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

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

August 19, 2015

Exemption No. 12504
Regulatory Docket No. FAA−2015−1828

Mr. Sean L. Suttles
sUAS Project Manager
Lochmueller Group Inc.
6200 Vogel Road
Evansville, IN 47715

Dear Mr. Suttles:

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 22, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Lochmueller Group Inc. (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial surveying, aerial mapping, construction aerial inspection, environmental wetland mitigation monitoring, remote sensing, wildlife monitoring and civil engineering aerial imagery.

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

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

Airworthiness Certification

The UAS proposed by the petitioner is a DJI Phantom 2 Vision +.

The petitioner requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*. In accordance with the statutory criteria

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

The Basis for Our Decision

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

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

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

Our Decision

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

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

Conditions and Limitations

In this grant of exemption, Lochmueller Group Inc. is hereafter referred to as the operator.

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

1. Operations authorized by this grant of exemption are limited to the DJI Phantom 2 Vision + 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 August 31, 2017, unless sooner superseded or rescinded.

Sincerely,

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

Enclosures

LOCHMUELLER GROUP
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April 22, 2015

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

Electronically Submitted via www.regulations.gov

Regarding: The Lochmueller Group, Inc. Petition for Exemption pursuant To Section 333 of the FAA Modernization Reform Act of Z012 (FMRA) includes 14 CFR 45.23(b); 14 CFR 45.29; 14 CFR Part 21 subpart H; 14 CFR, 6l.113(a)&(b); 61.133; 91.7(a); 91.9(b) (2); 91.103(b); 91.109(a); 91.119; 91.121; 91.151(a); 91.203(a)(1); 91.405(a); 91.407(a) (1); 91.409(a)(1)&(2); 91.417(a)&(b)

Dear Sir or Madam:

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (the "Reform Act") and 14 C.F.R. as noted above, Lochmueller Group, Inc. ("Petitioner") hereby submits this petition for exemption to authorize civil operations of small Unmanned Aircraft Systems ("sUAS") for the commercial use purposes of aerial surveying, aerial mapping, construction aerial inspection, environmental wetland mitigation monitoring, remote sensing, wildlife monitoring and civil engineering aerial imagery for project archival within private properties and public properties owned by State or Local governments within the Continental United States. As a full-service civil engineering firm, Lochmueller Group, Inc., proposes to directly operate sUAS for commercial operation by employees and contractors as a value added benefit for civil engineering related projects.

This exemption application is expressly submitted to fulfill Congress' goal in passing Section 333(a) through (c) of the FAA Modernization and Reform Act of 2012 (the "Reform Act"). This law directs the Secretary of Transportation to consider whether certain unmanned aircraft systems may operate safely in the National Airspace System 9NAS) before completion of the rulemaking required under Section 333 of the Reform Act. In making this determination, the Secretary of Transportation is required to determine which types of sUAS's do not create a hazard to users of the NAS or the public or pose a threat to national security in respect to the sUAS's size, weight, operational capability, speed, operation in close proximity to airports and populated areas and operation within visual line of sight of the pilot/operator.

This petition is, in most regards, similar to granted exemptions No. 11062, 11109, 11112 and 11213 both in operational approach (closer than 500') and equipment being utilized (DJI Phantom 2).

The Applicant name and address is:

Lochmueller Group Inc.
Attn: Sean L. Suttles
sUAS Project Manager
6200 Vogel Road
Evansville, Indiana 47715
Phone: (812)-479-6200
Fax: (812) 479-6262
Email: ssuttles@lochgroup.com

The following appendices are included in this document for reference purposes:

Appendix A: DJI Phantom 2 Vision + Pilot Training Guide v1.1
Appendix B: DJI Phantom 2 Vision + User Manual v1.8
Appendix C: DJI Smart Flight Battery Safety Guidelines
Appendix D: Lochmueller Group sUAS Flight Manual

SMALL UNMANNED AIRCRAFT SYSTEM (sUAS)

We are petitioning for exemption to permit Lochmueller Group, Inc. to operate a DJI Phantom 2 Vision + (sUAS) equipped with a high definition camera attached to a three-axis gimbal mount. The Phantom 2 Vision + is a multi-rotorcraft (quadcopter) equipped with an onboard NAZA computer stabilization controller with integrated GPS navigation weighing less than 55 pounds and flying at speeds of less than 87 knots. The Phantom 2 Vision + has the built in capability which limits the height it flies above the ground and the distances from which it travels from the operator as well as prohibiting the sUAS from flying in Class B, C and D airspace including defined "no fly zones" such as within 5 miles of an airport or within 25 miles of Washington D.C. The Phantom 2 Vision + features a safety system whereby if the sUAS either loses direct communication with the pilot/operator or it flies beyond a preset distance from the pilot/operator, a "return to home" command is triggered directing the sUAS to return to its originating takeoff location, preventing the sUAS from flying out of control from the pilot/operator.

sUAS OPERATING REQUIREMENTS

Lochmueller Group, Inc. proposes to operate a DJI Phantom 2 Vision + (sUAS) with the following parameters and restrictions.

1. sUAS maximum operating weight will be less than four (4) pounds.
2. All sUAS flights will be conducted with a pilot/operator and observer and will always be flown with the sUAS in a direct visual line of sight of the pilot/operator.
3. Pilot/operator will hold a current private, recreational or sport pilot certificate along with either a current FAA third class 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.

4. The sUAS will operate at speeds of no more than 50 knots, can hover and can simultaneously move vertically and horizontally.
5. The sUAS will be programmed to fly no more than 400 feet above ground level (AGL).
6. All sUAS flights will be limited to Visual Flight Rules Meteorological Conditions (VMC) and daylight hours.
7. All sUAS flights must not interfere with manned aircraft operations, must yield the right of way to manned aircraft and the pilot/operator must see & avoid other aircraft and obstacles at all times.
8. All sUAS flight will be of a time duration of 30 minutes or less.
9. All sUAS flights will be conducted over private or controlled-access property with the permission from the property owner/controller or authorized representative.
10. All sUAS flights within 5 miles of an airport will require a letter of agreement with the airport's management or otherwise permitted by a certificate of authorization (COA) issued to the exemption holder.
11. Prior to each sUAS flight, the pilot/operator must conduct a pre-flight inspection to determine if the sUAS is in a condition for safe flight.
12. Each sUAS operated under this exemption will comply with all manufacturer safety bulletins.
13. The PIC must abort the sUAS flight in the event of unpredicted obstacles or emergencies.
14. All sUAS incidents or accidents will be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web Site: www.ntsb.gov.

GLOSSARY OF ABBREVIATIONS

AGL	Above Ground Level
COA	Certificate of Authorization
CFR	Code of Federal Regulations
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
NAS	National Airspace System
NTSB	National Transportation Safety Board
PIC	Pilot in Command
Section 333	FAA Modernization and Reform Act of 2012, Section 333
sUAS	Small Unmanned Aircraft Systems
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions

THE PETITIONER REQUESTS RELIEF FROM THE FOLLOWING REGULATIONS:

14 CFR Part 21
14 CFR 45.23(b)
14 CFR 45.29

14 CFR 61.113(a) & (b)
14 CFR 61.133
14 CFR 91.7(a)
14 CFR 91.9(b)(2)
14 CFR 91.103(b)
14 CFR 91.109(a)
14 CFR 91.119
14 CFR 91.121
14 CFR 91.151(a)
14 CFR 91.203(a) & (b)
14 CFR 91.405(a)
14 CFR 91.407(a)(1)
14 CFR 91.409(a) (1) & (2)
14 CFR 91.417(a) & (b)

EXEMPTION REQUESTS AND EQUIVALENT LEVEL OF SAFETY

The Federal Aviation Act expressly grants the FAA the authority to issue exemptions. This statutory authority, by its terms, includes exempting civil aircraft, as the term is defined under § 40101 of the Act, including sUAS's, from its safety regulations and minimum standards whenever the Administrator decides a requested exemption is in the public interest.

Lochmueller Group, Inc. requests an exemption from the following regulations as well as any additional regulations that may technically apply to the operation of the sUAS System:

14 CFR Part 21, Subpart H, Airworthiness Certificates 14 CFR §91.203 (a) (1)

Establishes the procedural requirements for the issuance of an airworthiness certificates as required by FAR §91.203 (a) (1). The size, weight and restricted operational capabilities of the Phantom 2 Vision + permits exemption from Part 21 because it meets and exceeds an equivalent level of safety pursuant to Section 333 of the Reform Act.

The aircraft will not carry persons or property, will not carry fuel, and will only fly under strict operational requirements. Combined with the sUAS's light weight, being constructed primarily of carbon fiber and plastic, we propose that the UA will be at least as safe, if not safer, than a conventionally certificated aircraft performing the same mission. If an experimental airworthiness certificate is not appropriate for this application, then we request an exemption of 14 CFR Part 21, Subpart H, and the requirement for an airworthiness certificate in general, citing the equivalent level of safety outlined in the previous paragraph.

The sUAS to be operated (Phantom 2 Vision +) is less than 55 lbs. fully loaded, is by definition unmanned and carries neither a pilot nor passenger, carries no explosive materials or flammable liquid fuels, and operates exclusively within a limited flight area. Unlike other civil aircraft, operations under this exemption will be tightly controlled and monitored by the Operator and will also remain within the requirements of, and in compliance with, local public safety requirements. These safety enhancements,

which already apply to civil aircraft provide a greater degree of safety to the public and property owners than conventional operations conducted with airworthiness certificates issued under 14 CFR Part 21, Subpart H.

14 CFR 45.23 Display of marks; general and 45.29 Size of marks.
These regulations provide that each aircraft must display "N" and the aircraft's registration number in letters at least 3 inches high. Additionally, the aircraft must display the word "EXPERIMENTAL" in letters at least 2 inches high near the entrance to the cabin, cockpit, or pilot station. The Phantom 2 Vision + (sUAS) does not have an entrance in which the word "EXPERIMENTAL" can be placed and we propose to achieve an equivalent level of safety by including the identification (N –Number) on the fuselage of the sUAS in markings made as large as practicable.

14 CFR §91.103 Preflight Action
These regulations require the pilot in command (PIC) to become familiar with specific information before each flight, including information contained in the FAA approved Flight Manual on board the aircraft. An exemption is requested to the extent that an FAA approved Flight Manual is required. We propose to achieve an equivalent level of safety by providing the PIC with a copy of the Lochmueller Group sUAS Flight Manual and the Manufacturer's Manuals, which will be kept at the ground control station and will be accessible to the PIC at all times while sUAS flight operations are underway. The PIC, following the Lochmueller Group sUAS Flight Manual, will perform a series of checklists in accordance with said manual including Pre-flight, Launch and Post Landing. The PIC will also be required review other items such as weather conditions, battery charge, flight requirements and contingency landing sites prior to each sUAS flight.

14 CFR 61.113 Private pilot privileges and limitations: Pilot in Command and 61.133 Commercial pilot privileges and limitations.
This regulation provides that no person that holds a Sport, Recreational or Private Pilot certificate may act as pilot in Command of an aircraft for compensation or hire. Subparagraph (b) allows a private pilot to 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. Lochmueller Group's proposed sUAS operations require that the PIC must hold at least a Sport Pilot Certificate issued by the FAA and since the aircraft cannot carry passengers or property, Lochmueller Group feels that it meets the intent of 61.113 Subparagraph (b) even though the intent of this application is to conduct a business.

14 CFR §91.7 Civil Aircraft Airworthiness Certificate. This regulation prohibits the operation of an aircraft without an airworthiness certificate. Lochmueller Group seeks an exemption from 14 CFR §91.7 which requires that a civil aircraft be in airworthy condition to operate.

14 CFR §91.9(b)(2) Civil aircraft flight manual in the aircraft and 14 CFR §91.203(a) and (b) carrying civil aircraft certification and registration
The first regulation provides that no person may operate an aircraft unless a current, FAA-approved flight manual, approved manual material, markings and placards or any combination thereof is in the aircraft.

The second regulation states that no person may operate a civil aircraft unless it has within it an appropriate airworthiness certificate displayed at the cabin or cockpit entrance so that it is legible to crew or passengers. Since the sUAS is small in size and doesn't have a cockpit or cabin and cannot carry a pilot or passengers, Lochmueller group seeks an exemption to the abovementioned regulations. In obtain an equivalent level of safety and meet the intent of abovementioned regulations Lochmueller Group proposes that a current, approved sUAS Flight Manual be available to the crew at the ground station anytime the aircraft is in, or preparing for flight.

14 CFR §91.109(a) Flight Instruction

This regulation states that "no person may operate a civil aircraft (except a manned free balloon) that is being used for flight instruction unless that aircraft has fully functioning dual controls." The sUAS is a remotely piloted aircraft and by design does not have functional dual controls. An equivalent level of safety can be achieved by having the instructor (PIC) and the student pilot at the ground control station side by side with both of them having access to the single set of flight controls for flight instruction activities.

14 CFR §91.119 Minimum safe altitudes

This regulation states that over sparsely populated areas the aircraft cannot be operated closer than 500 feet to any person, vessel, vehicle, or structure. Lochmueller Group feels that an exemption is required because the proposed sUAS flight operations must occur below 400' AGL and during certain aspects of the sUAS flight envelope, the PIC and observer will be closer than 500' to the sUAS. An equivalent level of safety can be achieved given the weight, size and speed of the sUAS and given the fact that the sUAS will be only operated in a controlled environment.

14CFR §91.121 Altimeter settings

This regulation requires that a person operating an aircraft to maintain cruising altitude or flight level by reference to an altimeter that is set to the elevation of the departure airport or barometric pressure. Lochmueller Group requests an exemption from this regulation since the sUAS does not have a barometric altimeter but rather relies on a GPS altitude read out. An equivalent level of safety can be achieved by the following: (1) operating the sUAS at altitudes of less than 400' AGL, (2) operating the sUAS within visual line of sight at all times, (3) utilizing the real time GPS altitude read out on the control display at the ground based control station and (4) obtaining a "zero" ground altitude calibration at the beginning of each sUAS flight to confirm the accuracy of the onboard GPS system.

14 CFR §91.151(a) Fuel requirements for flight in VFR conditions.

This regulation states that no person may begin a flight in an airplane under day-VFR conditions unless there is enough fuel to fly to the first point of intended landing and to fly after that for at least 30 minutes. The sUAS is battery operated and the maximum duration of flight from a single battery charge is approximately 18 minutes with a 25% reserve. The FAA has stated that an equivalent level of safety can be achieved by requiring that each UAS operation be completed within 30 minutes of flight time or with 25% battery power remaining, whichever occurs first. Lochmueller Group requests an exemption to this regulation and proposes to limit the sUAS flights to a duration of less than 20 minutes or 25% battery power whichever occurs first.

Similar FAA exemptions have been recently approved for other sUAS operations including exemptions 10673, 11062 thru 11067, 1080 and 11369.

14 CFR Subpart E §91.405(a), §91.407(a)(1), §91.409(a) (1) and (2), §91.417(a) and (b) Maintenance & Inspections

Lochmueller Group seeks an exemption from the maintenance inspection requirements contained in 14 CFR Subpart E §91.405(a), §91.407(a)(1), §91.409(a) (1) and (2), §91.417(a) and (b). These regulations specify certain maintenance and inspections standards referenced in 14 CFR Part 43. The exemption is requested because the abovementioned regulations only apply to aircraft with an airworthiness certificate for which the proposed sUAS would not have. An equivalent level of safety will be achieved by performing maintenance and inspections in accordance to the manufacturer's manuals and safety bulletins. Lochmueller Group plans to have the PIC perform safety inspection on the sUAS before every flight and after every two hours of flight time. Maintenance items to be performed by the PIC shall include replacing propellers, landing gear, camera/gimbals, checking electrical connections, battery inspection and software/firmware updates. All other maintenance duties shall be performed by either the sUAS manufacturer or their designated repair facility. A record of all maintenance activities performed on the sUAS will be documented in a maintenance logbook in accordance with §91.417.

CONCLUSION

Lochmueller Group seeks this exemption in the belief that allowing commercial use of the sUAS will provide a greater economic benefit and safety factor in obtaining aerial mapping and surveying data in comparison to using a manned aircraft to collect the same data. Since the sUAS is battery powered and not dependent on combustible fuel, flies with no people on board and operates at lower altitudes, it will greatly reduce the risk levels and enhance safety and diminish the likelihood of death or serious injury when compared to using conventional manned aircraft for the same aerial mapping and survey data collection missions.

Sincerely,

Sean L. Suttles
sUAS Project Manager
Lochmueller Group, Inc.