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

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

April 8, 2015

Exemption No. 11293
Regulatory Docket No. FAA–2014–0962

Mr. Mark E. McKinnon
Counsel for Erie Insurance Group
McKenna Long & Aldridge LLP
1676 International Drive Penthouse
McLean, VA 22102

Dear Mr. McKinnon:

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

The Basis for Our Decision

By letter dated November 14, 2014,[1] you petitioned the Federal Aviation Administration (FAA) on behalf of Erie Insurance Group (hereinafter petitioner or operator) for an exemption. The exemption would allow the petitioner to operate an unmanned aircraft system (UAS) to conduct research and development at its own facilities and property (2) surveys and inspections, and (3) risk assessment, risk management, loss prevention, and underwriting.

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.

[1] By letter dated February 13, 2015, and posted to the public docket on March 4, 2015, the petitioner responded to the FAA's request for information.

Airworthiness Certification

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

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

The Basis for Our Decision

You have requested to use a UAS for aerial data collection. 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, Erie Insurance Group 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.

Conditions and Limitations

In this grant of exemption, Erie Insurance Group 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 Plus 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 April 30, 2017, unless sooner superseded or rescinded.

Sincerely,

/s/
John Barbagallo
Acting Deputy Director, Flight Standards Service

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November 14, 2014

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

Re: Petition of Erie Insurance Group for an Exemption Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012

Dear Gentlemen:

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 ("Reform Act") and 14 C.F.R. Part 11, Erie Insurance Group ("Erie Insurance") hereby applies for an exemption from the Federal Aviation Regulations ("FARs") identified below, to allow commercial operations of small unmanned aerial vehicles (*i.e.,* "small unmanned aircraft" or "UAS").

This exemption is made based on information outlined in this petition, as well as the accompanying Erie Operations Manual ("Operations Manual") and the DJI Phantom 2 Vision Plus Flight and Maintenance Manuals. Erie Insurance submits these supporting materials as confidential documents pursuant to 14 C.F.R. § 11.35(b), as the materials contain confidential commercial and proprietary information that Erie has not and will not share with others. Additionally, these documents contain operating conditions and procedures that are not generally available to the public and are protected from release under the Freedom of Information Act, 5 U.S.C. § 552 *et seq.*, and any other requirements established by the FAA pursuant to Section 333 of the Reform Act.

For your convenience, this Petition is organized as follows:

I. Description of Petitioner
II. Types of Operations

I. Description of Petitioner

Erie Insurance Group consists of the Erie Insurance Exchange, Erie Indemnity Company, Erie Insurance Company, Erie Insurance Company of New York, Erie Insurance Property & Casualty Company, Flagship City Insurance Company and Erie Family Life Insurance Company (hereinafter collectively referred to as "Erie Insurance"). Operations began in 1925 when Erie Insurance Exchange began selling and issuing policies. Today, Erie Insurance sells insurance in Illinois, Indiana, Kentucky, Maryland, New York, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, Wisconsin and the District of Columbia. It has nearly five million policies in force for auto, home and commercial insurance. Erie Insurance is the 22nd largest property/casualty group based on Policyholder surplus, and the 16th largest property/casualty insurer in the United States based on total lines net premiums written. It is the 11th largest home insurer in the country. Erie Insurance currently has an A+ or superior rating for its property/casualty company from A.M. Best, a global credit rating agency with a unique focus on the insurance industry.

Erie Insurance seeks an exemption to further its long history of providing the best service to its customers and local communities. Erie Insurance intends to use UASs in three general areas. First, Erie Insurance seeks an exemption to conduct Research and Development ("R&D") using UASs. Second, it will employ UASs to promptly survey and inspect its policyholders' property following casualty events. Third, Erie Insurance seeks permission to use UASs to perform risk assessment, risk management, loss prevention, and underwriting for its policyholders.

Erie Insurance has an experienced UAS team encompassing a wide range of disciplines and skill sets to offer safe and effective services to its customers. The team includes experienced aviation system and inspection officials.

The contact information for Erie Insurance is as follows:

Gary Sullivan
Vice President for Property and Subrogation
Erie Insurance Group
100 Erie Insurance Place
Erie, PA 16530
Phone: (814) 870-6046

II. Types of Operations

A. Request to Use UASs for R&D and Training at Test Sites Owned or Controlled by Erie Insurance

Erie Insurance seeks the following exemptions to conduct training and research and development at its own facilities and property. The test areas will not be open to the public and access will be restricted to Erie Insurance's employees or consultants engaged in flight tests, training, maintenance, or test-related work. The primary focus of Erie Insurance's R&D efforts is to evaluate how to best incorporate the UAS into Erie Insurance's survey, inspection, risk assessment, loss prevention, and underwriting procedures.

B. Request to Use UASs for Survey and Inspection of Damage and Loss After Casualty Events

The second component of Erie Insurance's request for exemption focuses on its use of UAS after casualty events. Erie Insurance has a large response team that responds to catastrophes and casualty events. Currently, Erie Insurance's response team uses conventional methods to conduct its surveys and inspections for damages and loss after a casualty event. The methods include the use of individuals to conduct physical inspections and evaluations of claims. By their very nature, these methods are more time consuming and expensive and carry their own substantial safety risks.

Unfortunately, after casualty events, structures can be compromised, or access to portions of the property may be blocked due to flooding or debris. Sending a person in to inspect the upper portions of a damaged structure may not be practical or safe. These are the types of situations where UAS can provide a safe and effective alternative that not only permits an inspection, but can fully document the results.

C. Request to Use UASs for Risk Assessment, Risk Management, Loss Prevention, and Underwriting

Erie Insurance also seeks exemption to perform risk assessment, risk management, loss prevention and underwriting evaluations for its commercial and residential property policyholders. In particular, inspections and evaluations of the roofs of large commercial structures, or where the roof has an especially steep pitch, provides unique challenges. Currently, most such roofs have to be inspected by physically sending a person onto the structure using ladders. These inspections are time consuming and carry a number of different risks, all of which can be mitigated or eliminated through the use of UAS.

III. Relevant Statutory Authority

This Petition for Exemption is submitted pursuant to Section 333(a) through (c) of the FAA Modernization and Reform Act of 2012 ("Reform Act"). Congress has directed the FAA "to safely accelerate the integration of civil unmanned aircraft systems into the national airspace system." Pursuant to Section 333 of the Reform Act, the FAA Administrator is to permit unmanned aircraft systems to operate in the National Air Space ("NAS") where it is safe to do so based on the following considerations:

- The UAS's size, weight, speed and operational capability;
- Operation of the UAS in close proximity to airports and populated areas; and
- Operation of the UAS within the visual line of sight of the operator.[1]

Additionally, the FAA Administrator has general authority to grant exemptions from the agency's safety regulations and minimum standards when the Administrator decides a requested exemption is in the public interest. *See* 49 U.S.C. § 106(f) (defining the authority of the Administrator); 49 U.S.C. § 44701(f) (permitting exemptions from §§ 44701(a), (b) and §§ 44702 – 44716, *et seq.*). A party requesting an exemption must explain the reasons why the exemption: (1) would benefit the public as a whole, and (2) would not adversely affect safety (or how it would provide a level of safety at least equal to the existing rules). *See* 14 C.F.R. § 11.81 (petitions for exemption).

IV. Erie Insurance's Proposed UAS Operations Meet the Requirements of Section 333 of the Reform Act

Erie Insurance's proposed operations in this Petition for Exemption qualify for expedited approval pursuant to Section 333 of the Reform Act as each of the statutory criteria and relevant factors are satisfied.

A. Approval is Warranted Based on the UAS's Size, Weight, Speed, and Operational Capability

Erie Insurance will employ the DJI Phantom 2 Vision Plus quadcopter for the operations specified in this Petition for Exemption. This UAS has a maximum take-off weight of less than 3 pounds. The flight speed will not exceed 35 miles per hour, and it will not be flown in controlled airspace or at an altitude that exceeds 400 feet AGL. All flights will be flown in such a way that they can be safely terminated with a reserve battery power of 25% of the battery's maximum charge.

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[1] *Id.* at 333(b)(1).

The DJI Phantom Vision II Plus does not carry any flammable propellant or fuel. The UAS also has an integrated GPS system that calculates the UAS's position and height and relays that information via a secure connection to the operator. Additionally, the UAS contains a failsafe mode if its connection to the remote control is lost, and this system permits the UAS to return to a predetermined location and land without injury or damage.

B. Approval is Warranted Based on the Operational Restrictions Set Forth in the Operations Manual

The Erie Insurance Operations Manual and the DJI's maintenance and flight manuals contain all of the procedures and limitations necessary to successfully perform the operations specified in this Petition for Exemption. To assist the FAA in making a safety assessment of Erie Insurance's operations, below is a summary of operational limitations and conditions which will ensure an equivalent or higher level of safety for operations conducted under current regulatory guidelines:

1. The UAS weighs 5 pounds or less.

2. Flights will be operated within the visual line of sight of a pilot and an observer.

3. Maximum total flight time for each operational flight will be limited to the amount of time the UAS can be flown and still maintain a reserve battery power of no less than 25%.

4. Flights will be operated at an altitude of no more than 400 feet AGL and will not be conducted within navigable airspace.

5. Flights will be operated at a lateral distance of at least 200 feet from any persons, inhabited structures, vehicles or vessels that are not involved in the inspection unless permission has been received from the persons or property owners in advance.

6. Flights will be limited to a speed of 35 m.p.h. and vertical ascent will be limited to 15 m.p.h.

7. Minimum crew for each operation will consist of the UAS Pilot, one or more Visual Observers as necessary to safely conduct the mission, and a Sensor Operator, if the sensor requires human direction or control.

8. The observer designated for any operation will be in constant voice contact with the pilot.

9. The UAS will operate in accordance with the requirements of its flight and maintenance manuals.

10. Prior to the operation, a Mission Plan will be created setting forth the limitations for the flight as well as contact and hazard information.

11. A NOTAM will be issued not more than 72 hours in advance of flight, but not less than 48 hours before flight.

12. A Certificate of Authorization will be obtained prior to flight.

13. All required permissions and permits will be obtained from territorial, state, county or city jurisdictions, including local law enforcement, fire or other appropriate governmental agencies.

14. The operator will coordinate all flights with the appropriate Flight Standards District Office.

15. If the UAS loses communication with the pilot, it will have the capability to return to a pre-determined location within the operational area and land.

16. Contingency plans will be in place to safely terminate flight if there is a loss of communication between the pilot and the observer.

17. The UAS will have the capability to abort flight in the case of unpredicted obstacles or emergencies.

18. Both the Pilot and Observer will have a current Class III Medical Certificate

V. REGULATIONS FROM WHICH EXEMPTION IS REQUESTED

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 UASs, from its safety regulations and minimum standards when the Administrator decides a requested exemption is in the public interest.[2]

Erie Insurance seeks an exemption from several interrelated provisions of 14 C.F.R. Parts 21, 45, 61 and 91 for purposes of conducting the requested operations using a UAS. Listed below are (1) the specific sections of 14 C.F.R. for which exemption is sought, and (2) the

[2] *See* 49 U.S.C. § 44701(f) (authorizing the grant of exemptions from requirements of regulations prescribed pursuant to Sections 44701(a) and (b) and Sections 44702 - 44716).

operating procedures and safeguards that Petitioner has established which will ensure a level of safety better than or equal to the rules from which exemption is sought.[3]

A. 14 C.F.R. Part 21, Subpart H – Airworthiness Certificates and 14 C.F.R. § 91.203(a)(1)

The FAA has stated that no exemption is needed from this section if a finding is made under the Reform Act that the UAS selected provides an equivalent level of safety when compared to aircraft normally used for the same application. These criteria are met, and therefore no exemption is needed. *See* Grant of Exemption to Astraeus Aerial, Docket No. FAA-2014-0352 at 13-14, 22. If, however, the FAA determines that there are some characteristics of the chosen UAS that fail to meet the requirements of the Reform Act, an exemption is requested.

Equivalent Level of Safety

The UASs selected by Erie is safe when taking into account their size, weight, speed, and operational capability. As set forth in Section II, *Supra*, the UAS weighs less than 5 pounds and will be flown at less than 35 miles per hour and completely outside controlled airspace. Additionally, the UASs carry neither pilots nor passengers, carry no explosive materials and or flammable liquid fuels, and operate exclusively within the parameters stated in the Operations Manual.

Operations under this exemption will be closely controlled and monitored by the operator and will be conducted in compliance with local public safety requirements, to provide security for the area of operation. Erie Insurance will also provide the FAA with advance notice of all operations via NOTAMS and coordination with the local FSDO. In all cases, the UAS operated under the proposed conditions, will be at least as safe as, or safer than conventional rotorcraft operating with an airworthiness certificate without the restrictions and conditions of the proposed UAS operations.

The UAS does not need a means to communicate with other aircraft or ATC, because those capabilities will be possessed by the pilot and observer, who are not onboard. *See* Grant of Exemption, Docket FAA-2014-0352 at 13. In addition, no sense and avoid technology is necessary on the UAS because it will be operated at all times by visual line-of-sight. *Id.*

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[3] *See* 14 C.F.R. § 11.81(e), which requires a petition for exemption to include:

> The reasons why granting the exemption would not adversely affect safety, or how the exemption would provide a level of safety at least equal to that provided by the rule from which you seek exemption.

B. 14 C.F.R. Part 27 Airworthiness Standards: Normal Category Rotorcraft

14 C.F.R. Part 27 sets forth the procedural requirements for airworthiness certification of normal category rotorcraft. To the extent the Petitioner's UAS would otherwise require certification under Part 27, Petitioner seeks an exemption from Part 27's airworthiness standards for the same reasons identified in the request for exemption from 14 C.F.R. Part 21, Subpart H, *supra*.

C. 14 C.F.R. §§ 91.9(c), 45.23(b) and 45.27(a): Aircraft Marking and Identification Requirements

Erie Insurance seeks an exemption from the aircraft marking and identification requirements contained in 14 C.F.R. §§ 91.9(c), 45.23(b) and 45.27(a).

- 14 C.F.R. § 91.9(c), Civil Aircraft Flight Manual, Marking and Placard requirements, provides that:

  > No person may operate a U.S.-registered civil aircraft unless that aircraft is identified in accordance with Part 45 of this chapter.

- 14 C.F.R. § 45.23(b), Markings of the Aircraft, states:

  > When marks include only the Roman capital letter "N" and the registration number is displayed on limited, restricted or light-sport category aircraft or experimental or provisionally certificated aircraft, the operator must also display on that aircraft near each entrance to the cabin, cockpit, or pilot station, in letters not less than 2 inches nor more than 6 inches high, the words "limited," "restricted," "light-sport, "experimental," or "provisional," as applicable.

- 14 C.F.R. § 45.27(a), Rotorcraft, states:

  > Each operator of a rotorcraft must display on that rotorcraft horizontally on both surfaces of the cabin, fuselage, boom, or tail the marks required by § 45.23.

In a previous Grant of Exemption, the FAA determined that exemption from these requirements was warranted provided that the aircraft "have identification (N-Number) markings in accordance with 14 C.F.R part 45, Subpart C if the markings are as large as practicable." FAA Docket No. FAA-2014-0352.

Equivalent Level of Safety

Erie Insurance will mark all aircraft with their N-Number in a prominent spot on the fuselage with markings that are as large as practicable.

D. 14 C.F.R. § 91.9(b)(2): Civil Aircraft Flight Manual in the Aircraft and 14 C.F.R. § 91.203(a) and (b): Carrying Civil Aircraft Certification and Registration

Pursuant to 14 C.F.R. § 91.9(b)(2):

(b) No person may operate a U.S.-registered civil aircraft –

...

(2) For which an Airplane or Rotorcraft Flight Manual is required by § 21.5 of this chapter, unless there is available in the aircraft a current approved Airplane or Rotorcraft Flight Manual, approved manual material, markings, and placards, or any combination thereof.

Pursuant to 14 C.F.R. § 91.203(a) and (b):

(a) Except as provided in § 91.715, no person may operate a civil aircraft unless it has within it the following:

(1) An appropriate and current airworthiness certificate...

(b) No person may operate a civil aircraft unless the airworthiness certificate required by paragraph (a) of this section or a special flight authorization issued under § 91.715 is displayed at the cabin or cockpit entrance so that it is legible to passengers or crew.

Erie Insurance does not request an exemption from this section but instead notifies the FAA that, in accordance with FAA Office of Chief Counsel's Opinion dated August 8, 2014, the UAS flight manual, registration certificate and other documentation will be kept at the control station with the PIC during flight. The Chief Counsel's Office has held that for all UAS operations, this alternate method constitutes full compliance with the regulations.

E. 14 C.F.R. § 91.7(a): Civil Aircraft Airworthiness

Erie Insurance seeks an exemption from 14 C.F.R. § 91.7(a), which requires that a civil aircraft be in airworthy condition to be operated. The FAA has stated that no exemption is required to the extent that the requirements of Part 21 are waived or found inapplicable.

Accordingly, Petitioner requests that the requirements for Section 91.7 be treated in accordance with Section V(A), *supra.*

F. 14 C.F.R. § 91.103: Preflight Action

Erie Insurance seeks an exemption from 14 C.F.R. § 91.103, which requires a PIC to become familiar with specific information before each flight, including information contained in the FAA-approved Flight Manual on board the aircraft. While the PIC will be familiar with all information necessary to safely conduct the flight, an exemption is requested to the extent that an FAA-approved Flight manual is required.

Equivalent Level of Safety

An equivalent level of safety will be provided by following the Aircraft Operations Manual and flight manual provided by the manufacturer. The PIC will take all required preflight actions - including performing all required checklists and reviewing weather, flight requirements, battery charge, landing and takeoff distance, aircraft performance data, and contingency landing areas - before initiation of flight. The Operations Manual and manufacturer's flight manual will be kept at the ground station with the operator at all times.

G. 14 C.F.R. § 91.109(a): Flight Instruction

Erie Insurance seeks an exemption from 14 C.F.R. § 91.109(a), which provides that "[n]o 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." UASs and remotely piloted aircraft, by their design, do not have functional dual controls. Instead, flight control is accomplished through the use of a device that communicates with the aircraft via radio communications.

Equivalent Level of Safety

Given the size and speed of the UAS employed by Erie Insurance, an equivalent level of safe training can still be performed without dual controls because no pilot or passengers are aboard the UAS, and all persons will be a safe distance away in the event that the UAS experiences any difficulties during flight instruction. In addition, Petitioner will conduct flight training at its Research and Development test sites, which are located on its own property. These training flights will be conducted in a sterile area and will otherwise comply with the provisions in the Operations Manual for flights at the R&D facility. Accordingly, Erie Insurance's proposed method of operation provides superior levels of safety.

H. 14 C.F.R. § 91.119: Minimum Safe Altitudes

Erie Insurance requests an exemption from the minimum safe altitude requirements of 14 C.F.R. § 91.119. Section 91.119 prescribes the minimum safe altitudes under which aircraft may not operate, including 500 feet above the surface and away from any person, vessel, vehicle, or structure in non-congested areas. *See* 14 C.F.R. § 91.119(c). Section 91.119(d) allows for a helicopter to operate at less than those minimum altitudes when it can be operated "without hazard to persons or property on the surface," provided that "each person operating the helicopter complies with any routes or altitudes specifically prescribed for helicopters by the FAA."

Equivalent Level of Safety

Compared to flight operations with rotorcraft weighing far more than the maximum weights proposed herein, and given the lack of flammable fuel, any risk associated with these operations is far less than those that presently exist with conventional aircraft. An equivalent level of safety will be achieved given the size, weight, and speed of the UAS, as well as the location where it is operated. In order to avoid any risk to aircraft, flight operations will be restricted to 400' AGL or below. As set forth in the Manuals, the UASs will be operated in a restricted area, away from persons or structures not involved in the operation.

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

This petition seeks an exemption from 14 C.F.R. § 91.121, which requires a person operating an aircraft to maintain cruising altitude or flight level by reference to an altimeter that is set to the elevation of the departure airport or barometric pressure. An exemption is required to the extent that the UASs do not have a barometric altimeter, but rather a GPS altitude read out.

Equivalent Level of Safety

The FAA has stated that an equivalent level of safety can be achieved if the UASs will be operated at 400' AGL or below and within visual line-of-sight in addition to GPS based altitude information relayed in real time to the operator. *See* Grant of Exemption to Astraeus Aerial, Docket No. FAA-2014-0352. As the attached Operations Manual indicates, the chosen UASs meets these requirements, and a zero altitude initiation point will be obtained prior to flight.

J. 14 C.F.R. § 91.151(a): Fuel Requirements for Flight in VFR Conditions

Erie Insurance requests an exemption from 14 C.F.R. § 91.151(a)'s fuel requirements for flight in VFR conditions. Section 91.151 states:

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

(1) During the day, to fly after that for at least 30 minutes; or

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

Here, the technological limitations on UAS battery power means that no meaningful flight operations can be conducted while still maintaining a 30 minute reserve. Erie Insurance proposes that all flights comply with this requirement by mandating that the aircraft be safely landed with no less than 25% of battery life remaining.

Equivalent Level of Safety

The FAA has stated that an equivalent level of safety is provided if the UAS flight is terminated with at least 25% reserve battery power still available. *See* Grant of Exemption to Astraeus Aerial, Docket No. FAA-2014-0352. The Operations Manual conforms to this limit, providing an equivalent level of safety.

K. 14 C.F.R. § 91.405(a), 91.407(a)(1), 91.409(a)(2); 91.417(a) and (b): Maintenance Inspections

Erie Insurance seeks an exemption from the maintenance inspection requirements contained in 14 C.F.R. § 91.405(a), 91.407(a)(1), 91.409(a)(2); 91.417(a) and (b). These regulations specify maintenance and inspection standards in reference to 14 C.F.R. Part 43. *See, e.g.,* 14 C.F.R. § 91.405(a) (stating that each owner or operator of an aircraft "[s]hall have the aircraft inspected as prescribed in subpart E of this part and shall between required inspections …have discrepancies repaired as prescribed in part 43 of this chapter"). An exemption from these regulations is needed because Part 43 and these sections only apply to aircraft with an airworthiness certificate, which the UAS will not have.

Equivalent Level of Safety

An equivalent level of safety will be achieved because maintenance and inspections will be performed in accordance with the UAS Manufacturer's Manual, as referenced in the Operations Manual. As provided in the Operations Manual, flights will not be conducted unless a flight operations checklist is performed that includes all of the aircraft's components. The Operations Manual also sets requirements for maintenance log books and record keeping as well as routine and post-flight maintenance. The Manual sets requirements for appropriate maintenance intervals.

L. 14 CFR Part 61, 14 CFR 61.3, 14 CFR § 61.113: Private Pilot Privileges And Limitations

Petitioner seeks exemption from 14 CFR Part 61, including 14 CFR § 61.3 to the extent that these regulations require a UAS operator to have a private pilot's certificate. The purpose of Part 61 is to ensure the skill and competency of any PIC matches the airspace in which the PIC will be operating. Petitioner has concerns that the training and education of persons obtaining a private or commercial pilots license is not an adequate match for UAS operation in low altitude environments, particularly given the vast differences in the control and flight profiles between conventional aircraft and UAS. Accordingly, Petitioner believes that a requirement for a private pilot's license is unnecessary.

In addition, Erie Insurance seeks exemption from 14 C.F.R § 61.113, which restricts private pilot certificate holders from flying aircraft for compensation or hire, and which would also require a second class medical certificate. The purpose of this section is to ensure the skill and competency of any PIC where the aircraft is carrying passengers or cargo for hire. In this case, while the UAS will be operated as part of a commercial operation, it carries neither passengers nor cargo. In the Grant of Exemption in FAA Docket No. FAA-2014-0352, the FAA determined that the unique characteristics of UAS operation outside of controlled airspace did not warrant the additional cost and restrictions attendant with requiring a the PIC to have a commercial pilot certificate and class II medical certificate.

Equivalent Level of Safety

Petitioner seeks to ensure safe operation by ensuring that any PIC is thoroughly versed in airspace and communication issues pertaining to all aircraft operators but also in the unique aspects of UAS flight. Accordingly, as set forth in the Operations Manual, Erie Insurance will require all PIC to have completed FAA authorized ground school instruction and also to have 250 hours of logged flight time in a UAS of the same class as will be used for Flight Operations (i.e. quadcopter, fixed wing, etc.). In addition, Erie Insurance will require all PIC to have logged at least 50 hours of flight time in the specific UAS used for the Flight Operation. Finally, Erie Insurance will require that all PIC remain current, and have logged no less than 3 flight cycles and five hours flight time within the last 90 days prior to any Flight Operation. Finally, in order to meet the stated national security goal outlined by Congress in the 2012 FAA Reform Act, Erie Insurance will require all PIC to pass a criminal background check at the time of hiring.

In addition to the training and experience requirements, Erie Insurance has placed restrictions on its Flight Operations to ensure an extra margin of safety. The UAS will operate in a sterile area away from persons and property not involved in the operation. It will be flown based on VLOS at 400' AGL or below. A NOTAM will be issued between 48 and 72 hours before the flight is to occur, and the flight will be coordinated with the applicable FSDO.

In the event that the FAA determines that a waiver of 14 CFR § 61.3 is inappropriate, Erie Insurance requests that the Exception from 14 CFR § 61.113 still be granted. The training and currency standards set forth by Erie Insurance in the attached Operations Manual are more than adequate to provide the extra margin of safety to allow a private pilot to act as a pilot for compensation or hire

VI. Drug and Alcohol Program

Erie Insurance has policies in place to ensure that no person may act as a PIC, observer, or sensor operator if they are under the influence of alcohol or any drug.

VII. Public Interest

The public interest will be served by granting Erie Insurance's Petition for Exemption. Congress has established a national policy that favors early integration of UAS into the NAS in controlled, safe working environments such as those proposed in this Petition. In addition, the public also has an interest in reducing the hazards associated with alternate methods of conducting similar inspection operations. Currently inspections are conducted using inspection teams physically climbing onto structures using ladders. By using a UAS, an inspector will be able to reduce his or her exposure to physical hazards by conducting the inspection while remaining safely on the ground.

Additionally, Erie Insurance's intended uses for the UAS have identifiable benefits for its policyholders and the communities it serves. Erie Insurance will be able to inspect, survey, and document the condition of its policyholders' property after a casualty event safely, thoroughly, and efficiently. This will allow Erie Insurance to evaluate and process claims more efficiently after an event and ensure that its policyholders can receive the money necessary to recover and rebuild. The UAS work will also aid in Erie Insurance's risk assessment, risk management, loss prevention and underwriting programs. These programs prevent accidents and injuries, and there is a strong public interest in making these programs more effective through the use of UASs.

VIII. Privacy

All flights will be conducted in accordance with any federal, state or local laws regarding privacy. In addition, Erie will adopt a series of standards to protect the privacy rights of persons impacted by the UAS operations.

IX. Federal Register Summary

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

Erie Insurance Group seeks an exemption from the following rules:

14 CFR Part 21, Subpart H; 14 CFR Part 27; 14 CFR 45.23(b); 14 CFR Part 61, 14 CFR 61.3, 14 CFR § 113; 14 CFR 91.7(a); 14 CFR 91.9(b)(2); 14 CFR 91.103; 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)(2); 14 CFR 91.417 (a) & (b).

The exemption will enhance safety by reducing risk to the general public and property owners from the substantial hazards associated with performing equivalent work with conventional aircraft, rotorcraft, or other methods.

X. CONCLUSION

Erie Insurance Group's Petition for Exemption satisfies the criteria articulated in Section 333 of the Reform Act of 2012 including weight, speed, operating capabilities, proximity to airports and populated areas, operation within visual line of sight and national security. Additionally, the Petition provides more than adequate justification for the grant of the requested exemptions to permit Erie Insurance to operate the selected UAS for the operations specified herein.

Granting the exemption will benefit the public interest as a whole in several ways, including (1) significantly improving safety and reducing risk by alleviating human exposure to danger, and (2) improving the quality of services and decreasing operating costs compared with conventional flight operations.

Very truly yours,

Mark E. McKinnon

Attachments: Erie Insurance Group UAS Operations Manual; UAS Maintenance and Flight Manuals (submitted as a Confidential Document under 14 C.F.R. § 11.35(b) and exempt from disclosure under the Freedom of Information Act, 5 U.S.C. § 552 *et seq.*, and any other requirements established by the FAA pursuant to Section 333 of the Reform Act).