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

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

August 27, 2015

Exemption No. 12639
Regulatory Docket No. FAA−2015−2426

Ms. Carmen P. Gackstetter
CEO
Raven Executive & Security Services, Inc.
7111 Dixie Highway, #149
Clarkston, MI 48346

Dear Ms. Gackstetter:

This letter is to inform you that we have granted your request for exemption. It transmits our decision, explains its basis, and gives you the conditions and limitations of the exemption, including the date it ends.

By letter dated June 1, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Raven Executive & Security Services, Inc. (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct inspections of vertically developed structures, energy pipelines, right of ways, aerial survey and photography in support of agricultural operations (including crop monitoring and inspection), surveying and civil engineering services, as well as the insurance and finance industries.

See Appendix A for the petition submitted to the FAA describing the proposed operations and the regulations that the petitioner seeks an exemption.

The FAA has determined that good cause exists for not publishing a summary of the petition in the Federal Register because the requested exemption would not set a precedent, and any delay in acting on this petition would be detrimental to the petitioner.

Airworthiness Certification

The UAS proposed by the petitioner are the DJI Phantom 2 Vision +, DJI Inspire 1, and DJI S1000.

In accordance with the statutory criteria provided in Section 333 of Public Law 112−95 in reference to 49 U.S.C. § 44704, and in consideration of the size, weight, speed, and limited operating area associated with the aircraft and its operation, the Secretary of Transportation has determined that this aircraft meets the conditions of Section 333. Therefore, the FAA finds that relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*, and any associated noise certification and testing requirements of part 36, is not necessary.

The Basis for Our Decision

You have requested to use a UAS for aerial data collection[1]. The FAA has issued grants of exemption in circumstances similar in all material respects to those presented in your petition. In Grants of Exemption Nos. 11062 to Astraeus Aerial (*see* Docket No. FAA−2014−0352), 11109 to Clayco, Inc. (*see* Docket No. FAA−2014−0507), 11112 to VDOS Global, LLC (*see* Docket No. FAA−2014−0382), and 11213 to Aeryon Labs, Inc. (*see* Docket No. FAA−2014−0642), the FAA found that the enhanced safety achieved using an unmanned aircraft (UA) with the specifications described by the petitioner and carrying no passengers or crew, rather than a manned aircraft of significantly greater proportions, carrying crew in addition to flammable fuel, gives the FAA good cause to find that the UAS operation enabled by this exemption is in the public interest.

Having reviewed your reasons for requesting an exemption, I find that—

- They are similar in all material respects to relief previously requested in Grant of Exemption Nos. 11062, 11109, 11112, and 11213;
- The reasons stated by the FAA for granting Exemption Nos. 11062, 11109, 11112, and 11213 also apply to the situation you present; and
- A grant of exemption is in the public interest.

Our Decision

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. 106(f), 40113, and 44701, delegated to me by the Administrator, Raven Executive & Security Services, Inc. is granted an exemption from 14 CFR §§ 61.23(a) and (c), 61.101(e)(4) and (5), 61.113(a), 61.315(a), 91.7(a), 91.119(c), 91.121, 91.151(a)(1), 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b), to the extent necessary to allow the petitioner to operate a UAS to perform

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

aerial data collection. This exemption is subject to the conditions and limitations listed below.

Conditions and Limitations

In this grant of exemption, Raven Executive & Security Services, Inc. is hereafter referred to as the operator.

Failure to comply with any of the conditions and limitations of this grant of exemption will be grounds for the immediate suspension or rescission of this exemption.

1. Operations authorized by this grant of exemption are limited to the DJI Phantom 2 Vision +, DJI Inspire 1, DJI S1000 when weighing less than 55 pounds including payload. Proposed operations of any other aircraft will require a new petition or a petition to amend this exemption.

2. Operations for the purpose of closed-set motion picture and television filming are not permitted.

3. The UA may not be operated at a speed exceeding 87 knots (100 miles per hour). The exemption holder may use either groundspeed or calibrated airspeed to determine compliance with the 87 knot speed restriction. In no case will the UA be operated at airspeeds greater than the maximum UA operating airspeed recommended by the aircraft manufacturer.

4. The UA must be operated at an altitude of no more than 400 feet above ground level (AGL). Altitude must be reported in feet AGL.

5. The UA must be operated within visual line of sight (VLOS) of the PIC at all times. This requires the PIC to be able to use human vision unaided by any device other than corrective lenses, as specified on the PIC's FAA-issued airman medical certificate or U.S. driver's license.

6. All operations must utilize a visual observer (VO). The UA must be operated within the visual line of sight (VLOS) of the PIC and VO at all times. The VO may be used to satisfy the VLOS requirement as long as the PIC always maintains VLOS capability. The VO and PIC must be able to communicate verbally at all times; electronic messaging or texting is not permitted during flight operations. The PIC must be designated before the flight and cannot transfer his or her designation for the duration of the flight. The PIC must ensure that the VO can perform the duties required of the VO.

7. This exemption and all documents needed to operate the UAS and conduct its operations in accordance with the conditions and limitations stated in this grant of

exemption, are hereinafter referred to as the operating documents. The operating documents must be accessible during UAS operations and made available to the Administrator upon request. If a discrepancy exists between the conditions and limitations in this exemption and the procedures outlined in the operating documents, the conditions and limitations herein take precedence and must be followed. Otherwise, the operator must follow the procedures as outlined in its operating documents. The operator may update or revise its operating documents. It is the operator's responsibility to track such revisions and present updated and revised documents to the Administrator or any law enforcement official upon request. The operator must also present updated and revised documents if it petitions for extension or amendment to this grant of exemption. If the operator determines that any update or revision would affect the basis upon which the FAA granted this exemption, then the operator must petition for an amendment to its grant of exemption. The FAA's UAS Integration Office (AFS−80) may be contacted if questions arise regarding updates or revisions to the operating documents.

8. Any UAS that has undergone maintenance or alterations that affect the UAS operation or flight characteristics, e.g., replacement of a flight critical component, must undergo a functional test flight prior to conducting further operations under this exemption. Functional test flights may only be conducted by a PIC with a VO and must remain at least 500 feet from other people. The functional test flight must be conducted in such a manner so as to not pose an undue hazard to persons and property.

9. The operator is responsible for maintaining and inspecting the UAS to ensure that it is in a condition for safe operation.

10. Prior to each flight, the PIC must conduct a pre-flight inspection and determine the UAS is in a condition for safe flight. The pre-flight inspection must account for all potential discrepancies, e.g., inoperable components, items, or equipment. If the inspection reveals a condition that affects the safe operation of the UAS, the aircraft is prohibited from operating until the necessary maintenance has been performed and the UAS is found to be in a condition for safe flight.

11. The operator must follow the UAS manufacturer's maintenance, overhaul, replacement, inspection, and life limit requirements for the aircraft and aircraft components.

12. Each UAS operated under this exemption must comply with all manufacturer safety bulletins.

13. Under this grant of exemption, a PIC must hold either an airline transport, commercial, private, recreational, or sport pilot certificate. The PIC must also hold a current FAA airman medical certificate or a valid U.S. driver's license issued by a state, the District of Columbia, Puerto Rico, a territory, a possession, or the Federal

government. The PIC must also meet the flight review requirements specified in 14 CFR § 61.56 in an aircraft in which the PIC is rated on his or her pilot certificate.

14. The operator may not permit any PIC to operate unless the PIC demonstrates the ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption, including evasive and emergency maneuvers and maintaining appropriate distances from persons, vessels, vehicles and structures. PIC qualification flight hours and currency must be logged in a manner consistent with 14 CFR § 61.51(b). Flights for the purposes of training the operator's PICs and VOs (training, proficiency, and experience-building) and determining the PIC's ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption are permitted under the terms of this exemption. However, training operations may only be conducted during dedicated training sessions. During training, proficiency, and experience-building flights, all persons not essential for flight operations are considered nonparticipants, and the PIC must operate the UA with appropriate distance from nonparticipants in accordance with 14 CFR § 91.119.

15. UAS operations may not be conducted during night, as defined in 14 CFR § 1.1. All operations must be conducted under visual meteorological conditions (VMC). Flights under special visual flight rules (SVFR) are not authorized.

16. The UA may not operate within 5 nautical miles of an airport reference point (ARP) as denoted in the current FAA Airport/Facility Directory (AFD) or for airports not denoted with an ARP, the center of the airport symbol as denoted on the current FAA-published aeronautical chart, unless a letter of agreement with that airport's management is obtained or otherwise permitted by a COA issued to the exemption holder. The letter of agreement with the airport management must be made available to the Administrator or any law enforcement official upon request.

17. The UA may not be operated less than 500 feet below or less than 2,000 feet horizontally from a cloud or when visibility is less than 3 statute miles from the PIC.

18. If the UAS loses communications or loses its GPS signal, the UA must return to a pre-determined location within the private or controlled-access property.

19. The PIC must abort the flight in the event of unpredicted obstacles or emergencies.

20. The PIC is prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough available power for the UA to conduct the intended operation and to operate after that for at least five minutes or with the reserve power recommended by the manufacturer if greater.

21. Air Traffic Organization (ATO) Certificate of Waiver or Authorization (COA). All operations shall be conducted in accordance with an ATO-issued COA. The

exemption holder may apply for a new or amended COA if it intends to conduct operations that cannot be conducted under the terms of the attached COA.

22. All aircraft operated in accordance with this exemption must be identified by serial number, registered in accordance with 14 CFR part 47, and have identification (N−Number) markings in accordance with 14 CFR part 45, Subpart C. Markings must be as large as practicable.

23. Documents used by the operator to ensure the safe operation and flight of the UAS and any documents required under 14 CFR §§ 91.9 and 91.203 must be available to the PIC at the Ground Control Station of the UAS any time the aircraft is operating. These documents must be made available to the Administrator or any law enforcement official upon request.

24. The UA must remain clear and give way to all manned aviation operations and activities at all times.

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

26. All Flight operations must be conducted at least 500 feet from all nonparticipating persons, vessels, vehicles, and structures unless:
    a. Barriers or structures are present that sufficiently protect nonparticipating persons from the UA and/or debris in the event of an accident. The operator must ensure that nonparticipating persons remain under such protection. If a situation arises where nonparticipating persons leave such protection and are within 500 feet of the UA, flight operations must cease immediately in a manner ensuring the safety of nonparticipating persons; and
    b. The owner/controller of any vessels, vehicles or structures has granted permission for operating closer to those objects and the PIC has made a safety assessment of the risk of operating closer to those objects and determined that it does not present an undue hazard.

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

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

28. Any incident, accident, or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA must be reported to the FAA's UAS Integration Office (AFS−80) within 24 hours. Accidents must be

reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.ntsb.gov.

If this exemption permits operations for the purpose of closed-set motion picture and television filming and production, the following additional conditions and limitations apply.

29. The operator must have a motion picture and television operations manual (MPTOM) as documented in this grant of exemption.

30. At least 3 days before aerial filming, the operator of the UAS affected by this exemption must submit a written Plan of Activities to the local Flight Standards District Office (FSDO) with jurisdiction over the area of proposed filming. The 3-day notification may be waived with the concurrence of the FSDO. The plan of activities must include at least the following:
    a. Dates and times for all flights;
    b. Name and phone number of the operator for the UAS aerial filming conducted under this grant of exemption;
    c. Name and phone number of the person responsible for the on-scene operation of the UAS;
    d. Make, model, and serial or N−Number of UAS to be used;
    e. Name and certificate number of UAS PICs involved in the aerial filming;
    f. A statement that the operator has obtained permission from property owners and/or local officials to conduct the filming production event; the list of those who gave permission must be made available to the inspector upon request;
    g. Signature of exemption holder or representative; and
    h. A description of the flight activity, including maps or diagrams of any area, city, town, county, and/or state over which filming will be conducted and the altitudes essential to accomplish the operation.

31. Flight operations may be conducted closer than 500 feet from participating persons consenting to be involved and necessary for the filming production, as specified in the exemption holder's MPTOM.

Unless otherwise specified in this grant of exemption, the UAS, the UAS PIC, and the UAS operations must comply with all applicable parts of 14 CFR including, but not limited to, parts 45, 47, 61, and 91.

This exemption terminates on September 30, 2017, unless sooner superseded or rescinded.

Sincerely,

/s/
John S. Duncan
Director, Flight Standards Service

Enclosures

June 1, 2015

Via Electronic Filing

Attn: Docket Operations
U.S. Department of Transportation (DOT)
1200 New Jersey Avenue SE, Room W12-140
West Building Ground Floor
Washington, DC 20590-0001

RE: Exemption Request; Section 333 of the FAA Modernization & Reform Act and Part 11 of the Federal Aviation Regulations from 14 C.F.R.; 14CFR45.23(b); 15 CFR Part 21; 14 CFR 61.113(a) & (b); 91.7(a); 91.9(b)(2); 91.103(b); 91.109; 91.119; 91.121; 91.151(a); 91.203 (a) & (b); 91.405(a); 91.407(a)(1); 91.409(a)(2); 91.417(a) & (b).

Dear Sir or Madame,

Raven Executive & Security Services, Inc. (henceforth referred to as "RES") hereby petitions the Secretary of Transportation and the Federal Aviation Administration ("FAA") for exemption to the above referenced and below more fully described Federal Aviation Regulations. The exemption is being sought for the purpose of utilizing Unmanned Aerial Systems (UAS) for the purpose of conducting inspections of vertically developed structures, energy pipelines, right of ways, aerial survey and photography in support of agricultural operations (including crop monitoring and inspection), surveying and civil engineering services, as well as the insurance and finance industries. The exemption will provide cost effective and personal safety enhancing aerial imagery services.

The leadership team at RES has a proven track record in aviation with over 1,400 hours of combined flight time holding Commercial and Private Pilot license certificates, instrument single and multi-engine land and ground instructor certificate. RES is of the opinion that responsible UAS operations will benefit the public interest in the following ways:

- Removal of human risk from conventional flight operations
- Removal of human risk from gas detection inspections
- Removal of human risk from vertically developed structural inspections
- Improvement in the ability to provide integrity and encroachment data to energy transportation facilities and infrastructures
- Improvement upon cost efficiencies associated with manned flight.
- Improvement and increased efficiencies in the agricultural industry
- Increase the sophistication of data available to insurance and financial industries for good decision making.

Carmen P. Gackstetter, CEO
Raven Executive & Security
Services, Inc.
7111 Dixie Highway #149
Clarkston, Michigan 48346

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PROPOSED OPERATIONS

Raven Executive & Security Services, Inc. (RES or Petitioner) is seeking an exemption that will permit it to perform aerial photography and surveying services for energy companies engaged in the research, development and maintenance of energy industry infrastructure, transmission, transportation and refining infrastructure and facilities, property owners, individual farmers, agri- businesses, surveying\engineering companies, and insurance\finance companies. These services would be used to improve overall safety of inspection operations, monitoring and research gathering operations normally conducted by manned aircraft, provide efficiencies and enhance decision-making ability through safe economical aerial based survey and photography. This would be done using conventional high resolution and 3D photo/video imaging and thermal imaging technology to study and document property or facility conditions, facility and right of way encroachment, the transmission and transportation infrastructure integrity and security, crop photosynthesis\health and also visually inspect farm ground for re-planting, tiling needs, as well as the need for additional farm inputs. For insurance\finance purposes it will allow for more thorough and conclusive claim research and documentation when insurance claims are made at both an individual or catastrophic\regional level.

AIRCRAFT

THE PHANTOM 2 VISION+ UAS

The Phantom 2 Vision+ UAS (the "System") is comprised of a quad-rotor unmanned aircraft (UA) with a gross weight of 2.6 pounds and a transportable ground control station. Capable of carrying small digital photography equipment during flight, the electrically powered PHANTOM has an approximate maximum speed of 28.6 kts. and is operated using the transportable ground station, by a minimum required flight crew of one, the Operator (PIC). The system will be operated in a manner that will not pose a threat to persons or property in the event of motor/rotor failure. Manufacturer specifications attached.

UA Manual - http://www.dji.com/product/phantom-2-vision-plus/download

UA Specs - http://www.dji.com/product/phantom-2-vision-plus/spec

This is the same system which is the subject system in Exemption No. 11138 granted to Douglas Trudeau, Realtor® on January 5, 2015. **Regulatory Docket No. FAA-2014-0481**.

THE DJI INSPIRE I UAS

The DJI model T600 INSPIRE I (the "System") is comprised of a small quad-rotor design unmanned aircraft (UA) and a transportable ground control station. The UA system gross weight configuration is 2935 g (6.5 pounds). The UA is capable of carrying small digital photography equipment during flight, the electrically powered INSPIRE I has an approximate maximum speed of 43 knots and may be operated using the transportable ground station, by a minimum required flight crew of one, the Operator (PIC). The system will be operated in a manner that will not pose a threat to persons or

property in the event of motor/rotor failure. Manufacturer specifications attached.

UA Manual - http://www.dji.com/product/inspire-1/download

UA Specs - http://www.dji.com/product/inspire-1/spec

This is the same system which is the subject system in Exemption No. 11693 granted to Replicopy Inc., dba RDM Productions May 26, 2015. **Regulatory Docket No. FAA-2014-1030**.

THE DJI S1000 UAS

The DJI model S1000 (the "System") is comprised of a small octo-rotor design unmanned aircraft (UA) and a transportable ground control station. The UA system gross weight configuration with full payload is 11.0 Kg (24.25 pounds). The UA is capable of carrying digital photography and research equipment during flight, the electrically powered S1000 has an approximate maximum speed of 39 knots and may be operated using the transportable ground station, by a minimum required flight crew of one, the Operator (PIC). Capable of sustained flight in the event of single motor failure. The system will be operated in a manner that will not pose a threat to persons or property in the event of motor/rotor failure. Manufacturer specifications attached.

UA Manual - http://www.dji.com/product/spreading-wings-s1000/download

UA Specs - http://www.dji.com/product/spreading-wings-s1000/spec

This is the same system which is the subject system in Exemption No. 11554 granted to Midstream Integrity Services, LLC May 12, 2015. **Regulatory Docket No. FAA-2015-0377**.

THE OPERATOR

The proposed Operator, (PIC) defined as the person who manipulates the controls of the System, 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 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.

The Petitioner proposes that the Operator (PIC) would be augmented with a crew of a visual observer (VO) to assist with scanning for collision hazards and maintaining awareness of the UAS's precise location, as noted in proposed Part 107, the Visual Observer would be a required crewmember.

In addition to the Observer, the Petitioner further proposes that Operator may (as an operation dictates) augment the crew with an Equipment Operator (EO), who would be responsible for operation of photographic equipment carried on board the UAS. The EO would not be permitted to manipulate the flight or navigation controls of the UAS.

OPERATING PARAMETERS

Raven Executive & Security Services, Inc. is committed to the safe and compliant operation of this System at all times. Because the UAS does not carry crew or passengers on-board, and is so much smaller, lighter, and slower than manned aircraft, Petitioner seeks relief from several aspects of 14 C.F.R. Part 91.

Raven Executive & Security Service's exemption will not adversely affect safety, in the alternative reducing the risk to personal safety in the air and on the ground inherent with conventional manned aviation operations to accomplish the missions. Additionally, Raven proposes to operate with the following safety procedures and restrictions if granted an exemption:

Proposed specific operating limitations

1. Operations authorized by this grant of exemption are limited to the above aircraft described in the operating documents which is a quad-rotor or octo-rotor aircraft weighing less than 55pounds. Proposed operations of any other aircraft will require a new petition or a petition to amend this grant.

2. The UA may not be flown at an indicated airspeed exceeding 87 knots.

3. The UA must be operated at an altitude of less than 200 feet above ground level (AGL), as indicated by the procedures specified in the operating documents. All altitudes reported to ATC must be in feet AGL.

4. The UA must be operated within visual line of sight (VLOS) of the Pilot In Command (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.

5. All operations must utilize a visual observer (VO). The UA must be operated within the visual line of sight (VLOS) of the 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 during flight operations. Such communications may be augmented through the use of radios or other technology so long as not to interfere with the operation of the UAS. 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 functions prescribed in the operating documents.

6. The operating documents and this grant of exemption must be accessible during UAS operations and made available to the Administrator upon request. If a discrepancy exists between the conditions and limitations 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 upon request. The operator must also present updated and revised documents if he 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 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.

7. Prior to each flight, the PIC must inspect the UAS to ensure it is in a condition for safe flight. If the inspection reveals a condition that affects the safe operation of the UAS, the UAS is prohibited from operating until the necessary maintenance has been performed and the UAS is found to be in a condition for safe flight. The Ground Control Station must be included in the preflight inspection. All maintenance and alterations must be properly documented in the aircraft records.

8. Any UAS maintenance or alterations that affect the UAS operation or flight characteristics, e.g. replacement of a flight critical component, must undergo a functional test flight. The PIC who conducts the functional test flight must make an entry in the aircraft records.

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

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

11. The operator must carry out its maintenance, inspections, and record keeping requirements, in accordance with the operating documents. Maintenance, inspection, and alterations must be noted in the aircraft records, including total flight hours, description of work accomplished, and the signature of the authorized person returning the UAS to service.

12. Each UAS operated under this exemption must comply with all manufacturer Safety Bulletins.

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

14. UAS operations must be conducted by a PIC possessing at least a private, recreational, sport pilot certificate and at least a current third-class medical certificate. 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.

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).

16. 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.

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

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

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

20. The operator must obtain an Air Traffic Organization (ATO) issued Certificate of Waiver or Authorization (COA) prior to conducting any operations in Class E airspace. This COA will also require the operator to request a Notice to Airman (NOTAM) not more than 72 hours in advance, but not less than 48 hours prior to that operation.

21. 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.

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

23. The 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 UAS 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 yield the right of 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. 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 and/or;

    b. The aircraft is operated near vessels, vehicles or structures where the owner/controller of such vessels, vehicles or structures has granted

permission and the PIC has made a safety assessment of the risk of operating closer to those objects and determined that it does not present an undue hazard, and;

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

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

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

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.

REGULATORY STATEMENT

In accordance with the FAA Modernization and Reform Act of 2012, Section 333, entitled *Special Rules for Certain Unmanned Aircraft Systems*, and 14 C.F.R. §§ 11.61(b) and 11.81, the Petitioner, through Counsel, submits the following:

PETITIONER'S CONTACT INFORMATION (14 C.F.R. § 11.81(a))

The name and address of the Petitioner is:

Raven Executive & Security Services, Inc.
7111 Dixie Highway # 149
Clarkston, MI. 48346

The point of contact for purposes of this Petition is:

Rollie W. Gackstetter VP/CFO
Raven Executive & Security Services, Inc.
7111 Dixie Highway # 149
Clarkston, MI. 48346

Tel.248.978.3367
Fax.248.922.9218
rgackstetter@sbcglobal.net

Raven Executive & Security Services, Inc. is a Michigan based corporation since 2006 Michigan ID Number 37015A , DUNS 078522636 conducting safety and security operations in Michigan, Indiana and Illinois.

SECTIONS OF TITLE 14 CODE OF FEDERAL REGULATIONS FOR WHICH RELIEF IS SOUGHT (14 C.F.R. § 11.81(b))

Relief is sought from the following provisions of Title 14 of the Code Of Federal Regulations:

Part 61

§ 61.113 (a) and (b), which state:

Private pilot privileges and limitations: Pilot in command.

(a) Except as provided in paragraphs (b) through (h) of this section, no person who holds a private pilot certificate may act as pilot in command of an aircraft that is carrying passengers or property for compensation or hire; nor may that person, for compensation or hire, act as pilot in command of an aircraft.

(b) A private pilot may, for compensation or hire, act as pilot in command of an aircraft in connection with any business or employment if:

(1) The flight is only incidental to that business or employment; and

(2) The aircraft does not carry passengers or property for compensation or hire.

Part 91

§ 91.7(a), which states:

Civil aircraft airworthiness.

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

§ 91.119, which states:

Minimum safe altitudes: General.

Except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes:

(a) Anywhere. An altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface.

(b) Over congested areas. 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.

(c) Over other than congested areas. 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.

(d) Helicopters, powered parachutes, and weight-shift-control aircraft. If the operation is conducted without hazard to persons or property on the surface—

(1) A helicopter may be operated at less than the minimums prescribed in paragraph (b) or (c) of this section, provided each person operating the helicopter complies with any routes or altitudes specifically prescribed for helicopters by the FAA; and
(2) A powered parachute or weight-shift-control aircraft may be operated at less than the minimums prescribed in paragraph (c) of this section.

§ 91.121(a), which states:

Altimeter settings.

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; or

(2) At or above 18,000 feet MSL, to 29.92″Hg.

§ 91.151, which states:

Fuel requirements for flight in VFR conditions.

(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 30 minutes; or

(2) At night, to fly after that for at least 45 minutes.

(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.

§ 91.405(a), which states:

Maintenance required.

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;

§ 91.407(a)(1), which states:

Operation after maintenance, preventative maintenance, rebuilding, or alteration.

(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; and…

§ 91.409(a)(1) and (2) which state:

Inspections

(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.

§ 91.417(a) and (b) which state:

Maintenance records.

(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.

EXTENT OF RELEIF SOUGHT (14 C.F.R. § 11.81(c))

61.113(a) and (b). Relief is requested to the extent necessary to permit the holder of a private pilot certificate, with at least a current third-class medical certificate holder to conduct the proposed flight operations for compensation or hire.

91.7(a). Raven Executive & Security Services, Inc. seeks relief from 91.7(a) to the extent that the UAS systems delineated above are not eligible for an airworthiness certificate under 14 C.F.R. 21 and therefore can not be airworthy in the context of the regulation.

91.119. Relief is sought from 91.119 due to the unique nature of the proposed operations and the limited capabilities of the System. Raven Executive & Security Services, Inc. can ensure that each operation is conducted within the requirements of 91.119(a) and is therefore not seeking exemption from that section of the regulation. With respect to 91.119 (b) and (c) Raven Executive & Security Services, Inc. seeks relief for two reasons. First, the diminutive size and flight envelope of the UA, and the limited range of the System necessarily restrict operations to that of low level, low speed, line of sight (with the Operator) operations. Combined with the intent of the operations primarily being the survey and photography of property; commercial operation simply could not be done without exemption. Second, while not a manned helicopter, the UAS systems are more analogous to a helicopter than other aircraft, which a private pilot is permitted to operate at less than the minimums prescribed in paragraph (b) or (c) of section 91.119 so long as the operation is conducted without hazard to persons or property on the surface. 14. C.F.R. § 91.119(d).

91.121. Relief is sought from 91.121 due to the design of the system. While not possessing an altimeter that can be set in compliance with the regulation, however the System contains barometric altimeter and GPS derived altitude capabilities. That being

said, Raven Executive & Security Services, Inc. is not proposing relief to the extent that the Operator is not expected to check the System settings prior to each flight.

91.151. Raven Executive & Security Services, Inc. requests relief from 91.151 due to the limited design range and associated battery storage capacity.

91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b). Due to the fact that the UAS aircraft and the larger System are not certificated pursuant to Part 21, nor issued airworthiness certificates, and due to the fact that the technology of the System is so different from traditional manned aircraft, the System does not fit well into the regulatory scheme of Part 91 Subpart E. As such Raven seeks relief from the above noted regulations. However, Raven will maintain all maintenance records related to the system. Raven does not intend to document each battery replacement or charge, however, because the battery is analogous to fuel in manned aircraft, and documenting each charge would be as laborious as documenting each fueling of a certificated aircraft in that aircraft's maintenance records.

STATEMENT OF PUBLIC INTEREST (14 C.F.R. § 11.81(d))

The public benefits commensurate with the commercial operation of the UAS systems described above by Raven Executive & Security Services, Inc. are numerous. By implementing this technology into the National Airspace System in a deliberate and limited way, the public's interest will be served in that environmental impacts will be lessened, economies will be more efficient and relative public safety will increase.

This technology will serve to reduce present environmental impacts, and prevent future negative impacts. Being an incredibly small, electrically powered System environmental impacts are mitigated when this system is used in place of present approved manned aircraft operations. Because neither leaded avgas nor jet fuel is burned, the System itself has low impact. The low weight and tiny motors not only reduce fuel consumption, but reduce noise in the environment and reduce the likely hood of other negative environmental impacts such as bird strikes and fuel spills.

Because the System is so small, cheap and quick to deploy, yet retains the ability to return incredibly detailed information, crops can be monitored more closely for less cost, and as such the need to dispense agricultural chemicals can be further minimized. Infrastructure such as roads, bridges, pipelines, can be quickly assessed without the need for heavy equipment such as trucks, cranes, hoists and aircraft that run on fossil fuels. Additionally, with this technology deployed, studies regarding all aspects of land use, soil, topography, become possible where they previously were not due to economic reasons. The information collected by Raven for their consumers will have a broader environmental impact that will benefit everyone, not just the customer.

When this System is used in support of commercial operations, the public at large will benefit from the efficiencies that this system brings into the aerial survey market. UAS services in agriculture will allow farmers to have access to aerial based crop studies

performed on a more timely basis which will allow them to reduce input costs (fuel, fertilizer, chemicals, etc.) allowing for more efficient crop production. In support of agricultural operations, UAS operation will provide the American consumer with lower food prices and better gains from the export of those agricultural products.

In support of the insurance and financial industries, pools of the insured will see lower premiums as a result of lower costs of claims administration and better future risk analysis derived from the collected information.

For both individual and wide-scaled disasters, the use of UAS's will allow the insurance companies a more efficient way of assessing the assets necessary to service their policyholder needs. They will be able to align their teams closely to the disaster paths at their disaster sites and allow them to visually inspect more frequently where their teams have been as well as where they need to go. The use of UAS's in disaster scenarios will not only allow the insurance companies to better service their policyholders, but will ensure that life safety measures are even more enhanced during widespread disaster scenarios. Through the use of thermal based imaging, not only will photosynthesis studies be possible, but it will also be possible to be used for disaster\recovery services during regional disasters.

REASONS WHY A GRANT OF THIS EXEMPTION WILL NOT AFFECT PUBLIC SAFETY (14 C.F.R. § 11.81(e))

Raven Executive & Security Services, Inc. is firmly convinced that this product will not affect public safety in any adverse way, but will in fact enhance it.

With respect to the safe operation of the aircraft, the Administrator, in exemption No. 11138 has already evaluated the technical specifications of the aircraft. In noting it's small size, limited speed and numerous safety features (such as low battery autonomous landing, lost-link event autonomous procedures, auto-pilot and stability control, to name a few), Raven believes that the Administrator's finding that this System can be safely operated in the NAS system was correct.

In order to ensure that safety, Raven would utilize a certificated pilot as the Operator, and abide by common sense operating limitations to ensure that the safety of the public is ensured. A list of proposed specific operating limitations is included in the additional information section, above. The Petitioner is only seeking relief from very specific regulations that relate to the operation of this System, and is suggesting specific alternative procedures to ensure safety in lieu of those regulations from which Petitioner is seeking relief.

Raven further notes that by replacing certain manned operations with operations conducted by this small System, public safety will actually be enhanced. In those operations where traditional manned aircraft are presently used, the public bears the risk of the crash of a much larger, heavier vehicle travelling at a much higher rate of speed.

Furthermore, many of those manned operations contribute to congestion in the NAS, and as such an increased risk of collision with other aircraft. Because the UAS systems listed above will be operated away from the airport environment, the airport environment being the location of the highest risk of collision, using this aircraft in place of a manned aircraft reduces the risk of collision.

With respect to each particular regulation for which relief is sought, Raven believes safety is insured:

61.113(a) and (b). Relief is requested to the extent necessary to permit the holder of a private pilot certificate, with at least a current third-class medical certificate holder to conduct the proposed flight operations for compensation or hire.

Raven Executive & Security Services, Inc. notes that private pilots are allowed to operate aircraft for compensation or hire so long as doing so is incidental to their business and they do not carry passengers. This is done in much heavier, faster aircraft, which pose a greater risk to persons or property on the ground. In the case of the UAS systems listed above, the aircraft, through it's limited speed and weight poses much less risk of harm to those on the surface. The fact that the very small UA will be operated in accordance with the manufacturer's instructions and over limited parcels of land, combined with it's limited range, negates the long cross-country flying experience required for a commercial pilot certificate. Therefore Petitioner believes that an equivalent level of safety with respect to manned aircraft is met with a minimum certification level of Private Pilot

91.7(a). Raven Executive & Security Service, Inc. seeks relief from 91.7(a) to the extent that the UAS systems listed above are not eligible for an airworthiness certificate under 14 C.F.R. 21 and therefore can not be airworthy in the context of the regulation. The Operator can, before each flight, determine whether or not the aircraft is capable of safe flight by visually inspecting the System, accomplishing appropriate pre-flight inspections, and ensuring compliance with the manufacturers operating manuals and therefore an equivalent level of safety will be met.

91.119. Relief is sought from 91.119 due to the unique nature of the proposed operations and the limited capabilities of the System. Raven can ensure that each operation is conducted within the requirements of 91.119(a) and is therefore not seeking exemption from that section of the regulation. With respect to 91.119(b) and (c) Raven seeks relief for two reasons. First, the diminutive size and flight envelope of the UA, and the limited range of the System necessarily restrict operations to that of low level, low speed, line of sight (with the Operator) operations. Combined with the intent of the operations primarily being the survey and photography of property; commercial operation simply could not be done without exemption. Second, while not a manned helicopter, the UAS systems listed above are more analogous to a helicopter than other aircraft, which a private pilot is permitted to operate at less than the minimums prescribed in paragraph (b) or (c) of section 91.119 so long as the operation is conducted without hazard to persons or property on the surface. 14. C.F.R. § 91.119(c).

With respect to operating the UAS systems listed above over or near a structure, Raven would like point out that it is often more dangerous for those involved if a person were

to, for example, fall off of a roof or a ladder, or drop a heavy tool such as a hammer, than it would be for the listed UAS systems to fall, so long as the Operator ensures that he has permission from the owner and requires that any structure the UAS is operated over or near is not occupied, nor are people in the immediate vicinity, a high level of safety can be achieved.

Due to the Systems limitations with respect speed and altitude, it's light weight, and ability to maneuver like a helicopter (with an equally trained Private Pilot Operator), and a restriction than any structure flown over with permission and only when unoccupied, Raven respectfully submits that an equivalent level of safety is assured if relief is granted from 91.119 (b) and (c).

91.121. Relief is sought from 91.121 due to the design of the system. While not possessing an altimeter that can be set in compliance with the regulation, an equivalent level of safety can be met due to the fact that the System contains barometric altimeter and GPS derived altitude capabilities, thus ensuring an equivalent level of safety. That being said, Raven is not proposing relief to the extent that the Operator is not expected to check the System settings prior to each flight.

91.152. Raven requests relief from 91.151 due to the limited battery storage capacity. Petitioner feels that a good balance of safety and utility can be met if the Operator is permitted to plan and initiate a daytime VFR flight to the first intended point of landing, at normal cruising speed which would require no more than 70% battery power. This System possesses several safety features with respect to power, including a low battery warning that first alerts at 30% remaining and an automated landing function when a low battery is detected by the System. Should conditions change during the flight, this will leave 30% battery capacity to fly to a safe alternative landing zone.

91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b). Due to the fact that the UAS systems listed above are not certificated pursuant to Part 21, nor issued airworthiness certificates, and due to the fact that the technology of the System is so different from traditional manned aircraft, the System does not fit well into the regulatory scheme of Part 91 Subpart E. As such Raven seeks relief from the above noted regulations. In order to ensure an equivalent level of safety, Raven will use trained technicians to perform maintenance, alterations, or preventive maintenance on the UAS using the methods, techniques, and practices prescribed in the manufacturer's manuals. Raven will maintain all maintenance records related to the system. Raven does not intend to document each battery replacement or charge, however, because the battery operated systems are analogous to fuel in manned aircraft, and documenting each charge would be as laborious as documenting each fueling of a certificated aircraft in that aircraft's maintenance records.

FEDERAL REGISTRY SUMMARY (14 C.F.R. § 11.81(f))

Raven Executive & Security Services, Inc. seeks exemption from the requirements of 14 C.F.R Sections 61.113(a)&(b), 91.7(a), 91.121, 91.151(b), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b).

This exemption will permit Raven Executive & Security Services, Inc. to commercially operate an Unmanned Aircraft System (UAS) for the purpose of conducting aerial survey and photography within the United States.

ADDITIONAL INFORMATION IN SUPPORT (14 C.F.R. § 11.81(g))

Documents and Manuals

The documents and manuals for the UAS systems delineated above in the petition can be found at:

DJI Phantom II Vision +:

http://www.dji.com/product/phantom-2-vision-plus/download

http://www.dji.com/product/phantom-2-vision-plus/spec

DJI Inspire I:

http://www.dji.com/product/inspire-1/download

http://www.dji.com/product/inspire-1/spec

DJI S1000:

http://www.dji.com/product/spreading-wings-s1000/download

http://www.dji.com/product/spreading-wings-s1000/spec

These documents are incorporated into this petition by reference. However, due to file size limitations they are not being attached.

CONCLUSION

As set forth above, Raven Executive & Security Services Inc. seeks an exemption from certain parts of the Federal Aviation Regulations to permit Raven Executive & Security Services to operate a UA systems described above, for compensation or hire, commercially in the United States for the purposes of conducting aerial photography and survey. RES believes that a grant of exemption is in the public interest and that public safety will not be negatively affected. By use of an unmanned system in scenarios where manned aircraft are traditionally operated RES believes that public safety will actually be enhanced.

PETITIONER, Raven Executive & Security Services Inc., in accordance with the Federal Aviation Regulations and the FAA Modernization and Reform Act of 2012, Section 333, respectfully requests that the Administrator grant this Petition for an exemption from the requirements of 14 C.F.R Sections 61.113(a) and (b), 91.7(a), 91.119(b) and (c), 91.121, 91.151(b), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) and (b), and permit Raven Executive & Security Services to operate the UA systems described above commercially for the purpose of conducting aerial survey and photography over certain areas of the United States.

Respectfully Submitted,
Raven Executive & Security
Services Inc.

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