



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

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

June 25, 2015

Exemption No. 11914
Regulatory Docket No. FAA-2015-1373

Mr. Timothy Cawood, PLS
Senior Vice President
McKim & Creed, Inc.
1730 Varsity Drive, Suite 500
Raleigh, NC 27606

Dear Mr. Cawood:

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 April 24, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of McKim & Creed, Inc. (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial acquisitions.

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 3D Robotics Aero-M, Steadi Drone Mavrik, and DJI S900.

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 collection¹. 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, McKim & Creed, Inc. is granted an exemption from 14 CFR §§ 61.23(a) and (c), 61.101(e)(4) and (5), 61.113(a), 61.315(a), 91.7(a), 91.119(c), 91.121, 91.151(a)(1), 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b), to the extent necessary to allow the petitioner to operate a UAS to perform aerial data collection. This exemption is subject to the conditions and limitations listed below.

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

Conditions and Limitations

In this grant of exemption, McKim & Creed, 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 3D Robotics Aero-M, Steadi Drone Mavrik, and DJI S900 when weighing less than 55 pounds including payload. Proposed operations of any other aircraft will require a new petition or a petition to amend this exemption.
2. Operations for the purpose of closed-set motion picture and television filming are not permitted.
3. The UA may not be operated at a speed exceeding 87 knots (100 miles per hour). The exemption holder may use either groundspeed or calibrated airspeed to determine compliance with the 87 knot speed restriction. In no case will the UA be operated at airspeeds greater than the maximum UA operating airspeed recommended by the aircraft manufacturer.
4. The UA must be operated at an altitude of no more than 400 feet above ground level (AGL). Altitude must be reported in feet AGL.
5. The UA must be operated within visual line of sight (VLOS) of the PIC at all times. This requires the PIC to be able to use human vision unaided by any device other than corrective lenses, as specified on the PIC's FAA-issued airman medical certificate or U.S. driver's license.
6. All operations must utilize a visual observer (VO). The UA must be operated within the visual line of sight (VLOS) of the PIC and VO at all times. The VO may be used to satisfy the VLOS requirement as long as the PIC always maintains VLOS capability. The VO and PIC must be able to communicate verbally at all times; electronic messaging or texting is not permitted during flight operations. The PIC must be designated before the flight and cannot transfer his or her designation for the duration of the flight. The PIC must ensure that the VO can perform the duties required of the VO.
7. This exemption and all documents needed to operate the UAS and conduct its operations in accordance with the conditions and limitations stated in this grant of exemption, are hereinafter referred to as the operating documents. The operating documents must be accessible during UAS operations and made available to the Administrator upon request. If a discrepancy exists between the conditions and limitations in this exemption and the procedures outlined in the operating documents,

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

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

14. The operator may not permit any PIC to operate unless the PIC demonstrates the ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption, including evasive and emergency maneuvers and maintaining appropriate distances from persons, vessels, vehicles and structures. PIC qualification flight hours and currency must be logged in a manner consistent with 14 CFR § 61.51(b). Flights for the purposes of training the operator's PICs and VOs (training, proficiency, and experience-building) and determining the PIC's ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption are permitted under the terms of this exemption. However, training operations may only be conducted during dedicated training sessions. During training, proficiency, and experience-building flights, all persons not essential for flight operations are considered nonparticipants, and the PIC must operate the UA with appropriate distance from nonparticipants in accordance with 14 CFR § 91.119.
15. UAS operations may not be conducted during night, as defined in 14 CFR § 1.1. All operations must be conducted under visual meteorological conditions (VMC). Flights under special visual flight rules (SVFR) are not authorized.
16. The UA may not operate within 5 nautical miles of an airport reference point (ARP) as denoted in the current FAA Airport/Facility Directory (AFD) or for airports not denoted with an ARP, the center of the airport symbol as denoted on the current FAA-published aeronautical chart, unless a letter of agreement with that airport's management is obtained or otherwise permitted by a COA issued to the exemption holder. The letter of agreement with the airport management must be made available to the Administrator or any law enforcement official upon request.
17. The UA may not be operated less than 500 feet below or less than 2,000 feet horizontally from a cloud or when visibility is less than 3 statute miles from the PIC.
18. If the UAS loses communications or loses its GPS signal, the UA must return to a pre-determined location within the private or controlled-access property.
19. The PIC must abort the flight in the event of unpredicted obstacles or emergencies.
20. The PIC is prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough available power for the UA to conduct the intended operation and to operate after that for at least five minutes or with the reserve power recommended by the manufacturer if greater.
21. Air Traffic Organization (ATO) Certificate of Waiver or Authorization (COA). All operations shall be conducted in accordance with an ATO-issued COA. The exemption holder may apply for a new or amended COA if it intends to conduct operations that cannot be conducted under the terms of the attached COA.

22. All aircraft operated in accordance with this exemption must be identified by serial number, registered in accordance with 14 CFR part 47, and have identification (N-Number) markings in accordance with 14 CFR part 45, Subpart C. Markings must be as large as practicable.
23. Documents used by the operator to ensure the safe operation and flight of the UAS and any documents required under 14 CFR §§ 91.9 and 91.203 must be available to the PIC at the Ground Control Station of the UAS any time the aircraft is operating. These documents must be made available to the Administrator or any law enforcement official upon request.
24. The UA must remain clear and give way to all manned aviation operations and activities at all times.
25. The UAS may not be operated by the PIC from any moving device or vehicle.
26. All Flight operations must be conducted at least 500 feet from all nonparticipating persons, vessels, vehicles, and structures unless:
 - a. Barriers or structures are present that sufficiently protect nonparticipating persons from the UA and/or debris in the event of an accident. The operator must ensure that nonparticipating persons remain under such protection. If a situation arises where nonparticipating persons leave such protection and are within 500 feet of the UA, flight operations must cease immediately in a manner ensuring the safety of nonparticipating persons; and
 - b. The owner/controller of any vessels, vehicles or structures has granted permission for operating closer to those objects and the PIC has made a safety assessment of the risk of operating closer to those objects and determined that it does not present an undue hazard.

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

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

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

29. The operator must have a motion picture and television operations manual (MPTOM) as documented in this grant of exemption.
30. At least 3 days before aerial filming, the operator of the UAS affected by this exemption must submit a written Plan of Activities to the local Flight Standards District Office (FSDO) with jurisdiction over the area of proposed filming. The 3-day notification may be waived with the concurrence of the FSDO. The plan of activities must include at least the following:
 - a. Dates and times for all flights;
 - b. Name and phone number of the operator for the UAS aerial filming conducted under this grant of exemption;
 - c. Name and phone number of the person responsible for the on-scene operation of the UAS;
 - d. Make, model, and serial or N-Number of UAS to be used;
 - e. Name and certificate number of UAS PICs involved in the aerial filming;
 - f. A statement that the operator has obtained permission from property owners and/or local officials to conduct the filming production event; the list of those who gave permission must be made available to the inspector upon request;
 - g. Signature of exemption holder or representative; and
 - h. A description of the flight activity, including maps or diagrams of any area, city, town, county, and/or state over which filming will be conducted and the altitudes essential to accomplish the operation.
31. Flight operations may be conducted closer than 500 feet from participating persons consenting to be involved and necessary for the filming production, as specified in the exemption holder's MPTOM.

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

This exemption terminates on July 31, 2017, unless sooner superseded or rescinded.

Sincerely,

/s/

John S. Duncan

Director, Flight Standards Service

Enclosures



ENGINEERS

SURVEYORS

PLANNERS

April 24, 2015

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

RE: Exemption Request Under Section 333 of the FAA Reform Act and
Part 11 of the Federal Aviation Regulations

Dear Sir or Madam:

REQUEST

McKim & Creed, Inc. (McKim & Creed) seeks exemption to operate an Unmanned Aircraft System pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (FMRA). from the requirements of 14 C.F.R.

61.113(a) & (b),
91.7(a),
91.121,
91.151(a)(1),
91.405(a),
91.407(a)(1),
91.409(a)(1) & (a)(2), and
91.417(a) & (b),

This exemption will permit McKim & Creed to commercially operate three (3) Unmanned Aircraft Systems (UAS) for the purpose of conducting aerial acquisitions within the National Airspace System (NAS) for compensation or hire.

INTRODUCTION

McKim & Creed's three-plus decades in business have been marked by one constant, and that is change. As a consultancy offering a full range of engineering, surveying, landscape architectural and planning services, we have continuously reinvented ourselves to meet the ever-changing needs of our

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customers and our marketplace. We have repositioned the business from a two-person structural design firm to a 360 person infrastructure design company with offices from North Carolina to Florida.

McKim & Creed offers a full range of engineering, surveying, and planning services. Core competencies of the firm include water and wastewater planning and design, site/civil engineering, landscape architecture, structural engineering, GIS, and surveying specialties ranging from electronic data collection to hydrographic surveying, aerial photogrammetry, laser scanning and subsurface utility engineering. Engineering News-Record has named McKim & Creed one of the top 500 design firms and top 200 environmental firms in the U.S. Public Works magazine ranked McKim & Creed as one of the top AEC firms in the U.S., and Southeast Construction names the firm as the top surveying and mapping firm in the region.

McKim & Creed operates offices in Wilmington, Raleigh, Charlotte, and Asheville, NC; Clearwater, Daytona Beach, DeLand, Fort Myers, Palm Coast, North Tampa, and Sarasota, FL.; Austin, Fort Worth, Houston, and San Antonio, TX; Norfolk, VA, and Atlanta and Lawrenceville, GA.

McKim & Creed will use the 3drobotics Aero-M (Aero-M) fixed wing , the Steadi Drone Mavrik (Mavrik), and the DJI S900 (S900) rotoray wing systems to commercially provide professional geospatial services to clients associated with land use planning, mining, utilities to conduct inventories, mapping and inspection services, environmental planning and other geomatics applications. Use of the Aero-M, Mavrik, and S900 will provide McKim & Creed a suite of safe and efficient platforms to perform its business operations.

AIRCRAFT

McKim & Creed seeks an exemption to operate the Aero-M, Mavrik, and S900 for compensation or hire within the NAS. The Aero-M is a fixed wing UAS, and the Mavrik and S900 are rotary wing UAS, all are electrically powered propeller driven systems. Unmanned Aircraft (UA) with transportable Ground Control Stations (GCS).

The Aero-M has a maximum gross weight of approximately 6.8 pounds, the Mavrik has a maximum gross weight of approximately 4.8 pounds, and the S900 has a maximum gross weight of approximately 7.2 pounds. All three systems are equipped with propeller systems driven by a Lithium Polymer battery powered electric motor.

The Aero-M, Mavrik, and S900 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

McKim & Creed, pursuant to the provisions of the Federal Aviation Regulations (14 C.F.R. § 11.61) and the FAA Modernization and Reform Act of 2012, Section 333, Special Rules for Certain Unmanned Aircraft Systems, petitions the Administrator to commercially operate the Aero-M, Mavrik, and S900 UAS within the National Airspace System (NAS), and for an exemption from the requirements of 14 C.F.R.

61.113(a) & (b),

91.7(a),

91.121,

91.151(a)(1),

91.405(a),

91.407(a)(1),

91.409(a)(1) & (a)(2), and

91.417(a) & (b).

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

Name and Address of the Petitioner.

The name and address of the

Petitioner McKim & Creed, Inc.

1730 Varsity Drive, Suite 500

Raleigh, NC 27606

Mr, Timothy Cawood, PLS

Senior Vice President

(910)-343-1048 ext 247

tcawood@mckimcreed.com

The following documents contain proprietary information and are to be held in a separate file pursuant to 14 C.F.R. § 11.35(b).

1. Aero-M: Aero-M- Operations Manual V1
2. Drone Safety -3D Robotics
3. Mavrik: Mavrik Manual Mavrik Quick Start Guide
4. Mavrik LI-PO Safety and Disposal
5. Mavrik Periodic Maintenance Check
6. S900: S900 Release Note,
7. S900 User Manual V1.2
8. McKim & Creed Field Preflight and Safety Checklist
9. McKim & Creed Flight Log
10. McKim & Creed UAS Flight Safety Procedure

Description of Proposed Operations and Safety Procedures

1. In order to maintain the highest possible degree of safety and consistency the key safety and operational restrictions are incorporated to our daily Flight and safety checklist, thus ensuring full compliance by the PIC and VO.
2. McKim & Creed proposes to commercially operate the UAS for the special purpose of conducting aerial acquisitions within the NAS, pursuant to the following specific operating limitations.
3. Proposed Operations will be limited to the following aircraft described in the operating documents, which are fixed and rotary wing, propeller driven aircraft with the following characteristics:
 - a. The Aero-M has a maximum gross weight of approximately 6.8 pounds;
 - b. The Mavrik has a maximum gross weight of approximately 4.8 pounds and
 - c. The S900 has a maximum gross weight of approximately 7.2 pounds.
 - d. All three systems are equipped with propeller systems driven by a Lithium Polymer battery powered electric motor.
4. UAS operations under this proposed exemption will be limited to conducting operations for the purpose of aerial acquisitions.

5. The UA will not be flown at an indicated airspeed exceeding 80 knots or not exceeding the manufacturers recommendations.
6. The UA will be operated at an altitude of no more than 400 feet above ground level (AGL), as indicated by the procedures specified in the operating documents. All altitudes reported to ATC will be in feet AGL.
7. The UA will be operated within visual line of sight (VLOS) of the PIC at all times. This requires the PIC to be able to use human vision unaided by any device other than corrective lenses.
8. The use of first person view (FPV) by the pilot in command PIC or visual observer (VO) will not be permitted.
9. All operations will utilize a visual observer (VO). The VO may be used to satisfy the VLOS requirement as long as the PIC always maintains VLOS capability. The VO and PIC will be able to communicate verbally at all times. Electronic messaging or texting will not be permitted during flight operations. The PIC will be designated before the flight and will not transfer his or her designation for the duration of the flight. The PIC will ensure that the VO can perform the functions prescribed in the operating documents.
10. The VO will not perform any other duties beyond assisting the PIC with seeing and avoiding other air traffic and other ground based obstacles/obstructions and will not be permitted to operate the camera or other instruments.
11. The operating documents and the grant of exemption will be accessible during UAS operations and made available to the Administrator upon request.
 - a. If a discrepancy exists between the conditions and limitations contained in the grant of exemption and the procedures outlined in the operating documents, the conditions and limitations contained in the grant of exemption take precedence and must be followed.
 - b. The operator will follow the procedures as outlined in the operating documents.
 - c. The operator may update or revise the operating documents.

- d. It is the operator's responsibility to track such revisions and present updated and revised documents to the Administrator upon request.
 - e. The operator will present updated and revised documents if it petitions for extension or amendment to the grant of exemption.
 - f. If the operator determines that any update or revision would affect the basis upon which the FAA granted the exemption, then the operator will petition for amendment to the grant of exemption.
 - g. The FAA's UAS Integration Office (AFS-80) will be contacted if questions arise regarding updates or revisions to the operating documents.
12. Prior to each flight the PIC will inspect the UAS to ensure it is in a condition for safe flight.
- a. 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.
 - b. The Ground Control Station will be included in the preflight inspection.
 - c. All maintenance and alterations will be properly documented in the aircraft records.
13. Any UAS that has undergone maintenance or alterations that affect the UAS operation or flight characteristics, e.g. replacement of a flight critical component, will undergo a functional test flight. The PIC who conducts the functional test flight will make an entry in the aircraft records.
14. The pre-flight inspection will account for all potential discrepancies, e.g. inoperable components, items, or equipment, not already covered in the relevant sections of the operating documents.
- a. The operator will follow the UAS manufacturer's aircraft/component, maintenance, overhaul, replacement, inspection, and life limit requirements.
 - b. The operator must carry out its maintenance, inspections, and record keeping requirements, in accordance with the operating documents.
 - c. Maintenance, inspection, alterations, and status of replacement/overhaul component parts will be noted in the

aircraft records, including total time in service, description of work accomplished, and the signature of the authorized person returning the UAS to service.

- d. Each UAS operated under this exemption will comply with all manufacturer Safety Bulletins.
 - e. The authorized person will make an entry in the aircraft record of the corrective action taken against discrepancies discovered between inspections.
15. The PIC will hold either an airline transport, commercial, private, recreational, or sport pilot certificate. The PIC will also hold a current FAA airman medical certificate or a valid U.S. driver's license issued by a state, the District of Colombia, Puerto Rico, a territory, a possession, or the Federal government. The PIC will 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. This is per exemption as granted in Docket 11238 Dated March 26, 2015.
16. The operator will not permit any PIC to operate unless the PIC meets the operator's qualification criteria and demonstrates the ability to safely operate the UAS in a manner consistent with how the UAS will be operated under the exemption, including evasive and emergency maneuvers and maintaining appropriate distances from persons, vessels, vehicles, and structures.
- a. The PIC qualification flight hours will be logged in a manner consistent with 14 C.F.R. § 61.51(b).
 - b. The VO will complete the operator's training requirements.
 - c. The record of training will be documented and made available upon request by the Administrator.
 - d. Flights for the purposes of training the operator's PICs and VOs (training, proficiency, and experience-building), will be permitted under the terms of the exemption.
 - e. Training operations will only be conducted during dedicated training sessions.
 - i. During training, proficiency, and experience-building flights, all persons not essential for flight operations are considered nonparticipants, and the PIC will operate the UA with appropriate distance from nonparticipants in accordance with 14 C.F.R. § 91.119.

17. UAS operations will not be conducted during night, as defined in 14 C.F.R. § 1.1. All operations will be conducted under visual meteorological conditions (VMC). Flights under special visual flight rules (SVFR) are not authorized.
18. The UA will not operate within 5 nautical miles of an airport reference point as denoted on a current FAA-published aeronautical chart unless a letter of agreement with that airport's management is obtained, and the operation is conducted in accordance with a NOTAM as required by the operator's COA. The letter of agreement with the airport management will be made available to the Administrator upon request.
19. The UA will not be operated less than 400 feet below or less than 2,000 feet horizontally from a cloud or when visibility is less than 3 statute miles from the PIC.
20. If the UAS loses communications or loses its GPS signal, it will return to a pre-determined location within the planned operating area and land or be recovered in accordance with the operating documents.
21. The PIC will abort the flight in the event of unpredicted obstacles or emergencies in accordance with the operating documents.
22. 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 20% battery power remaining.
23. The operator will obtain an Air Traffic Organization (ATO) issued Certificate of Waiver or Authorization (COA) prior to conducting any operations under the grant of exemption. This COA will also require the operator to request a Notice to Airmen (NOTAM) not more than 72 hours in advance, but not less than 48 hours prior to the operation. All operations will be conducted in accordance with airspace requirements in the ATO issued COA including class of airspace, altitude level and potential transponder requirements.
 - a. Note as of March 22 2015 the FAA granted a "blanket" COA for flights at or below 200 feet to any UAS operator with a Section 333 exemption. McKim & Creed will operate aircraft that weighs less than 55 lbs, will conduct operations under VFR rules and

conditions within VLOS of the PIC and restrict flight from airports and heliports as per applicable FAA rules.

24. All aircraft operated in accordance with the exemption will be identified by serial number, registered in accordance with 14 C.F.R. part 47, and have identification (N- Number) markings in accordance with 14 C.F.R. part 45, Subpart C. Markings will be as large as practicable.
25. Before conducting operations, the radio frequency spectrum used for operation and control of the UA will comply with the Federal Communications Commission (FCC) or other appropriate government oversight agency requirements.
26. The UA will remain clear and yield the right of way to all manned aviation operations and activities at all times.
27. The UAS will not be operated by the PIC from any moving device or vehicle.
28. The UA will not be operated over congested or densely populated areas.
29. Flight operations will be conducted at least 500 feet from all nonparticipating persons (persons other than the PIC, VO, operator trainees or essential 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.
 - b. The operator will ensure that nonparticipating persons remain under such protection.
 - c. If a situation arises where nonparticipating persons leave such protection and are within 500 feet of the UA, flight operations will cease immediately and/or;
 - d. 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
 - e. Operations nearer to the PIC, VO, operator trainees or essential persons do not present an undue hazard to those persons per § 91.119(a).

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

Requested Regulations for Exemptions and Equivalent Level of Safety

14CFR Section 61.113(a) And (b).

1. Section 61.113, entitled Private pilot privileges and limitations: Pilot in command, subsections (a) and (b) prescribe the following, in relevant part:
 - a. No person who holds a private pilot certificate may act as a pilot in command (PIC) of an aircraft that is carrying passengers or property for compensation or hire; nor may that person, for compensation or hire, act as PIC of an aircraft.
 - b. A private pilot may, for compensation or hire, act as PIC of an aircraft in connection with any business or employment if:
 - i. The flight is only incidental to that business or employment; and
 - ii. The aircraft does not carry passengers or property for compensation or hire.
2. McKim & Creed submits that an equivalent level of safety will be maintained because no PIC will be allowed to operate the Aero-M, Mavrik, and S900 UAS's unless that PIC has met certain flight-hour and currency requirements, demonstrating that the PIC is able to safely operate the Aero-M, Mavrik, and S900 UAS's in a manner consistent with the operations specifications as set forth herein, including evasive and emergency maneuvers, as well as maintaining appropriate distances from people, vessels, vehicles and structures.

3. Further, McKim & Creed submits that all flights of the Aero-M, Mavrik, and S900 UAS, conducted by the PIC pursuant to the grant of this Petition: (1) will be incidental to McKim & Creed business; and (2) will not carry passengers or property for compensation or hire.
4. Specifically, the PIC will have accumulated and logged, in a manner consistent with 14 CFR C.F.R. § 61.51(b), 25 hours of total time as a UAS pilot (with a minimum of 5 hours of those hours as a UAS pilot operating the same make and model of UAS to be used for operations under the exemption). In addition to the hour requirements, the PIC will accomplish 3 takeoffs and landings in the preceding 90 days (for currency purposes).

14CFR Section 91.7(a).

1. 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.
 - a. Relief from Section 91.7(a) entitled Civil aircraft airworthiness, is requested to the extent required to allow McKim & Creed to determine that the Aero-M, Mavrik, and S900 UAS are in an airworthy condition prior to every flight by ensuring that each UAS is in compliance with the operating documents (UAS DOCUMENTS) and that the aircraft are in a condition for safe flight.
 - b. McKim & Creed seeks the requested relief because the Aero-M, Mavrik, and S900 UAS do not require an airworthiness certificate in accordance with 14 C.F.R. Part 21, Subpart H. Therefore, prior to every flight, McKim & Creed will ensure that the Aero-M, Mavrik, and S900 UAS are in an airworthy condition based upon manufacturers operating documents.
2. The equivalent level of safety established by Section 91.7(a) will be maintained because prior to every flight, McKim & Creed will ensure that the UAS are in an airworthy condition based upon the aircraft's operating documents (i.e., the User Manual, Maintenance Procedures).
3. McKim & Creed seeks relief from Section 91.7(a), entitled Civil aircraft airworthiness, because the Aero-M, Mavrik, and S900 UAS's do not require an airworthiness certificate in accordance with 14 C.F.R. Part 21,

Subpart H. As such, McKim & Creed submits that it will ensure that the Aero-M, Mavrik, and S900 UAS's are in an airworthy condition, prior to every flight, by determining that the UAS being used is in compliance with the operating documents and that the aircraft is in a condition for safe flight as below in the supporting documents:

- a. Aero-M : Aero-M- Operations Manual V1
- b. Drone Saftey -3D Robotics
- c. Mavrik : Mavrik Manual Mavrik Quick Start Guide
- d. Mavrik LI-PO Saftey and Disposal
- e. Mavrik Peridoc Maintenance Check
- f. S900: S900 Relase Notes
- g. S900 User Manual V1.2
- h. McKim & Creed – Field Preflight Saftey Checklist
- i. McKim & Creed Flight Log
- j. McKim & Creed UAS Flight Saftey Procedure

UAS Specifications:

Aero M		
Type	Fixed Wing	
Weight	6.8	Lbs
Flight Time	40	Min
Power	4S 600 mAh 35C LP	
Motor	Tiger AT 2828-7 830kv	
Flight speed	33	MPH
Wing Span	74	Inches
AC Length	51	Inches
MAVRIK		
Type	Rotory	
Weight	4.8	Lbs
Flight Time	18	Min
Power	8000mah 4S LP	
Motor	4 x 600kv 4008	
Flight speed	10	MPH
Wing Span	14	Inches
AC Length	NA	Inches
S900		
Type	Rotory	

Weight	7.2	Lbs
Flight Time	18	Min
Power	6S 15000mAh LP	
Motor	400rpm/V	
Flight speed	10	MPH
Wing Span	15.5	Inches
AC Length	NA	Inches

14CFR Section 91.121.

1. 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:
 - i. Below 18,000 feet MSL, 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.
2. McKim & Creed seeks relief from Section 91.121, entitled Altimeter settings, which is required to allow flight operations of the Aero-M, Mavrik, and S900 UAS because before each flight, the altitude reporting equipment will be set on the ground to zero feet AGL, rather than the local barometric pressure or field altitude. The Aero-M, Mavrik, and S900 UAS utilize 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).
3. In order to maintain a level of safety equivalent to Section 91.121 reporting will be ensured as the altitude of the Aero-M, Mavrik, and S900 will be reported to air traffic control (ATC) in feet above ground level (AGL), and McKim & Creed will operate the Aero-M, Mavrik, and S900 within visual line of sight (VLOS), at or below 400 feet AGL.

4. The altitude information of the UA will be provided to the PIC via a barometric pressure sensor, 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. Prior to each flight, a zero altitude initiation point will be automatically established by the UAS at ground level.

14CFR Section 91.151(a)(1).

1. Section 91.151, entitled Fuel requirements for flight in visual flight rules (VFR) conditions, subsection (a)(1), states the following, in relevant part:
 - 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.
 - b. During the day, to fly after that for at least 30 minutes.
2. McKim & Creed seeks relief from Section 91.151(a)(1) entitled Fuel requirements for flight in VFR conditions, to the extent required to allow flights of the battery powered Aero-M, Mavrik, and S900 during daylight hours in visual meteorological conditions (VMC), under visual flight rules (VFR) to fly for a total duration of 18- 40 (Rotary ,fixed wing) minutes to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least ten minutes or 20 percent battery power remaining. McKim & Creed seeks the requested relief because without an exemption from Section 91.151(a)(1), the flight time duration of the battery powered Aero-M, Mavrik, and S900 will severely constrain the practicality of any aerial acquisition and research flight operations that McKim & Creed proposes to conduct pursuant to this Petition.
3. The technical specifications of the Aero-M, Mavrik, and S900 UAS, as well as McKim & Creed proposed operating limitations, will ensure safe operation of the battery powered Aero-M, Mavrik, and S900 UAS during daylight hours in VMC, under VFR, with enough battery power to fly to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least ten minutes or 20 percent battery power remaining.
4. A grant of this exemption would ensure an equivalent level of safety established by 14C.F.R. Section 91.151(a)(1) as a result of (1) the technical

specifications of the UAS; (2) the limitations on the proposed flight operations; and (3) the location of the proposed flight operations.

5. McKim & Creed will ensure that it will safely operate the battery powered UA only during daylight hours in visual meteorological conditions (VMC) under visual flight rules (VFR), with enough battery power for the Aero-M, Mavrik, and S900 to fly for the specific system duration to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least ten minutes or 20 percent battery power remaining.

14CFR Section 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b) only

1. 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, McKim & Creed requests relief from these Sections because the Aero-M, Mavrik, and S900 UAS do not require an airworthiness certificate. As set forth more fully below, the Aero-M, Mavrik, and S900 UAS meet the conditions of Section 333 of the FMRA for operation without an airworthiness certificate.
2. All maintenance, alterations, or preventive maintenance of the Aero-M, Mavrik, and S900 UAS will be performed by McKim & Creed in accordance with the methods, techniques, and practices prescribed in the operating documents:
 - a. Aero-M : Aero-M- Operations Manual V1
 - b. Drone Safety -3D Robotics
 - c. Mavrik : MavrikManual Mavrik Quick Start Guide
 - d. Mavrik LI-PO Safety and Disposal
 - e. Mavrik Periodic Maintenance Check
 - f. S900: S900 Release Notes
 - g. S900 User Manual V1.2
 - h. McKim & Creed – Field Preflight Safety Checklist
 - i. McKim & Creed Flight Log
 - j. McKim & Creed UAS Flight Safety Procedure
3. Only the Original Equipment Manufacturer (OEM) or qualified OEM maintainers will perform higher-level inspections and maintenance per the operating documents and OEM standards. McKim & Creed will

document and maintain all maintenance records for the Aero-M, Mavrik, and S900 UAS.

4. McKim & Creed 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 all maintenance, alterations, or preventive maintenance of the UAS performed by McKim & Creed will be in accordance with the methods, and practices required in the operating documents.
5. Since the UAS will be inspected as prescribed by the operating documents, McKim & Creed will maintain the equivalent level of safety established by Sections 91.405(a), 91.409(a)(1), and 91.409(a)(2). The following operating documents are attached.
 - a. Aero-M : Aero-M- Operations Manual V1
 - b. Drone Safety -3D Robotics
 - c. Mavrik : MavrikManual Mavrik Quick Start Guide
 - d. Mavrik LI-PO Safety and Disposal
 - e. Mavrik Periodic Maintenance Check
 - f. S900: S900 Release Notes
 - g. S900 User Manual V1.2
 - h. McKim & Creed – Field Preflight Safety Checklist
 - i. McKim & Creed Flight Log
 - j. McKim & Creed UAS Flight Safety Procedure

The Public Interest

1. Granting the present Petition will further the public interest by allowing McKim & Creed to safely, efficiently, and economically perform aerial acquisitions and mapping within the NAS, commercially, in support of government entities, engineering, agriculture, railroad industry, utilities, oil and gas industries, environmental, and shoreline mapping. The use of the Aero-M, Mavrik, and S900 UAS will decrease congestion of the NAS, reduce pollution, and provide significant benefits to the economy. Notably, the benefits of McKim & Creed proposed operation of the Aero-M, Mavrik, and S900 UAS will be realized without implicating any privacy issues.

2. The Aero-M, Mavrik, and S900 will provide safe, efficient, and economical aerial acquisition and mapping operations to further each of these fields, all of which are critical to the well being of the general public.
3. The specific operations that McKim & Creed will perform with the Aero-M, Mavrik, and S900 UAS demonstrate how the requested exemption will directly benefit the above-referenced industries and the public, as a whole. In land use planning, engineering and mapping and industrial operations, the UAS will be used to aid in inspections, survey and plan new worksites, conduct volumetric analysis, and perform right of way analysis. The UAS may also be used to aid in environmental management of coastal and tidal areas, to map and monitor protected habitat and species.

The Public Will Benefit From Decreased Congestion Of The NAS

1. The Aero-M, Mavrik, and S900 UAS are battery powered and serve as a safe, efficient, and economical alternative to the manned aircraft traditionally utilized to obtain aerial imagery. By reducing the amount of manned aircraft needed to perform aerial acquisitions, an exemption allowing the use of UAS would reduce the amount of manned aircraft in the NAS, reduce noise and air pollution, and increase the safety of life and property in the air and on the ground.
2. The Aero-M, Mavrik, and S900 UAS do not require an airport to takeoff or land. Likewise, a reduction of manned aircraft conducting aerial survey 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.
3. The 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.
4. The UAS will only be operated pursuant to the specific conditions and limitations and in accordance with the Federal Aviation Regulations, including the minimum altitude requirements of 14 C.F.R. § 91.119. The UA will not be operated closer than 500 feet to any person, vessel, vehicle, or structure, which is not directly involved in the operation so that privacy will not be of a concern.

5. A Summary That Can Be Published In The Federal Register, stating: The Rules From Which McKim & Creed Seeks Exemption:
 - a. McKim & Creed seeks exemption from the requirements of 14 C.F.R. Sections 61.113(a)&(b), 91.7(a), 91.121, 91.151(a)(1), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b).

CONCLUSION

1. This exemption will permit McKim & Creed to commercially operate Unmanned Aircraft Systems (UAS) for the purpose of conducting aerial acquisitions within the National Airspace System (NAS).
2. McKim & Creed 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 Aero-M, Mavrik, and S900 commercially, without an airworthiness certificate, for the limited purpose of conducting aerial acquisitions within the National Airspace System (NAS). 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 public interests, by allowing McKim & Creed to safely, efficiently, and economically operate UAS commercially within the NAS.
3. In accordance with the Federal Aviation Regulations and the FAA Modernization and Reform Act of 2012, Section 333, McKim & Creed respectfully requests that the Administrator grant this Petition for an exemption from the requirements of 14 C.F.R Sections 61.113(a) & (b), 91.7(a), 91.121, 91.151(a)(1), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b), and permit operation of the Aero-M, Mavrik, and S900 UAS commercially for the purpose of conducting aerial acquisitions within the NAS.

Respectfully Submitted,
McKim & Creed, Inc.



Mr. Timothy Cawood, PLS
Senior Vice President