

UNITED STATES OF AMERICA  
DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION  
WASHINGTON, DC

Regulatory Docket No. FAA-2007-3330-0001

**IN THE MATTER OF THE PETITION FOR EXEMPTION OF:  
STEVEN MCDONALD dba IRONGATE HOME  
INSPECTIONS  
FOR AN EXEMPTION SEEKING RELIEF FROM THE REQUIREMENTS OF  
TITLE 14 OF THE CODE OF FEDERAL REGULATIONS  
SECTIONS 91.7(a), 91.121, 91.151(b), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), AND  
91.417(a) & (b) CONCERNING COMMERCIAL OPERATION OF DJI PHANTOM 3  
AND INSPIRE 1 UNMANNED AIRCRAFT SYSTEMS  
PURSUANT TO SECTION 333 OF  
THE FAA MODERNIZATION AND REFORM ACT OF 2012  
(PUBLIC LAW 112-95)**

**Submitted on 29 January 2016**  
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## **SUMMARY**

STEVEN MCDONALD seeks exemption from the requirements of 14 C.F.R §§ 91.7(a), 91.121, 91.151(b), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b), to operate an

Unmanned Aircraft System pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (FMRA). This exemption will permit STEVEN MCDONALD to operate an Unmanned Aircraft System (UAS) for the commercial purpose of conducting aerial video and photography of construction sites, real estate, farmland, and landscape over certain areas of the United States.

## **INTRODUCTION AND INTERESTS OF THE PETITIONER**

STEVEN MCDONALD will provide his clients with expertise and knowledge in advanced technologies and solutions to increase efficiency, productivity and effectiveness. STEVEN MCDONALD has nearly 25 hours of recreational/hobby flying experience in aspects of aerial video and photography. The objective of STEVEN MCDONALD and his aerial operations is to safely provide high quality imaging for a variety of commercial, public, and residential uses, specifically targeting:

- General aerial still photos
- Real Estate marketing
- Aerial inspections of public and private structures

## **BACKGROUND**

Unmanned Aircraft Systems: DJI Phantom 3 & Inspire 1 UASs

STEVEN MCDONALD seeks an exemption to operate DJI systems for compensation or hire within the NAS. The DJI Phantom 3 is a vertical takeoff and landing (VTOL) Unmanned Aircraft (UA) with a Ground Control Station (GCS) utilizing electronic tablet or smart phone systems. The DJI Phantom 3 has a maximum gross weight of approximately 3 pounds while having a length of 16 inches, width of 16 inches, height of 8 inches, and a maximum speed of approximately 30 knots and the Inspire 1 is approximately 15 pounds 15 x 15 x 20 inches, and a maximum speed of approximately 30 knots. Both the DJI Phantom 3 and Inspire 1 UA is equipped with four main rotors, driven by Lithium Polymer battery powered electric motors.

Both the UA that will be operated by STEVEN MCDONALD will be registered in accordance with 49 U.S.C. 44103, *Registration of Aircraft*, as well as 14 C.F.R Part 47, *Aircraft Registration*, and marked in accordance with 14 C.F.R. Part 45, *Identification and Registration Marking*.

## **BASIS FOR PETITION**

Petitioner, STEVEN MCDONALD, pursuant to the provisions of the Federal Aviation Regulations (14 C.F.R. § 11.61) and the FAA Modernization and Reform Act of 2012 (FMRA), Section 333, *Special Rules for Certain Unmanned Aircraft Systems*, hereby petitions the Administrator to commercially operate the DJI Phantom 3 & Inspire 1UA in the National Airspace System (NAS), and for an exemption from the requirements of 14 C.F.R §§ 91.7(a), 91.121, 91.151(b), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b).

In consideration of the speed, weight, size, and limited operating area associated with the unmanned aircraft and its operation, STEVEN MCDONALD's operation of the DJI Phantom 2 & Inspire 1 UA meets the conditions of FMRA Section 333 and therefore, will not require an airworthiness certificate in accordance with 14 C.F.R. Part 21, Subpart H.

Accordingly, STEVEN MCDONALD requests relief from Sections 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b), as these sections set forth requirements for maintenance that only apply to aircraft with an airworthiness certificate. STEVEN MCDONALD submits that the requested relief is proper since an equivalent level of safety will be ensured. STEVEN MCDONALD will use experienced personnel or technicians to perform maintenance, alterations, or preventive maintenance on the UASs using the methods, techniques, and practices prescribed in the operating documents (i.e., Monthly Maintenance Log, and DJI Instruction Manual). Furthermore, STEVEN MCDONALD will document and maintain all maintenance records for the DJI Phantom 3 & Inspire 1UA.

*Privileges and Limitations: Pilot in Command*, is requested by STEVEN MCDONALD to the extent necessary to allow a Pilot in Command (PIC) who has demonstrated, by meeting minimum 20 flight-hour requirements and that the PIC is able to safely operate the said DJI UA in a manner consistent with this exemption, including evasive and emergency maneuvers and maintaining appropriate distances from people, vessels, vehicles, and structures.

STEVEN MCDONALD seeks relief from Section 91.7(a), entitled *Civil Aircraft Airworthiness*, because the DJI Phantom 3 & Inspire 1 UA does not require an airworthiness certificate in accordance with 14 C.F.R. Part 21, Subpart H. As such, STEVEN MCDONALD submits that he will ensure that the DJI Phantom 3& Inspire 1 UA is in an airworthy condition, prior to every flight, by determining that the UA is in compliance with the operating documents (i.e., Monthly Maintenance Log, and DJI Instruction Manual), and that the aircraft is in a condition for safe flight.

STEVEN MCDONALD also seeks an exemption from the requirements of Section 91.121, entitled *Altimeter Settings*, as the DJI Phantom 3 UA & Inspire 1 will not have a typical barometric altimeter onboard. However, altitude information of these said UA will be provided to the PIC via Global Positioning System (GPS) equipment and radio communications telemetry data link, which downlinks from the UA to the GCS for active monitoring of the flight path. This altitude information, combined with STEVEN MCDONALD's operation of the DJI Phantom 3 & Inspire 1 UA within visual line of sight, at or below 500 feet AGL, will ensure a level of safety equivalent to Section 91.121.

Additionally, STEVEN MCDONALD seeks an exemption from the requirements of Section 91.151(b), entitled *Fuel Requirements for Flight in VFR Conditions*. STEVEN MCDONALD submits that safety will not be affected by operation of the DJI Phantom 3 & Inspire 1 UA during daylight hours in visual meteorological conditions (VMC) under visual flight rules (VFR), with enough battery power to fly for a total duration of approximately 17.5 minutes to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 4.5 minutes.

In accordance with 14 C.F.R. § 11.81, STEVEN MCDONALD provides the following information in support of his petition for exemption

**Name And Address Of The Petitioner.**

STEVEN MCDONALD

746 Lynn Lane Central Point Or 97502

541-301-3964

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**The Specific Sections Of 14 C.F.R. From Which STEVEN MCDONALD Seeks Exemption.**

**1. STEVEN MCDONALD Seeks Exemption From The Requirements Of Section 91.7(a).**

Section 91.7, entitled *Civil Aircraft Airworthiness*, subsection (a), states the following:

(a) No person may operate a civil aircraft unless it is in an airworthy condition.

**2. STEVEN MCDONALD Seeks Exemption From The Requirements Of Section 91.121.**

Section 91.121, entitled *Altimeter Settings*, subsection (a), states the following, in part:

(a) Each person operating an aircraft shall maintain the cruising altitude or flight level of that aircraft, as the case may be, by reference to an altimeter that is set, when operating--

(1) Below 18,000 feet MSL, to--

(i) The current reported altimeter setting of a station along the route and within 100 nautical miles of the aircraft;

(ii) If there is no station within the area prescribed in paragraph (a)(1)(i) of this section, the current reported altimeter setting of an appropriate available station; or

(iii) In the case of an aircraft not equipped with a radio, the elevation of the departure airport or an appropriate altimeter setting available before departure.

**3. STEVEN MCDONALD Seeks Exemption From The Requirements Of Section 91.151(b).**

Section 91.151, entitled *Fuel Requirements for Flight in VFR Conditions*, subsection (b), states the following:

*(b) No person may begin a flight in a rotorcraft under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 20 minutes.*

**4. STEVEN MCDONALD Seeks Exemption From The Requirement Of Section 91.405(a).**

Section 91.405, entitled *Maintenance required*, subsection (a), states the following: Each owner or operator of an aircraft—

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

**5. STEVEN MCDONALD Seeks Exemption From The Requirements Of Section 91.407(a)(1)**

Section 91.407, entitled *Operation After Maintenance, Preventive Maintenance, Rebuilding, or Alteration*, subsection (a)(1), states the following:

(a) No person may operate any aircraft that has undergone maintenance, preventive maintenance, rebuilding, or alteration unless--

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

#### **6. STEVEN MCDONALD Seeks Exemption From The Requirements Of Sections 91.409(a)(1) And 91.409(a)(2).**

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

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

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

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

#### **7. STEVEN MCDONALD Seeks Exemption From The Requirements Of Sections 91.417(a) And 91.417(b).**

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

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

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

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

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

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

(2) Records containing the following information:

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

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

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

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

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

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

(b) The owner or operator shall retain the following records for the periods prescribed:

(1) The records specified in paragraph (a)(1) of this section shall be retained until the work is repeated or superseded by other work or for 1 year after the work is performed.

(2) The records specified in paragraph (a)(2) of this section shall be retained and transferred with the aircraft at the time the aircraft is sold.

(3) A list of defects furnished to a registered owner or operator under § 43.11 of this chapter shall be retained until the defects are repaired and the aircraft is approved for return to service.

## **The Extent Of Relief STEVEN MCDONALD Seeks And The Reason STEVEN MCDONALD Seeks The Relief.**

### **1. Extent Of Relief STEVEN MCDONALD Seeks And The Reason STEVEN MCDONALD Seeks Relief From Section 91.7(a).**

Relief from Section 91.7(a) entitled *Civil aircraft airworthiness*, is requested to the extent required to allow STEVEN MCDONALD to determine that the DJI Phantom 3 & Inspire 1 UA is in airworthy condition prior to every flight by ensuring that the UAS is in compliance with the operating documents (i.e., Monthly Maintenance Log and DJI Instruction Manual).

STEVEN MCDONALD seeks the requested relief because the DJI Phantom 3 & Inspire 1 UA does not require an airworthiness certificate in accordance with 14 C.F.R. Part 21, Subpart H. Therefore, STEVEN MCDONALD will ensure that the DJI Phantom 3 & Inspire 1 UA is in airworthy condition based upon its compliance with the operating documents (i.e., Monthly Maintenance Log, and DJI Instruction Manual) prior to every flight, and further, determine that the aircraft is in condition for safe flight, as stated in the conditions and limitations below.

### **2. Extent Of Relief STEVEN MCDONALD Seeks And The Reason STEVEN MCDONALD Seeks Relief From Section 91.121.**

Relief from Section 91.121, entitled Altimeter Settings, may be required to allow flight operations of the DJI Phantom 2 UA, which utilizes a barometric pressure sensor, GPS equipment, and a radio communications telemetry data link to downlink altitude information from the UA to the PIC at the ground control station (GCS). Since the FAA requires that any altitude information concerning UAS operations be reported to air traffic control (ATC) in feet above ground level (AGL), STEVEN MCDONALD seeks the requested relief because the DJI Phantom 3

& Inspire 1 UA's altimeter may be set on the ground to zero feet AGL, rather than the local barometric pressure or field altitude, before each flight. Considering the limited altitude of the proposed operations, relief from 14 CFR 91.121 is sought to the extent necessary to comply with the applicable conditions and limitations stated below. As more fully set forth herein, an equivalent level of safety will be maintained since the DJI Phantom 3 & Inspire 1 UA is equipped with a barometric pressure sensor and GPS equipment, which automatically ensures that a ground level pressure setting will be established prior to each flight, and provides the PIC with altitude information of the UA on the heads-up display of the GCS.

### **3. Extent Of Relief STEVEN MCDONALD Seeks And The Reason STEVEN MCDONALD Seeks Relief From Section 91.151(b).**

Relief from Section 91.151(b) entitled Fuel Requirements for Flight in VFR Conditions, is requested to the extent required to allow flights of the battery powered DJI Phantom 3 & Inspire 1 UA during daylight hours in visual meteorological conditions (VMC), under visual flight rules (VFR), for a total duration of 17.5 minutes to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 4.5 minutes. STEVEN MCDONALD seeks the requested relief because without an exemption from Section 91.151(b), the flight time duration of the battery powered DJI Phantom 3 & Inspire 1 UA will severely constrain the practicality of any aerial video or still photo flight operations that STEVEN MCDONALD proposes to conduct pursuant to this Petition.

Significantly, as set forth below, the technical specifications of the DJI Phantom 3 & Inspire 1 UA, the DJI Phantom 3 & Inspire 1 and STEVEN MCDONALD's proposed operating limitations, ensure that STEVEN MCDONALD will safely operate the battery powered DJI Phantom 3 & Inspire 1 UA during daylight hours in visual meteorological conditions (VMC), under visual flight rules (VFR), with enough battery power to fly for a total duration of 17.5 minutes to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 4.5 minutes.

### **4. Extent Of Relief STEVEN MCDONALD Seeks And The Reason STEVEN MCDONALD Seeks Relief From Sections 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), And 91.417(a) & (b).**

Since Sections 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b) only apply to aircraft with an airworthiness certificate, STEVEN MCDONALD requests relief from these Sections because the DJI Phantom 3 & Inspire 1 UA does not require airworthiness certificates. As set forth more fully below, the DJI UAS meets the conditions of FMRA Section 333 for operation without an airworthiness certificate. Accordingly, STEVEN MCDONALD will use trained technicians to perform maintenance, alterations, or preventive maintenance on the UAS using the methods, techniques, and practices prescribed in the UAS operating documents (i.e., the Monthly Maintenance Log, and DJI Instruction Manual). Furthermore, STEVEN MCDONALD will document and maintain all maintenance records for the DJI Phantom 3 & Inspire 1 UAS.

### **The Reasons Why Granting STEVEN MCDONALD's Request Would Be In The Public Interest; That Is, How It Would Benefit The Public As A Whole.**

Granting the present Petition will further the public interest by allowing STEVEN MCDONALD to safely, efficiently, and economically perform aerial video and photography of construction sites, real estate, and landscape over certain areas of the United States.

Additionally, use of the DJI Phantom 3 & Inspire 1 UAS will decrease congestion of the NAS, reduce pollution, and provide

significant benefits to the economy. Notably, the benefits of STEVEN MCDONALD's proposed operation of the DJI UAS will be realized without implicating any privacy issues.

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

The DJI Phantom 3 & Inspire 1 UA is battery powered and serves as a safe, efficient, and economical alternative to the manned aircraft traditionally utilized to obtain aerial imagery. An exemption allowing the use of a DJI UAS would reduce the number of manned aircraft in the NAS and reduce noise and air pollution, as well as increase the safety of life and property in the air and on the ground. Furthermore, by reducing the number of manned aircraft operating in the NAS, congestion around airports caused by arriving and departing aircraft will be reduced. The DJI UA does not require an airport to takeoff or land. Likewise, a reduction of manned aircraft conducting aerial video and photography missions would result in fewer aircraft that must be handled by air traffic control during the ground, takeoff, departure, arrival, and landing phases of flight operations.

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

Conducting aerial acquisitions with the DJI Phantom 3 & Inspire 1 UAS, instead of manned aircraft, will greatly benefit the public by drastically reducing the levels of air and noise pollution generated during traditional aerial video and still photography flight operations. By using battery power and electric motors, the DJI UAS produce no air pollution, and is the most viable environmentally conscious alternative to the cabin class, six cylinder internal combustion engine aircraft that are typically utilized for aerial video and photography, while burning approximately 20-30 gallons per hour of leaded aviation fuel. The DJI Phantom 3 & Inspire 1 UA, while reducing the carbon footprint of aerial acquisitions, also eliminates noise pollution, as the UAs are propelled by battery-powered electric motors, rather than an internal combustion engine. By using the DJI UAS to perform aerial acquisitions, the substantial risk to life and property in the air and on the ground, which is usually associated with traditional manned aircraft flight operations, will be substantially reduced or completely eliminated. Aside from the lack of flight crew members located onboard the aircraft, the DJI UA (weighing approximately 3 & 15 pounds and with a length of 16 & 20 inches and widths of 16 inches and with no fuel on board), has less physical potential for collateral damage to life and property on the ground, and in the air, compared to the manned aircraft that typically conduct similar operations (weighing approximately 6,000 pounds with a wingspan of approximately 42 feet, a length of 34 feet, and a fuel capacity of 180 gallons).

### **3. Performing Aerial Video and Photography Operations With The DJI UAS Will Benefit The Economy.**

In addition to being safe and efficient, the DJI Phantom 3 & Inspire 1 UA is also an economical alternative to using manned aircraft to conduct similar aerial operations. As such, operation of the DJI Phantom 3 & Inspire 1 UAS will allow United States based companies, like STEVEN MCDONALD dba Irongate home inspections, to remain competitive and contribute to growth of the U.S. economy. Specifically, with the rising cost of aviation fuel and the Environmental Protection Agency (EPA) regulatory actions phasing out leaded aviation fuels, U.S. owned and operated companies must adopt new and alternative technology in order to remain competitive. Operating the battery powered DJI UAS is one such technology that not only allows companies greater operational

flexibility compared to manned aircraft, but provides such flexibility without the high operational cost of a traditional manned aircraft.

By operating the DJI Phantom 3 & Inspire 1 UAS, companies such as STEVEN MCDONALD dba Irongate home inspections, can remain competitive and profitable, and therefore, provide greater job stability to employees and contractors, which will ultimately contribute to growth of the U.S. economy. Improved financial performance of U.S. companies, through commercial use of the DJI UAS, provides a stable workforce that increases consumer spending; improves local, state, and federal tax revenues; and allows companies to invest in research and development in order to remain competitive both in the United States and abroad.

#### **4. There Are No Privacy Issues.**

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

#### **Seeks And The Reason STEVEN MCDONALD Seeks Relief From Section 91.7(a).**

Relief from Section 91.7(a) entitled *Civil aircraft airworthiness*, is requested to the extent required to allow STEVEN MCDONALD to determine that the DJI Phantom 3 & Inspire 1 UA is in airworthy condition prior to every flight by ensuring that the UAS is in compliance with the operating documents (i.e., Monthly Maintenance Log and DJI Instruction Manual). STEVEN MCDONALD seeks the requested relief because the DJI UA does not require an airworthiness certificate in accordance with 14 C.F.R. Part 21, Subpart H. Therefore, STEVEN MCDONALD will ensure that the DJI Phantom 3 & Inspire 1 UA is in airworthy condition based upon its compliance with the operating documents (i.e., Monthly Maintenance Log, and DJI Instruction Manual) prior to every flight, and further, determine that the aircraft is in condition for safe flight, as stated in the conditions and limitations below.

#### **1. Extent Of Relief STEVEN MCDONALD Seeks And The Reason STEVEN MCDONALD Seeks Relief From Section 91.121.**

Relief from Section 91.121, entitled Altimeter Settings, may be required to allow flight operations of the DJI Phantom 3 & Inspire 1 UA, which utilizes a barometric pressure sensor, GPS equipment, and a radio communications telemetry data link to downlink altitude information from the UA to the PIC at the ground control station (GCS). Since the FAA requires that any altitude information concerning UAS operations be reported to air traffic control (ATC) in feet above ground level (AGL), STEVEN MCDONALD seeks the requested relief because the DJI Phantom 3 & Inspire 1 UA's altimeter may be set on the ground to zero feet AGL, rather than the local barometric pressure or field altitude, before each flight. Considering the limited altitude of the proposed operations, relief from 14 CFR 91.121 is sought to the extent necessary to comply with the applicable conditions and limitations stated below. As more fully set forth herein, an equivalent level of safety will be maintained since the DJI is equipped with a barometric pressure sensor and GPS equipment, which automatically ensures that a ground level

pressure setting will be established prior to each flight, and provides the PIC with altitude information of the UA on the heads-up display of the GCS.

## **2. Extent Of Relief STEVEN MCDONALD Seeks And The Reason STEVEN MCDONALD Seeks Relief From Section 91.151(b).**

Relief from Section 91.151(b) entitled Fuel Requirements for Flight in VFR Conditions, is requested to the extent required to allow flights of the battery powered DJI UA during daylight hours in visual meteorological conditions (VMC), under visual flight rules (VFR), for a total duration of 17.5 minutes to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 4.5 minutes. STEVEN MCDONALD seeks the requested relief because without an exemption from Section 91.151(b), the flight time duration of the battery powered DJI Phantom 3 & Inspire 1 UA will severely constrain the practicality of any aerial video or still photo flight operations that STEVEN MCDONALD proposes to conduct pursuant to this Petition.

Significantly, as set forth below, the technical specifications of the DJI Phantom 3 & Inspire 1 UA, the DJI Phantom 3, Inspire 1 and STEVEN MCDONALD's proposed operating limitations, ensure that STEVEN MCDONALD will safely operate the battery powered DJI Phantom 3 & Inspire 1 UA during daylight hours in visual meteorological conditions (VMC), under visual flight rules (VFR), with enough battery power to fly for a total duration of 17.5 minutes to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 4.5 minutes.

## **3. Extent Of Relief STEVEN MCDONALD Seeks And The Reason STEVEN MCDONALD Seeks Relief From Sections 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), And 91.417(a) & (b).**

Since Sections 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b) only apply to aircraft with an airworthiness certificate, STEVEN MCDONALD requests relief from these Sections because the DJI Phantom 3 & Inspire 1 UA does not require airworthiness certificates.

As set forth more fully below, the DJI UAS meets the conditions of FMRA Section 333 for operation without an airworthiness certificate. Accordingly, STEVEN MCDONALD will use trained technicians to perform maintenance, alterations, or preventive maintenance on the UAS using the methods, techniques, and practices prescribed in the UAS operating documents (i.e., the Monthly Maintenance Log, and DJI Instruction Manual). Furthermore, STEVEN MCDONALD will document and maintain all maintenance records for the DJI Phantom 3 & Inspire 1 UAS.

## **The Reasons Why Granting STEVEN MCDONALD's Request Would Be In The Public Interest; That Is, How It Would Benefit The Public As A Whole.**

Granting the present Petition will further the public interest by allowing STEVEN MCDONALD to safely, efficiently, and economically perform aerial video and photography of construction sites, real estate, Farms and landscape over certain areas of the United States. Additionally, use of the DJI Phantom 3 & Inspire 1 UAS will decrease congestion of the NAS, reduce pollution, and provide significant benefits to the economy. Notably, the benefits of STEVEN MCDONALD's proposed operation of the DJI UAS will be realized without implicating any privacy issues.

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

The DJI UA is battery powered and serves as a safe, efficient, and economical alternative to the manned aircraft traditionally utilized to obtain aerial imagery. By reducing the number of manned aircraft needed to perform aerial acquisitions, an exemption allowing the use of a DJI Phantom 3 & Inspire 1 UAS would reduce the number of manned aircraft in the NAS and reduce noise and air pollution, as well as increase the safety of life and property in the air and on the ground.

Furthermore, by reducing the number of manned aircraft operating in the NAS, congestion around airports caused by arriving and departing aircraft will be reduced. The DJI Phantom 3 & Inspire 1 UA does not require an airport to takeoff or land. Likewise, a reduction of manned aircraft conducting aerial video and photography missions would result in fewer aircraft that must be handled by air traffic control during the ground, takeoff, departure, arrival, and landing phases of flight operations.

### **2. The Public Will Benefit From The Safety And Efficiency Of The DJI Phantom 3 & Inspire 1 UAS.**

Conducting aerial acquisitions with the DJI Phantom 3 & Inspire 1 UAS, instead of manned aircraft, will greatly benefit the public by drastically reducing the levels of air and noise pollution generated during traditional aerial video and still photography flight operations. By using battery power and electric motors, the DJI Phantom 3 & Inspire 1 UAS produce no air pollution, and is the most viable environmentally conscious alternative to the cabin class, six cylinder internal combustion engine aircraft that are typically utilized for aerial video and photography, while burning approximately 20-30 gallons per hour of leaded aviation fuel. The DJI Phantom 3 & Inspire 1 UA, while reducing the carbon footprint of aerial acquisitions, also eliminates noise pollution, as the UAs are propelled by battery-powered electric motors, rather than an internal combustion engine. By using the DJI Phantom 3 & Inspire 1 UAS to perform aerial acquisitions, the substantial risk to life and property in the air and on the ground, which is usually associated with traditional manned aircraft flight operations, will be substantially reduced or completely eliminated. Aside from the lack of flight crew members located onboard the aircraft, the DJI Phantom 3 & Inspire 1 UA (weighing approximately 3 & 15 pounds at its maximum gross weight with a length of 16 & 20 inches and widths of 16 inches and with no fuel on board), has less physical potential for collateral damage to life and property on the ground, and in the air, compared to the manned aircraft that typically conduct similar operations (weighing approximately 6,000 pounds with a wingspan of approximately 42 feet, a length of 34 feet, and a fuel capacity of 180 gallons).

### **3. Performing Aerial Video and Photography Operations With The DJI UAS Will Benefit The Economy.**

In addition to being safe and efficient, the DJI Phantom 3 & Inspire 1 UA is also an economical alternative to using manned aircraft to conduct similar aerial operations. As such, operation of the DJI UAS will allow United States based companies, like STEVEN MCDONALD dba Irongate home inspections to remain competitive and contribute to growth of the U.S. economy. Specifically, with the rising cost of aviation fuel and the Environmental Protection Agency (EPA) regulatory actions phasing out leaded aviation fuels, U.S. owned and operated companies must adopt new and alternative technology in order to remain competitive. Operating the battery powered DJI UAS is one such technology that not only allows companies greater operational flexibility compared to manned aircraft, but provides such flexibility without the high operational cost of a traditional manned aircraft. By operating the DJI UAS, companies such as STEVEN MCDONALD dba Irongate home inspections, can remain competitive and profitable, and therefore, provide greater job stability to employees and contractors, which will ultimately contribute to growth of the U.S. economy. Improved financial performance of U.S. companies, through commercial use of the DJI UAS, provides a stable workforce that increases consumer spending; improves local, state, and federal tax revenues; and allows companies to invest in research and development in order to remain competitive both in the United States and abroad.

### **4. There Are No Privacy Issues.**

Similar to the manned aerial acquisition flight operations that have been conducted for decades, STEVEN MCDONALD's proposed operation of the DJI UAS will not implicate any privacy issues.

Specifically, the DJI Phantom 3 & Inspire 1 UAS will be operated only in compliance with operating documents (i.e., The Monthly Maintenance Log, and DJI Instruction Manual) which requires property owner involvement as well as local law enforcement notification, and in accordance with the Federal Aviation Regulations, including the minimum altitude requirements of 14 C.F.R. § 91.119.

### **Rule From Which STEVEN MCDONALD Seeks Exemption.**

#### **1. Reasons Why The DJI Phantom 3 & Inspire 1 UA Meets The Conditions Of The FAA Modernization and Reform Act of 2012 (FMRA) Section 333.**

In consideration of the size, weight, speed, and limited operating area associated with the unmanned aircraft and its operation, STEVEN MCDONALD's operation of the DJI UAS meets the conditions of FMRA Section 333, and will not require an airworthiness certificate in accordance with 14 C.F.R. Part 21, Subpart H.

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

*(a) In General.--Notwithstanding any other requirement of this subtitle, and not later than 180 days after the date of enactment of this Act, the Secretary of Transportation shall determine if certain unmanned aircraft systems may operate safely in the national airspace system before completion of the plan and rulemaking required by section 332 of this Act or the guidance required by section 334 of this Act.*

*(b) Assessment of Unmanned Aircraft Systems.--In making the determination under subsection (a), the Secretary shall determine, at a minimum--*

*(1) ) which types of unmanned aircraft systems, if any, as a result of their size, weight, speed, operational capability, proximity to airports and*

*populated areas, and operation within visual line of sight do not create a hazard to users of the national airspace system or the public or pose a threat to national security; and*

*(2) ) whether a certificate of waiver, certificate of authorization, or airworthiness certification under section 44704 of title 49, United States Code, is required for the operation of unmanned aircraft systems identified under paragraph (1).*

*(c) Requirements for Safe Operation.--If the Secretary determines under this section that certain unmanned aircraft systems may operate safely in the national airspace system, the Secretary shall establish requirements for the safe operation of such aircraft systems in the national airspace system.*

In seeking this exemption, STEVEN MCDONALD submits that the DJI Phantom 3 & Inspire 1 UAS can operate safely in the NAS pursuant to FMRA Section 333, as demonstrated by: (a) the characteristics of the DJI Phantom 3 & Inspire 1 UA; (b) the pilot certification requirement; and (c) the specific operating limitations.

A complete description of the operation and specifications of the DJI Phantom 3 & Inspire 1 GCS and flight control software is provided at DJI WEB SITE

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

The equivalent level of safety established by Section 91.121 will be maintained because the altitude information of the DJI Phantom 3 & Inspire 1 UA will be provided to the PIC via GPS equipment and a radio communications telemetry data link, which downlinks from the UA to the GCS for active monitoring of the flight path and altitude. This altitude information, combined with STEVEN MCDONALD's operation of the DJI Phantom 3 & Inspire 1 UA within visual line of sight, at or below 500 feet AGL, will ensure a level of safety equivalent to Section 91.121. The altitude information will be generated by GPS equipment installed onboard the aircraft. Prior to each flight, a zero altitude initiation point is automatically established by the UASs at ground level.

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

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

A grant of this exemption would ensure an equivalent level of safety established by 14 C.F.R. Section 91.151(b) as a result of (1) the technical specifications of the DJI Phantom 3 & Inspire 1 UAS; (2) the limitations on the proposed flight operations; and (3) the location of the proposed flight operations. Accordingly, STEVEN MCDONALD will ensure that it will safely operate the battery- powered DJI UA during daylight hours in VFR conditions, with enough battery power to fly for a total duration of 17.5 minutes to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 4.5 minutes.

Here, as in Exemption No. 11109, the technical specifications of the DJI UAS, the limitations on the proposed flight operations, and the location of the proposed operations, will ensure an equivalent level of safety established by 14 C.F.R. Section 91.151(b). Furthermore, safety will be ensured as the DJI UAS provides audible and visual warnings to the PIC at the GCS when the UA experiences low battery voltage, the first warning occurring at approximately 33% remaining battery power, and again at approximately 10% remaining battery power. At the critically low battery level, the DJI Phantom 3 & Inspire 1 UAS will descend and land automatically. Significantly, previous exemptions granted by the FAA concerning Section 91.151 establish that safety is not adversely affected when the technical characteristics and

operating limitations of the UAS are considered. Relief has been granted for manned aircraft to operate at less than the minimums prescribed in Section 91.151, including Exemption Nos. 2689, 5745, and 10650. Moreover, the FAA has previously granted relief from Section 91.151 specific to UAS, in circumstances similar, in all material respects, to those presented herein (e.g. Exemption Nos. 8811, 10808, 10673, 11042, 11062, 11063, 11064, 11065, 11066, 11067, 11080, 11109, 11110, 11136, 11138, 11150, 11153, 11156, 11157, 11158, 11159, 11160, 11161).

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

In seeking this exemption, STEVEN MCDONALD submits that the equivalent level of safety with regard to the regulatory maintenance and alteration requirements established by Sections 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b) will be met because STEVEN MCDONALD will use trained technicians to perform maintenance, alterations, or preventive maintenance on the UASs using the methods, techniques, and practices prescribed in the operating documents (i.e. The Monthly Maintenance Log and DJI Instruction Manual). Furthermore, STEVEN MCDONALD will document and maintain all maintenance records for the DJI UAS. Since the DJI UAS will be inspected as prescribed by the operating documents, STEVEN MCDONALD will maintain the equivalent level of safety established by Sections 91.405(a), 91.409(a)(1), and 91.409(a)(2). A copy of the DJI User Manual is attached hereto as Appendix A; a copy of the DJI Phantom 3 & Inspire 1 UAS Maintenance LOG is attached hereto as Appendix B.

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

Furthermore, the exemption sought would maintain an equivalent level of safety established by Sections 91.407, 91.417(a) and 91.417(b), because all maintenance of the DJI Phantom 3 & Inspire 1 UAS will be performed by trained technicians. Maintenance will be documented and

maintained utilizing the monthly maintenance log. Significantly, previous exemptions granted by the FAA concerning Sections 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b) establish that safety is not adversely affected when the technical characteristics and operating limitations of the UAS are considered.

In consideration of STEVEN MCDONALD's proposed operating limitations, the operating documents, and the technical aspects of the DJI Phantom 3 & Inspire 1 UAS, STEVEN MCDONALD submits that safety will not be adversely affected by granting exemption from 14 C.F.R. Sections 91.405(a), 91.407(a)(1) and (a)(2), 91.409(a)(2), and 91.417(a) and (b). The FAA has previously granted relief specific to UAS in circumstances similar, in all material respects, to those presented herein (e.g. Exemption Nos. 11062, 11063, 11064, 11065, 11066, 11067, 11080, 11109, 11110, 11112, 11136, 11138, 11150, 11153, 11156, 11157, 11158, 11159, 11160, 11161).

## **CONCLUSION**

As set forth herein, STEVEN MCDONALD seeks an exemption pursuant to 14 C.F.R. § 11.61 and Section 333 of the FAA Modernization and Reform Act of 2012 (FMRA), which will permit safe operation of the DJI Phantom 3 & Inspire 1 UAS commercially, without an airworthiness certificate, for the limited purpose of conducting aerial video and photography over certain areas of the United States. By granting this Petition, the FAA Administrator will be fulfilling the Congressional mandate of the FAA Modernization and Reform Act of 2012, while also advancing the interests of the public, by allowing STEVEN MCDONALD dba Irongate home inspections to safely, efficiently, and economically operate the DJI Phantom 3 & Inspire 1 UAS commercially within the NAS.

**WHEREFORE**, in accordance with the Federal Aviation Regulations and the FAA Modernization and Reform Act of 2012, Section 333, STEVEN MCDONALD respectfully requests that the Administrator grant this Petition for an exemption from the requirements of 14 C.F.R Sections 91.7(a), 91.121, 91.151(b), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b), and permit STEVEN MCDONALD to operate the DJI Phantom 3 & Inspire 1 UAS commercially for the purpose of conducting aerial video and photography over certain areas of the United States.

Dated: 29 January 2016

Respectfully,  
Steven McDonald