted in accordance with an ATO-issued COA. The exemption holder may apply for a new or amended COA if it intends to conduct operations that cannot be conducted under the terms of the attached COA.
22. All aircraft operated in accordance with this exemption must be identified by serial number, registered in accordance with 14 CFR part 47, and have identification (N-Number) markings in accordance with 14 CFR part 45, Subpart C. Markings must be as large as practicable.

23. Documents used by the operator to ensure the safe operation and flight of the UAS and any documents required under 14 CFR §§ 91.9 and 91.203 must be available to the PIC at the Ground Control Station of the UAS any time the aircraft is operating. These documents must be made available to the Administrator or any law enforcement official upon request.
24. The UA must remain clear and give way to all manned aviation operations and activities at all times.
25. The UAS may not be operated by the PIC from any moving device or vehicle.
26. All Flight operations must be conducted at least 500 feet from all nonparticipating persons, vessels, vehicles, and structures unless:
 - a. Barriers or structures are present that sufficiently protect nonparticipating persons from the UA and/or debris in the event of an accident. The operator must ensure that nonparticipating persons remain under such protection. If a situation arises where nonparticipating persons leave such protection and are within 500 feet of the UA, flight operations must cease immediately in a manner ensuring the safety of nonparticipating persons; and
 - b. The owner/controller of any vessels, vehicles or structures has granted permission for operating closer to those objects and the PIC has made a safety assessment of the risk of operating closer to those objects and determined that it does not present an undue hazard.

The PIC, VO, operator trainees or essential persons are not considered nonparticipating persons under this exemption.

27. All operations shall be conducted over private or controlled-access property with permission from the property owner/controller or authorized representative. Permission from property owner/controller or authorized representative will be obtained for each flight to be conducted.
28. Any incident, accident, or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA must be reported to the FAA's UAS Integration Office (AFS-80) within 24 hours. Accidents must be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.nts.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 April 30, 2017, unless sooner superseded or rescinded.

Sincerely,

/s/

John S. Duncan
Director, Flight Standards Service

December 12, 2014

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

Petition of Micro Drone Vision, LLC for Exemption Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012.

To Whom It May Concern:

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 and 14 CFR Part 11, Micro Drone Vision, LLC (MDV), hereby applies for an exemption from Federal Aviation Regulations (FARs) identified below, to allow commercial operations of small unmanned aerial system (*i.e.*, sUAS).

This exemption is in accordance with protocols outlined in this petition for exemption, the enclosed MDV's Operations Manual¹, MDV's UAS Aircraft Training Manual¹, the DJI UAS manufacturer's operations and/or instructions manual, DJI UAS User's Manuals, DJI UAS Quick Start Guides, and any other requirements established by the FAA pursuant to Section 333 of the Reform Act.

This exemption would permit commercial operation by MDV, which uses DJI Phantoms, 550S Flame Wheels, Inspire 1, and S1000 to conduct sUAS flight training, education, real estate photography, and videography, film and movie production, and demonstration flights. MDV's operation under the exemption will be subject to strict operating requirements and conditions to ensure an equivalent level of safety to currently authorized operations using manned aircraft and under conditions as may be modified by the FAA as required by Section 333.²

¹ Micro Drone Vision submits the Operations Manual and Training Manual as a Confidential document under 14 CFR § 11.35(b), the entire content of both Manuals contain confidential commercial and proprietary information that MDV has not and will not share with others. These Manuals contain operating procedures and training procedures that are not available to the public and are protected from release under the Freedom of Information Act, 5 USC § 552 (b) (4).

² Micro Drone Vision is filing this exemption request on its own behalf; it anticipates that its customers, in the future, will file exemption applications to allow them to operate the DJI UAS's in commercial operations in their own location. Those filings will be substantially similar to this exemption application.

MDV will be operated under controlled VFR conditions at low altitude in airspace that is permitted in accordance with MDV's approved Certificate of Authorization (COA). They will operate the sUAS's with pilots who are current and qualified with a FAA Pilot Certificate and only after completing MDV's training program. Finally, the FAA ATC will approve the airspace in which the sUAS will operate in advance.

Micro Drone Vision respectfully submits this request for an exemption because it operates sUASs. Currently, the operations of MDV will be conducting will be in lieu of comparatively hazardous operations now conducted with fixed wing and rotary conventional aircraft. The FAA can have confidence that the operations will be conducted at an equivalent level or greater level of safety. Approval of this exemption would thereby enhance safety and fulfill the Secretary of Transportation's (the FAA Administrator's) responsibilities under Section 333(c) of the Reform Act to "establish requirements for the safe operation of such aircraft systems in the national airspace system."

For your convenience, MDV has organized this Exemption request as follows:

- I.** Petitioner's Description
- II.** Relevant Statutory Authority
- III.** Qualifications for Approval Under Section 333 of the Reform Act
- IV.** Description of Proposed Operations
- V.** Regulations From Which Exemption is Requested
- VI.** Public Interest
- VII.** Privacy
- VIII.** Federal Registry Summary
- IX.** Conclusion

I. Petitioner's Description:

Micro Drone Vision, LLC, headquartered in Tampa, Florida, is a company that provides sUAS flight training, support to news services, real estate photography, film and movie production, education, and demonstration flights in a compliant and safe environment. MDV plans on providing a wide range of services as the sUAS market expands.

The management at MDV has over 62 years experience in aviation and over 3 years combined experience operating sUAS's. The Director of Operations is a current Private Pilot ASEL. The Chief Pilot has an ATP certificate, accumulated over 15,000 hours of flight time, and is current in HS-125's, LRJETs, King Air's, and ASES's. The Chief Pilot is intimately familiar with operational control procedures and overseeing the safe operations of an aviation event. The Manger has eight years working video production and understands the requirements to integrate the sUAS into the movie sets.

MDV's goal is to operate in an accident-free environment by:

- Demonstrating a commitment by management and all employee's to operator in a compliant manner.
- Identify hazard and risk while eliminating or controlling all these risk. They will use steps to intervene and report when unsafe work practices appear to exist.
- Train all employees involved in flight operations to operate at the highest standard level.

The contact information for Petitioner is as follows:

Micro Drone Vision, LLC
20125 Heron Crossing Drive
Tampa, FL 33647

Member Managers:
Bonnie Edwards
Office: 813-449-2454
Cell: 321-505-2920

Justin W. Newcomb
Cell: 30- 270-8665

II. Relevant Statutory Authority:

This petition for exemption is submitted to fulfill Congress' goal in passing Section 333(a) through (c) of the Reform Act. Congress has directed the FAA "to safely accelerate the integration of civil unmanned aircraft systems into the national airspace system." Pursuant to Section 333 of the Reform Act, the FAA Administrator is to consider whether certain unmanned aircraft systems may operate safely in the National Airspace ("NAS") before completion of the formal UAS rulemaking, based on the

following considerations:

- The UAS's size, weight, speed, and operational capability;
- Operation of the UAS in close proximity to airports and populated areas; and
- Operation of the UAS within the visual line of sight of the operator.³

If the Secretary determines that such vehicles "may operate safely in the National Airspace System, the Secretary shall establish requirements for the safe operation of such aircraft in the National Airspace System".

Additionally, the FAA Administrator has general authority to grant exemptions from its safety regulations and minimum standards when the Administrator decides a requested exemption is in the public interest. A party requesting an exemption must explain the reasons why the exemption: (1) would benefit the public as a whole, and (2) would not adversely affect safety (or how it would provide a level of safety at least equal to the existing rules).

The Federal Aviation Act expressly grants the FAA the authority to issue exemptions. This statutory authority, by its terms, includes exempting civil aircraft, as the term is defined under 40101 of the Act, from the requirement that all civil aircraft must have a current airworthiness certificate and those regulations requiring commercial pilots to operate aircraft in commercial service:

The Administrator may grant an exemption from a requirement of a regulation prescribed under subsection (a) or (b) of this section or any of sections.

III. Qualifications for Approval Under Section 333 of the Reform Act

The proposed operations in this petition for exemption qualify for expedited approval under Section 333 of the Reform Act. Each of the statutory criteria and other relevant factors are satisfied.

The proposed operations would permit MDV the use of small UAS under controlled conditions in airspace that is: (1) predetermined; (2) controlled as to access; and that (3) provides an increased level of safety beyond that existing when fixed or rotor wing aircraft are used to accomplish the same purpose.

³ MDV's submission places a duty on the Administrator to not only process applications for exemptions under Section 333, but for the Administrator, if he deems the conditions proposed herein require modification in order to allow approval, to supply conditions for the safe operation of the sUAS. MDV welcomes the opportunity to consult with FAA staff in order to address any issues or concerns that this proposal may raise that they believe may require modification.

MDV uses UASs that are multirotor, weighing less than 25 pounds including payload. They operate, under normal conditions, at speeds not to exceed 45 mph and have the capability to hover, and move in the vertical and horizontal plane. MDV's UASs will operate in line of sight, during daylight hours, and will only operate within a sterile area described in the enclosed Operations Manual. MDV will operate at or below 400 feet AGL and will file a NOTAM for each flight operated in controlled airspace. All required permissions and permits would be obtained from territorial, state, county or city jurisdictions, including local law enforcement, fire, or other appropriate governmental agencies prior to operating a sUAS.

Given the small size of the sUAS's involved and the restricted sterile environment within which they will operate, this MDV's exemption falls within the zone of safety and demonstrate an equivalent level of safety, in which Congress desired the FAA to permit commercial UAS operations by exemption pending completion of formal rulemaking. Also, due to the size of the sUAS's and the confined area in which the sUAS's will operate, approval of the application presents no hazard in the NAS.

Considering the clear direction in Section 333 of the Reform Act, the authority contained in the Federal Aviation Act, as amended, the equivalent level of safety surrounding the proposed operations, and the significant public benefit, the grant of the requested exemptions is also in the public interest.

IV. Description of Proposed Operations

The enclosed Operations Manual describes, in detail, the policies and procedures for MDV's proposed sUAS operations. To assist the FAA in its safety assessment of MDV's proposed sUAS operations, below is a summary of operational limitations and conditions that will ensure an equivalent or higher level of safety to operations conducted under current regulatory guidelines:

1. The sUAS will weigh less than 25 pounds.
2. Flights will be operated within line of sight of the PIC and observer.
3. Maximum total flight time for each operational flight will be limited to the amount of time the sUAS can be flown and still maintain a reserve battery power of no less than 25%.
4. Flights will be operated at an altitude of no more than 400 feet AGL.
5. Flights will be operated at a lateral distance of least 100 feet from any inhabited structures, buildings, vehicles, vessels, people not associated with the operation or who have not signed a waiver in advance of the operation.

6. Minimum crew for each operation will consist of the sUAS Pilot in Command and a Visual Observer. Additional crewmembers consist of a Pilot and a Camera Operator.
7. The sUAS Pilot in Command will be an FAA licensed airman with at least a private pilot's certificate, third class medical, and a current check required by 14 CFR Part 61.56 in an aircraft in which the PIC is rated on his or her pilot certificate.
8. MDV will designate a Pilot in Command ("PIC") for each mission.
9. The sUAS will operate only within a confined "Sterile Area" as defined in the Operations Manual.
10. Prior to the operations at a particular location, a site inspection will have been conducted. On the day of the mission the management person with operational control and the PIC will concur on dispatching of the mission.
11. In accordance with Operations Manual a briefing will be conducted in regard to the planned sUAS operations prior to each day's missions. It will be mandatory that all personnel who will be performing duties within the boundaries of the sterile area be present for this briefing.
12. MDV crew will use the checklist and callouts required in the Operations Manual.
13. All sUAS's will be maintained in accordance with inspection program specified in the MDV's Operations Manual and in compliance with the manufacturer's guidelines.
14. In the event of an accident involving an MDV sUAS, they will cease operations and report the accident to the NTSB and AFS-80.
15. Pilot in Command and Visual Observer will at all times be able to communicate by voice.
16. Pilot in Command, Pilot, Camera Operator, Visual Observer, and Operational Personnel will have been trained and tested in accordance to MDV's UAS Aircraft Training Manual.

17. All required permissions and permits would be obtained from territorial, state, county or city jurisdictions, including local law enforcement, fire or other appropriate governmental agencies.
18. In compliance with approved Waiver, MDV management will submit a written "Plan of Activities" to the local Flight Standards District Office (FSDO) having jurisdiction over the area of proposed filming three days in advanced of operations during film or movie productions.
19. If the sUAS loses communications signal, the sUAS will have the capability to return to a pre-determined location within the Sterile Area and land.
20. Contingency plans will be in place to safely terminate flight if there is a loss of communication between the pilot and the observer.
21. The sUAS has the capability to abort a flight in case of unpredicted obstacles or emergencies.
22. MDV, by following procedures listed in the Operations Manual will assure no individuals' privacy is violated.
23. Procedures have been established in MDV's Operations Manual to contact ATC prior to operating in airspace other than G.

V. Regulations From Which Exemption is Requested

- A. 14 CFR § Part 61.113 (a) and (b) Private Pilot Privileges and Limitations; Pilot in Command**
- B. 14 CFR § 91.103: Preflight Action**
- C. 14 CFR § 91.113: Right-of-Way Rules**
- D. 14 CFR § 91.119 (c): Minimum Safe Altitudes**
- E. 14 CFR § 91.121: Altimeter Settings**
- F. 14 CFR § 91.151(b): Fuel Requirements for Flight in VFR Conditions**
- G. 14 CFR § 91.405(a), 91.407(a)(1), 91.409(a)(2); 91.417(a) and (b): Maintenance Inspections**

A. 14 CFR § Part 61.113 (a) and (b) Private Pilot Privileges and Limitations; Pilot in Command

Section 61.113(a) & (b) limit private pilots to non-commercial operations. Unlike a conventional aircraft that carries a pilot, passengers, and cargo, the DJI sUAS's are remotely controlled with no passengers or property of others on board. MDV respectfully proposes that the FAA should take into account the characteristics and procedures of the particular UAS.

Micro Drone Vision proposes that the actual operation of the DJI sUAS does not require the Pilot to hold a private pilot certificate. Instead, the actual site operation requires a private pilot certificate. MDV proposes the following requirements:

- **Pilot in Command Requirements:**

1. The PIC must possess a Private Pilot's Certificate and a valid third-class medical certificate;
2. The PIC must have accumulated and logged a minimum of 200 flight cycles and 25 hours of total time as a UAS pilot and at least 10 hours logged as a UAS pilot with a similar UAS type (single blade or multirotor) and 5 hours in type of UAS aircraft.
3. The PIC must have accumulated and logged a minimum of five hours as UAS pilot with the make and model of UAS to be utilized for operations under the exemption and three takeoffs and landings in the preceding 90 days.
4. The PIC must have successfully completed the qualification process as specified in the MDV Operations Manual and MDV Training Program, to include a knowledge and skill test.
5. The PIC must also meet the flight review requirements specified in 14 CFR Part 61.56 in an aircraft in which the PIC is rated on his or her pilot certificate.

- **Pilot Requirements:**

1. The Pilot must have accumulated and logged a minimum of 200 flight cycles and 25 hours of total time as a UAS rotorcraft pilot and at least 10 hours logged as a UAS pilot with a similar UAS type (single blade or multirotor).
2. The Pilot must have accumulated and logged a minimum of five hours as UAS pilot with the make and model of UAS to be utilized for operations under the exemption and three takeoffs and landings in the preceding 90 days.
3. The Pilot must have successfully completed the qualification process as specified in the MDV Operations Manual and MDV Training Program, to include a knowledge and skill test.
4. The Pilot must have successfully completed the recurrent requirements as specified in MDV Training Program within the last 12 calendar months.

Equivalent Level of Safety

Micro Drone Vision utilizes both a PIC and a Pilot to increase safety during flight operations. While the Pilot is concentrating on flying the UAS the PIC has the ability oversee safety of the entire operations. The PIC will always remain within 10 feet of the Pilot when the UAS is airborne to assist or take over if an emergency should happen.

Procedures developed by Micro Drone Vision far exceed the current safety requirements established by the FAA. Micro Drone Vision respectfully requests the option to use a two pilot crew and the second crewmember not having to possess a private pilot certificate.

B. 14 CFR § 91.103: Preflight Action

MDV requests an exemption from the preflight actions requirements of 14 CFR 91.113 that prescribes the preflight actions under which aircraft may operate:

Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight.

- (a) Flight under IFR or a flight not in the vicinity of an airport, weather reports and forecasts, fuel requirements, alternatives available if the planned flight cannot be completed, and any known traffic delays of which the pilot in command has been advised by ATC;
- (b) For any flight, runway lengths at airports of intended use, and the following takeoff and landing distance information:
 - (1) For civil aircraft for which an approved Airplane or Rotorcraft Flight Manual containing takeoff and landing distance data is required, the takeoff and landing distance data contained therein; and
 - (2) For civil aircraft other than those specified in paragraph (b)(1) of this section, other reliable information appropriate to the aircraft, relating to aircraft performance under expected values of airport elevation and runway slope, aircraft gross weight, and wind and temperature.

MDV will not operate sUAS's under IFR conditions or when the ceilings are below 1000 feet and the visibility is below 3 statute miles. DJI's sUAS's do not have published approved Airplane or Rotorcraft Flight Manual containing takeoff and landing distance data.

Equivalent Level of Safety

Located in MDV Operations Manual are procedures describing steps the PIC along with the person having operational control must follow to assure that the weather will be adequate to complete the mission in VFR condition. Since MDV operates in Florida

where the density altitude is never usually above 2000 feet, UAS performance is not affected. When MDV is allowed to operate in other parts of the United States the UAS used in those locations will be test flown at gross weight to test performance limitations prior to conducting commercial operations.

C. 14 CFR 91.113: Right-of-Way Rules

MDV request an exemption from 14 CFR 91.113 Right-of-way rules, requiring vigilance by each person operating an aircraft so as to see and avoid other aircraft. When a rule of this section gives another aircraft the right-of-way, the pilot shall give way to that aircraft and may not pass over, under, or ahead of it unless well clear.

Micro Drone Visions operates small pilotless UAS's and cannot comply with these rules as they have been written.

Equivalent Level of Safety

MDV operates sUAS's at or below an altitude of 400 feet AGL, well below the normal operating altitude of other aircraft. MDV Operations Manual specifies that a Pilot in Command with experience will oversee each mission and has knowledge of the avoid rules. A Visual Observer will assist the PIC in looking for aircraft entering the operations area. It's the responsibility of the PIC to cease operations and land the UAS immediately whenever and aircraft comes into the vicinity creating a potential threat. Operations cannot recommence until the threat is clear.

D. 14 CFR. § 91.119: Minimum Safe Altitudes

MDV requests an exemption from the minimum safe altitude requirements of 14 CFR 91.119 that prescribes the minimum safe altitudes under which aircraft may operate:

- Over any congested area of a city, town, or settlement, or over any open air assembly of persons, an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft.
- Over other than congested areas at an altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure.

Section 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."

To provide the intended operations, the sUAS is normally operated below 400 feet

AGL. Additionally, due to the nature of the proposed operations, the sUAS will maintain a lateral distance of at least 100 feet from inhabited structures, buildings, vehicles, and vessels, and from people not associated with the operation.

Equivalent Level of Safety

Compared to flight normal aircraft, MDV's multi-rotor aircraft weigh a maximum of 25 pounds, and given the lack of flammable fuel, any risk associated with these operations is far less than those that presently exist with conventional aircraft. An equivalent level of safety will be achieved given the size, weight, and speed of the UAS, as well as the location where it is operated. As set forth in the Operations Manual, the sUAS will be operated in a sterile area, where buildings and people will not be exposed to operations without their pre-obtained consent. Because of the advance notice to the property owners and participants, all affected individuals will be well aware of the planned flight operations as set forth in the Operations Manual.

Furthermore, by operating at such lower altitudes, the sUAS will not interfere with aircraft that are subject to the minimum safe altitude regulations. Finally, the successful safety record of the DJI sUAS's demonstrates that the sUAS can be safely used at these lower altitudes and closer operating environments.

E. 14 C.F.R. § 91.121: Altimeter Settings

MDV seeks an exemption from 14 CFR 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 because the sUAS does not have a barometric altimeter, but rather a GPS altitude read out.

Equivalent Level of Safety

An equivalent level of safety will be achieved by following the procedures set forth in the Operations Manual. MDV will confirm the altitude of the launch site shown on the GPS altitude indicator before flight. Moreover, the PIC will use the GPS altitude indicator to constantly monitor the sUAS's height, thus ensuring operation at safe altitudes.

F. 14 CFR 91.151(a): Fuel Requirements for Flight in VFR Conditions

MDV requests an exemption from 14 CFR § 91.151(a)'s fuel requirements for flight in VFR conditions. Section 91.151 states:

- (a) No person may begin a flight in an airplane under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing, and assuming normal cruising speed –

- (1) During the day, to fly after that for at least 25 minutes; or
- (2) At night, to fly after that for at least 45 minutes.

The batteries powering MDV's UAS's provide approximately 10-18 minutes of powered flight. To meet the 30 minutes reserve requirement in 14 CFR 91.151, sUAS flights could not be conducted. Given the limitations on the sUAS's proposed flight area and the location of its proposed operations within a predetermined area, a safety margin based on a reserve amount of battery life is needed.

MDV will not be conducting any sUAS flights at night.

Equivalent Level of Safety

An equivalent level of safety will be achieved because the operations will be conducted on-site without significant transit time by the sUAS. All flights will be planned to terminate with no less than 25% reserve battery power still available. This restriction would be more than adequate to return the sUAS safely to its planned landing zone from anywhere in its confined area of operation even in the event of an unexpected occurrence. Operation of the sUAS with less than 30 minutes of reserve fuel does not include the type of risks that Section 91.151(a) was intended to alleviate given the size and speed of the small UAS, and the proximity of the flight operation to the landing zone. Moreover, operation will be limited to controlled areas where only people and property owners, or official representatives who have signed waivers will be allowed.

G. 14 CFR § 91.405(a), 91.407(a)(1), 91.409(a)(2); 91.417(a) and (b): Maintenance Inspections

MDV also seeks an exemption from the maintenance inspection requirements contained in 14 CFR 91.405(a), 91.407(a)(1), 91.409(a)(2), 91.417(a) and (b). These regulations specify maintenance and inspection standards in reference to 14 CFR Part 43. 14 CFR 91.405(a) (stating that each owner or operator of an aircraft "shall have the aircraft inspected as prescribed in subpart E of this part and shall between required inspections ...have discrepancies repaired as prescribed in part 43 of this chapter"). An exemption to these regulations is needed because Part 43 and these sections only apply to aircraft with an airworthiness certificate, which the sUAS will not have.

Equivalent Level of Safety

An equivalent level of safety will be achieved because maintenance and inspections will be performed in accordance with the MDV Operations Manual and DJI User's Manuals. As provided in the Operations Manual, the operator will ensure that the sUAS is in working order prior to initiating flight, perform required maintenance, and keep a log of any maintenance performed. The operator is the person most familiar with the aircraft and best suited to maintain the aircraft in an airworthy condition to provide the equivalent level of safety.

If mechanical issues arise, the sUAS's size and carrying capacity, and the fact that flight operations will only take place in restricted areas for limited periods of time during daylight hours, creates less risk than that associated with conventional rotorcraft performing the same operation.

VI. PUBLIC INTEREST

Granting Micro Drone Vision, LLC an exemption furthers the public interest. National policy set by Congress favors early integration of UAS into the national airspace in controlled, safe working environments such as those proposed in this petition. The one vision of MDV is to help facilitate safe integration of sUAS's into mainstream USA in the following areas:

- **Movies and Videography**

Whether the shot requires unique views and expansive panning or extreme altitude with radical views, the UAS is designed to hold up under demanding conditions. Because of the autopilot feature with pre-designed mission management and R/C control interrupt, the pilot and camera operator can easily create the ultimate shot with HD video or HD still photos. When working close in on a closed set the hazards to the actors are greatly reduced due to the size of the sUAS.

- **News Gathering**

Similar to movies and videography, each news assignment may require a completely different shot or view of a scene. With budgets for traditional helicopter use being greatly reduced, the UAS is the perfect solution to allow for easy news gathering for a fraction of the cost. The sUAS can and will be operated in a sterile area away from the public, while the traditional helicopter must hover over persons and property increasing the danger to individuals.

- **Real Estate**

The sUAS can be used in all areas of real estate, including commercial, residential and industrial properties. Using a sUAS, real estate professionals can create promotional videos, photos and unique shots that normal camera aspects cannot capture. MDV's easy-to-use video and photo platform enables properties to stand out, providing dazzling views that are typically shown via expensive computer animation or costly helicopter rentals. Imagine shooting a view from a high-rise condo in stunning high definition that shows your potential customer the actual view from the residence. The remote platform is great for new planning, zoning and large developments. Simple and easy-to-use video and photos allow for multiple height pictures and elevation views.

- **Fire and Rescue**

MDV would introduce and demonstrate to fire and rescue personnel the sUAS's reliability and the capability to perform in extreme situations. The ability to offer real time HD and IR video facilitates placing personnel and equipment in the right places. Also, with modern FLIR cameras, areas can be identified for potential 'hot spots' and additional focus without putting personnel at risk. MDV's mission is to assist governmental agencies safely into the NAS.

- **Law Enforcement and SWAT**

MDV would introduce and demonstrate to Law enforcement officers that sUAS excel in rapid deployment and challenging situations. Most sUAS's deploy in less than 5 minutes. MDV is working with a manufacturer that has developed a sUAS that will deploy in 1 minute. With a video package, the sUAS provides law enforcement with seamless incident situational awareness, tactical support and accident photography. Using the sUAS, police and SWAT can quickly assess potential threats; take HD photos of a crime scene or FLIR video of an area to find hidden threats.

- **Agriculture and Conservation**

MDV would introduce and demonstrate to farmers of all types that the sUAS can aid commercial agriculture, land management and conservation efforts by assessing crops, mapping flood zones, measuring snow pack and more. The sUAS can fly pre-saved missions via the fully automated ground station, which allows for time-lapse photos of fields, crops and known land tracts. It also can accurately recreate the same pattern during all seasons, providing invaluable data for land and soil management. Using HD video, HD photos, and IR cameras allows for detailed analysis and recording. With photo rendering software, 3D maps and topography can be used in conjunction with time-lapse photos to create highly detailed maps for erosion, flood mapping and other critical aspects of land management.

VII. Privacy

Micro Drone Vision has established a chapter in their Operations Manual to protect the public privacy. MDV knows that many individual have concerns about privacy from the operations of sUAS's. MDV has created a privacy notice that informs residents, commercial property owners, churches, schools, and governmental organizations of our intent to conduct commercial drone operations in proximity to their property.

VIII. Federal Registry Summary

Pursuant to 14 CFR Part 11, the following summary is provided for publication in the Federal Register, should it be determined that publication is needed:

Micro Drone Vision, LLC seeks an exemption from the following rules:

14 CFR Part 61.113 (a) and (b); 14 CFR 91.103; 14 CFR 91.113; 14 CFR 91.119; 14 CFR 91.121; 14 CFR 91.151(a); 14 CFR 91.405(a); 14 CFR 91.407(a)(1); 14 CFR; 91.409(a)(2); 14 CFR 91.417 (a) & (b).

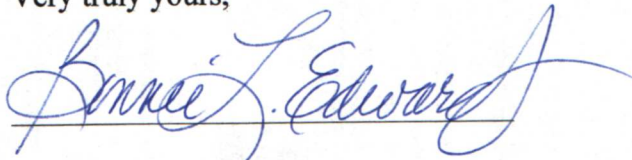
Approval of this exemption request allows MDV to conduct commercial operations with small and lightweight unmanned aerial systems. MDV **One Vision** is to enhance safety of sUAS operations in the NAS while reducing risk to the general public and property owners.

The DJI sUAS, weighing less than 25 pounds and powered by batteries, eliminates virtually all of that risk given the reduced mass and lack of combustible fuel carried on board. The sUAS is transported to the designated mission area and set up there. The sUAS will carry no passengers or crew and, therefore, will not expose them to the risks associated with manned aircraft flights.

The operation of this small UAS will provide an equivalent level of safety, supporting the grant of the exemptions requested herein, including exempting the applicant from the requirements of several regulations and allowing commercial operations. These lightweight sUAS's operate at slow speeds, close to the ground, and in a sterile environment. As a result, they are far safer than conventional aerial survey and inspection operations conducted with fixed wing aircraft or helicopters.

If additional information is required, or if you have any questions regarding this Petition for Exemption, please contact the undersigned at:

Very truly yours,



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