Exemption No. 11185

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, DC 20591

In the matter of the petition of

COMMONWEALTH EDISON COMPANY

for an exemption from part 21 Subpart H; §§ 43.7; 43.11; 45.11; 45.23(b); 45.25; 45.29; 47.3(b)(2); 47.31(c); 91.9(b)(2) and (c); 91.103(b)(2); 91.105; 91.109; 91.113(b); 91.115; 91.119(b) and (c); 91.121; 91.151; 91.203(a)(1) and (2); 91.215; 91.319(a)(1); 91.403; 91.405; 91.407; 91.409; and 91.417 of Title 14, Code of Federal Regulations

Regulatory Docket No. FAA-2014-0855

GRANT OF EXEMPTION

By letter dated October 15, 2014, Ms. Linda G. Rhodes, CSP, of Commonwealth Edison Company (hereinafter Petitioner or Operator), 2 Lincoln Centre, Oakbrook Terrace, IL 60181, petitioned the Federal Aviation Administration (FAA) for an exemption from part 21, specifically Subpart H; §§ 43.7, 43.11, 45.11, 45.23(b), 45.25, 45.29, 47.3(b)(2), 47.31(c), 91.9(b)(2) and (c), 91.103(b)(2), 91.105, 91.109, 91.113(b), 91.115, 91.119(b) and (c), 91.121, 91.151, 91.203(a)(1) and (2), 91.215, 91.319(a)(1), 91.403, 91.405, 91.407, 91.409, and 91.417 of Title 14, Code of Federal Regulations (14 CFR). The exemption would allow Commonwealth Edison to operate DJI Innovations S900 unmanned aircraft systems (UAS) for the purpose of electric transmission and distribution utility system monitoring, inspections, and damage assessments.

The petitioner requests relief from the following regulations:

Part 21, specifically subpart H, prescribes, in pertinent part, the procedural requirements for issuing and changing design approvals, productions approvals, airworthiness certificates, and airworthiness approvals.

Section 43.7 prescribes, in pertinent part, the procedural requirements for approval of an aircraft, airframe, aircraft engine, propeller, appliance, or component part for return to service after it has undergone maintenance, preventive maintenance, rebuilding, or alteration.

Section 43.11 prescribes, in pertinent part, information required to be documented by the person approving or disapproving for return to service an aircraft, airframe, aircraft engine, propeller, appliance, or component part after any inspection performed in accordance with part 91, 125, §135.411(a)(1), or §135.419.

Section 45.11 prescribes, in pertinent part, information and process required, by product manufacturers, for the fireproof marking of products such as aircraft, gliders, free balloons, aircraft engines, propellers and propeller blades and hubs, to include the information required in §45.13.

Section 45.23(b) prescribes, in pertinent part, that 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.

Section 45.25 prescribes, in pertinent part, the location of nationality and registration marks on fixed-wing aircraft.

Section 45.29 prescribes, in pertinent part, that each operator of an aircraft must display marks on the aircraft meeting the size requirements of this section.

Section 47.3(b)(2) prescribes that no person may operate an aircraft that is eligible for registration under 49 U.S.C. 44101-44104, unless the aircraft is carrying aboard the temporary authorization required by §47.31(c).

Section 47.31(c) prescribes that after compliance with paragraph (a) of the section, the applicant for registration of an aircraft last previously registered in the United States must carry the second copy of the Aircraft Registration Application in the aircraft as temporary authority to operate without registration.

(1) This temporary authority is valid for operation within the United States until the date the applicant receives the Certificate of Aircraft Registration or until the date the FAA denies the application, but in no case for more than 90 days after the date the applicant signs the application. If by 90 days after the date the applicant signs the Aircraft Registration Application, the FAA has neither issued the Certificate of Aircraft Registration nor denied the application, the Registry will issue a letter of extension that serves as authority to continue to operate the aircraft without registration while it is carried in the aircraft.

(2) This temporary authority is not available in connection with any Aircraft Registration Application received when 12 months have passed since the receipt of the first application following transfer of ownership by the last registered owner.

(3) If there is no registration number assigned at the time application for registration is made, the second copy of the Aircraft Registration Application may not be used as temporary authority to operate the aircraft.

Section 91.9(b)(2) prohibits operation of U.S.-registered civil aircraft 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.

Section 91.9(c) Civil aircraft flight manual, marking, and placard requirements. (c) No person may operate a U.S.-registered civil aircraft unless that aircraft is identified in accordance with part 45 of this chapter.

Section 91.103(b)(2) Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight. This information must include—

(b) For any flight, runway lengths at airports of intended use, and the following takeoff and landing distance information:

(2) For civil aircraft other than those specified in paragraph (b)(1) of this section, other reliable information appropriate to the aircraft, relating to aircraft performance under expected values of airport elevation and runway slope, aircraft gross weight, and wind and temperature.

Section 91.105 prescribes, in pertinent part, requirements for flight crewmembers at stations including use of the seatbelt and shoulder harness during takeoff and landing

Section 91.109 prescribes, in pertinent part, 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.

Section 91.113(b) Right-of-way rules: Except water operations.

(b) *General.* When weather conditions permit, regardless of whether an operation is conducted under instrument flight rules or visual flight rules, vigilance shall be maintained by each person operating an aircraft so as to see and avoid other aircraft. When a rule of this section gives another aircraft the right-of-way, the pilot shall give way to that aircraft and may not pass over, under, or ahead of it unless well clear.

Section 91.115 *Right-of-way rules: Water operations.*

(a) General. Each person operating an aircraft on the water shall, insofar as possible, keep clear of all vessels and avoid impeding their navigation, and shall give way to any vessel or other aircraft that is given the right-of-way by any rule of this section.

(b) Crossing. When aircraft, or an aircraft and a vessel, are on crossing courses, the aircraft or vessel to the other's right has the right-of-way.

(c) Approaching head-on. When aircraft, or an aircraft and a vessel, are approaching head-on, or nearly so, each shall alter its course to the right to keep well clear.

(d) Overtaking. Each aircraft or vessel that is being overtaken has the right-of-way, and the one overtaking shall alter course to keep well clear.

(e) Special circumstances. When aircraft, or an aircraft and a vessel, approach so as to involve risk of collision, each aircraft or vessel shall proceed with careful regard to existing circumstances, including the limitations of the respective craft.

Section 91.119(b)(c) prescribes that, except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes:

(b) *Over congested areas*. Over any congested area of a city, town, or settlement, or over any open air assembly of persons, an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft.

(c) *Over other than congested areas*. An altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure.

Section 91.121 prescribes, in pertinent part, each person operating an aircraft to maintain cruising altitude by reference to an altimeter that is set "to the elevation of the departure airport or an appropriate altimeter setting available before departure."

Section 91.151prescribes that no person may begin a flight in an airplane under visual flight rules (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.

Section 91.203(a)(1) prescribes, in pertinent part, that no person may operate a civil aircraft unless it has within it—

(1) An appropriate and current airworthiness certificate.

Section 91.203(a)(2) prescribes, in pertinent part, that no person may operate a civil aircraft unless it has within it—

(2) An effective U.S. registration certificate issued to its owner or, for operation within the United States, the second copy of the Aircraft Registration Application as provided for in § 47.31(c), or a registration certification issued under the laws of a foreign country.

(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.

Section 91.215 prescribes, in pertinent part, ATC transponder and altitude reporting equipment and use for all aircraft in all classes of airspace.

Section 91.319(a)(1), *Aircraft having experimental certificates: Operating limitations*, prescribes in pertinent part that no person may operate an aircraft that has an experimental certificate for other than the purpose for which the certificate was issued.

Section 91.403 *Maintenance, Preventive Maintenance, and Alterations*

(a) The owner or operator of an aircraft is primarily responsible for maintaining that aircraft in an airworthy condition, including compliance with part 39 of this chapter.

(b) No person may perform maintenance, preventive maintenance, or alterations on an aircraft other than as prescribed in this subpart and other applicable regulations, including part 43 of this chapter.

(c) No person may operate an aircraft for which a manufacturer's maintenance manual or instructions for continued airworthiness has been issued that contains an airworthiness limitations section unless the mandatory replacement times, inspection intervals, and related procedures specified in that section or alternative inspection intervals and related procedures set forth in an operations specification approved by the Administrator under part 121 or 135 of this chapter or in accordance with an inspection program approved under §91.409(e) have been complied with.

(d) A person must not alter an aircraft based on a supplemental type certificate unless the owner or operator of the aircraft is the holder of the supplemental type certificate, or has written permission from the holder.

Section 91.405 requires, in pertinent part, that an aircraft operator or owner shall have that aircraft inspected as prescribed in subpart E of the same part and shall, between required inspections, except as provided in paragraph (c) of the same section, have discrepancies repaired as prescribed in part 43 of the chapter.

Section 91.407 prohibits, in pertinent part, any person from operating an aircraft that has undergone maintenance, preventive maintenance, rebuilding, or alteration unless it has been approved for return to service by a person authorized under § 43.7 of the same chapter.

Section 91.409 prescribes that no person may operate any aircraft unless, within the preceding 12 calendar months, it has had an inspection for the issuance of an airworthiness certificate in accordance with part 21 of this chapter.

Section 91.417 prescribes, in pertinent part, that—

(a) Each registered owner or operator shall keep records of the maintenance, preventive maintenance, and alteration and records of the 100-hour, annual, progressive, and other required or approved inspections, as appropriate, for each aircraft (including the airframe) and each engine, propeller, rotor, and appliance of an aircraft;

(b)The owner or operator shall retain records for the periods prescribed;
(c) The owner or operator shall make all maintenance records required to be kept by this section available for inspection by the Administrator or any authorized representative of the National Transportation Safety Board (NTSB).

(d) When a fuel tank is installed within the passenger compartment or a baggage compartment pursuant to part 43 of this chapter, a copy of FAA Form 337 shall be kept on board the modified aircraft by the owner or operator.

The petitioner supports its request with the following information:

The petitioner proposes to operate the DJI Innovations S900 (DJI S900) UAS to conduct electric transmission and distribution utility system monitoring, inspections, and damage assessments. See Appendix A for the petition submitted to the FAA describing the proposed operations.

The DJI S-900 is a six rotor hexacopter and electrically powered by lithium polymer batteries. It weighs less than 8 pounds, with a maximum operating weight of 18 pounds.

The petitioner has provided the following information to support its request for an exemption, which includes proprietary supporting documents:

1) Commonwealth Edison S-900 Safety Job Briefing and Job Turnover Process;
2) Commonwealth Edison Safety Personal Protective Equipment Program;
3) Commonwealth Edison Time Out for Safety;
4) Commonwealth Edison DJI S-900 Pilot Operating Handbook; and
5) Commonwealth Edison UAV Aerial Inspection Flight Briefing Sheet.

Discussion of Public Comments:

A summary of the petition was published in the Federal Register on November 13, 2014 (79 FR 67537). The petition received four comments. The Small UAV Coalition (Coalition) and the Edison Electric Institute (EEI) supported the petition, and the Air Line Pilots Association, International (ALPA) and the National Agricultural Aviation Association (NAAA) opposed it.

In support of the petition, the Coalition stated the petitioner has proposed to abide by stronger safety measures than hobby and modeler groups operating similar aircraft. The Coalition stated that it does not believe that heightened safety measures should be required for the petitioner simply because of the commercial nature of its operations. The Coalition urged the FAA to adopt an evaluation framework for UAS operations under section 333 of Pub. L. 112–95 that weighs the relative safety issues and risks of UAS by class and operational

circumstances, rather than adopting artificial distinctions among unmanned aerial vehicles based on commercial and noncommercial operations. The Coalition suggested FAA safety regulations be proportionate to the risks posed by the particular proposed UAS operations by distinguishing between UAS. The petitioner's UAS pose considerably less safety risk than larger UAS. The Coalition asserted that because UAS operations like the petitioner's pose minimal risk to safety, they should be subject to minimal and appropriate regulations.

The Coalition noted the FAA is to consider the seven factors[1] in section 333 as a minimum. The Coalition stated the petition shows the FAA should consider factors other than those specified in section 333, such as the location and altitude of its small UAS. The Coalition maintained that the petitioner's proposed operations satisfy the seven factors in section 333 and include several additional mitigating factors to ensure the safety and security of the proposed UAS operations. The Coalition emphasized the FAA must evaluate each factor within the context of the petitioner's proposed UAS operations.

The Coalition also commented that the FAA should grant relief from the requirement to hold an airman's certificate, but stated that at a minimum the FAA should provide an exception from part 61 and approve training and testing regiments that pertain to UAS commercial operations pertinent to the aircraft and operation proposed. The Coalition also asserted that Congress intended the section 333 national security criterion to focus on the operation rather than on the pilot and that shifting that focus imposes an unnecessary burden.

In response, as discussed in the grant of exemption to Trimble Navigation Ltd. (Exemption No. 11110), neither section 333 nor the FAA's authority to exempt from its regulations found in 49 USC § 44701(f), authorizes the FAA to provide exemption to the statutory requirement to hold an airman certificate as prescribed in 49 USC § 44711. The FAA notes that under this exemption the petitioner proposed to use pilots holding private certificates and it will be able to use the training program it proposed. Finally, the FAA does not agree that relying on the pilot certificate for a national security finding poses an unnecessary burden because pilots under this exemption, and the exemptions granted previously to section 333 requests, are already required to hold a pilot certificate to satisfy 49 USC § 44711.

The Coalition commented that a visual observer (VO) should not be required for all small UAS operation. The Coalition further asserted that the presence of one or more VOs may allow the UAS to be operated beyond visual line of sight (VLOS) of the pilot in command (PIC) and that the petitioner's proposal to operate the unmanned aircraft (UA) within VLOS

[1] Section 333(b) of P.L. 112-95 states, in part: "In making the determination under subsection (a), the Secretary shall determine, at a minimum-- (1) which types of unmanned aircraft systems, if any, as a result of their size, weight, speed, operational capability, proximity to airports and populated areas, and operation within visual line of sight do not create a hazard to users of the national airspace system or the public or pose a threat to national security; …"

of the PIC *and/or* VO should be permitted. The FAA notes that one of the determinations for operations under section 333 is operation within visual line of sight. As the PIC is determined to be in command of the UA, he must maintain VLOS while operating the UA. The FAA also notes that a VO complements the PICs capability to see and avoid other aircraft, including when the PIC may be momentarily attending to other flying tasks. The VO provides an additional level of operational safety.

In support of the petition, EEI noted the petitioner will work with the Illinois Institute of Technology to conduct trial operations of the DJI Innovations S900 for the limited purpose of researching utility system monitoring by small UAS in a remote area of Cook and Will Counties, Illinois. EEI asserted that the research would evaluate the performance of the UAS technology in hard-to-access areas, including the assessment of storm damage of the Commonwealth Edison electric transmission and distribution system. EEI further asserted that the use of a small UAS would allow utility workers to conduct inspections without being in close proximity to high-voltage equipment or subject to the hazards of working at heights. They can also facilitate the safe inspection of hard-to-access or environmentally sensitive areas without the use of bucket trucks, helicopters, and other utility vehicles.

ALPA expressed concern regarding several aspects of the petition. ALPA noted the petitioner's reference to operations conducted over property that is owned or controlled by Commonwealth Edison. ALPA noted that the petitioner did not provide detail procedures for controlling the airspace or area of operation. Specifically, ALPA stated "there must be means both to ensure that the sUAS remains within the defined airspace and to ensure that the hazard of other aircraft intruding on the operation is mitigated." The FAA believes the limitations under which the petitioner will operate (i.e. VLOS and at or below 400 feet above ground level (AGL)) are sufficient mitigations to this risk so that the operations will not adversely affect safety.

Regarding the petitioner's statement that the PIC and observer will be able to communicate by voice or text, ALPA stated that the pilot and observer should be able to maintain a visual observation of the aircraft and area of operation when using voice communication. NAAA stated UAS observers must be present and able to communicate with the operator from the most minimal distance possible. The FAA has inserted a condition regarding PIC and VO communications.

ALPA asserted the UAS's lithium polymer batteries have numerous associated fire and explosion hazards as outlined in DOT/FAA/AR-09/55, "Flammability Assessment of Lithium-Ion and Lithium-Ion Polymer Battery Cell Designed for Aircraft Power Usage (January 2010)," and that the safe carriage of the batteries and the mitigations in place for known risks should be addressed. The referenced study was primarily conducted to determine how certain battery cells react in a fire situation aboard manned airplanes. Given the size of the battery

and the operating conditions of the UAS, the FAA concludes that the use of a lithium polymer battery will not pose an undue safety risk for the proposed operations.

ALPA commented that command and control (C2) link failures are one of the most common failures on a UAS, and that lost link mitigations should require safe modes to prevent fly-aways or other scenarios. The FAA agrees and carefully examined the proposed operation to ensure that the vehicle design and the petitioner's operating documents addressed potential hazards related to C2 failure. The FAA finds that the UAS to be operated by the petitioner has sufficient design features to address these hazards. The FAA also finds that the operating documents have incorporated safety procedures to be followed by all operational participants should a C2 failure occur. Further detail is contained in the analysis of the UAS below.

ALPA also noted that the petitioner's proposed operations are for "compensation or hire," and argues the pilot must hold at least a current FAA commercial pilot certificate with an appropriate category and class rating for the type of aircraft being flown, as well as specific and adequate training on the UAS make and model intended to be used. Similarly, ALPA asserted a current second-class airman medical certificate should be required. NAAA also commented on pilot qualification, stating—

> Just as manned aircraft pilots are required to undergo a rigorous training curriculum and show that they are fit to operate a commercial aircraft, so too must UAS operators. Holding a commercial certificate holds UAS operators to similar high standards as commercial aircraft operators and ensures they are aware of their responsibilities as commercial operators within the NAS. Medical requirements ensure they have the necessary visual and mental acuity to operate a commercial aircraft repeatedly over a sustained period of time.

The FAA has reviewed the knowledge and training required by holders of both private and commercial certificates. Additional details are available in the ensuing analysis of this issue with regards to 14 CFR § 61.113.

ALPA opposed an exemption from the pre-flight action requirements of § 91.103. In addition, although the petitioner did not request an exemption from § 91.113, ALPA noted the petitioner must specify a means to meet see and avoid requirements in § 91.113 given the absence of an onboard pilot. This comment is addressed in detail in the FAA analysis below.

ALPA mentioned the aircraft will not have a barometric altimeter as required by 14 CFR § 91.121, stating the ability to accurately maintain altitude must be addressed, and processes or mitigations, such as redundant control capability, fail-safe systems, backups and specific, validated procedures for system and equipment failures must be in place.

Regarding the fuel requirements of § 91.151, ALPA argues that using batteries as the only source of an aircraft's power is a substantial shift from traditional methods of propulsion, and requires further research to determine best safety practices. This comment is addressed in detail below.

Regarding §§ 91.405(a), 91.407(a)(1), 91.409(a)(2), and 91.417(a) and (b), ALPA opposed the petitioner's attempt to avoid compliance with established aircraft maintenance and recordkeeping requirements. ALPA stated the UAS should comply with the same level of safety as other aircraft operated commercially in the NAS. This comment is addressed in detail below.

ALPA also expressed concern that the petitioner's waiver request is not for a single specific operation or location, but for all operations of the same general type. ALPA stated that this results in a considerable increase in the FAA's oversight tasks. The FAA notes ALPA's concern and in order to minimize potential impact to the NAS, the FAA requires each operator secure a Certificate of Waiver or Authorization (COA) which covers specific details of the petitioners operation. The FAA recognizes that UAS integration will generate new NAS access demand and will review and adjust accordingly.

ALPA stated that the petition seeks an exemption from the aircraft airworthiness process, 14 CFR 21 and 14 CFR § 91.203. The FAA discusses aspects of 14 CFR 21 with respect to the petitioner's request, below.

ALPA repeated its position that all aircraft in the NAS must operate to the same high level of safety with respect to minimum safe altitudes, as directed in 14 CFR § 91.119. The petitioner is proposing to operate no higher than 400 feet AGL, below the 500 foot general minimum altitude for civil aircraft. The FAA addresses this concern, below.

ALPA expressed concern on whether the petitioner's UAS can comply with the aircraft light requirements for night operations in § 91.209, given its limited electric power. The petitioner has not requested to fly its UAS at night.

NAAA noted that its members operate in low-level airspace, and therefore clear low-level airspace is vital to the safety of these operators. NAAA stated that seeing and avoiding other aircraft and hazardous obstructions is the backbone for agricultural safety, and that agricultural pilots depend on pilots of other aircraft to perform their see-and-avoid functions to prevent collisions. NAAA believes UAS operations at low altitudes will increase the potential for collision with agricultural aircraft. The FAA recognizes these concerns and has incorporated associated conditions and limitations into this exemption, including: a) a Notice to Airman (NOTAMs) issued for all operations, b) operations conducted within VLOS of the pilot in command (PIC) and the VO, and c) the UAS PIC must always yield right-of-way to manned aircraft.

NAAA stated that FAA airworthiness certification should be a requirement for all unmanned aircraft to operate within the NAS. NAAA recommended UAS be equipped with ADS-B or similar identification and positioning systems, strobe lights, high-visibility markings and registration numbers. NAAA also recommended UAS be operated strictly within the line-of-sight of the ground controller, with the assistance of a VO and well clear of any low-flying manned aircraft. As discussed in greater detail below, Section 333 of the FAA Modernization and Reform Act of 2012 authorizes the Secretary of Transportation to determine, considering a number of factors laid out in the statute, that an airworthiness certificate is not necessary for certain operations. The Secretary has made that determination in this case and therefore the aircraft operated by the petitioner will not need to be certificated by the FAA.

The FAA's analysis is as follows:

The FAA has organized its analysis into four sections: (1) Unmanned Aircraft System (UAS), (2) the UAS pilot in command (PIC), (3) the UAS operating parameters, and (4) the public interest.

Unmanned Aircraft System (UAS)

The petitioner requested relief from 14 CFR part 21, *Airworthiness Certificates.* In accordance with the statutory criteria provided in Section 333 of P.L. 112-95 in reference to 49 USC § 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.

Manned aircraft conducting aerial imagery operations can weigh 5,000 to 7,000 lbs. or more, are operated by an onboard pilot and may carry other onboard crewmembers, as well as carry 100-200 gallons or more of fuel. The petitioner’s UA weighs approximately 6 pounds. The pilot and crew will be remotely located from the aircraft. The limited weight and construction reduces the potential for harm to persons or damage to property in the event of an incident or accident. The risk to an onboard pilot and crew during an incident or accident is eliminated with the use of a UAS for the proposed operation.

Manned aircraft are at risk of fuel spillage and fire in the event of an incident or accident. The unmanned aircraft (UA) carries no fuel and therefore the risk of fire following an incident or accident due to fuel spillage is eliminated.

The petitioner’s UAS has the capability to operate safely after experiencing certain in-flight contingencies or failures and uses an auto-pilot system to maintain UAS stability and control. The UAS is also able to respond to a loss of GPS or a lost-link event with a pre-coordinated,

predictable, automated flight maneuver. These safety features provide an equivalent level of safety compared to a manned aircraft holding a restricted airworthiness certificate performing a similar operation.

The petitioner requested relief from 14 CFR parts § 43.7, *Persons authorized to approve aircraft, airframes, aircraft engines, propellers, appliances, or component parts for return to service after maintenance, preventive maintenance, rebuilding, or alteration,* and § 43.11, *Content, form, and disposition of records for inspections conducted under parts 91 and 125 and §135.411(a)(1) and §135.419* of this chapter. Part 43 prescribes rules governing the maintenance, preventative maintenance, rebuilding, and alteration of any−(1) Aircraft having a U.S. airworthiness certificate; (2) Foreign-registered civil aircraft used in common carriage or carriage of mail under the provisions of Part 121 or 135 of this chapter; and (3) Airframe, aircraft engines, propellers, appliances, and component parts of such aircraft. Relief from part 43 is not necessary because the UAS does not have a U.S. airworthiness certificate and is not foreign registered.

The petitioner requested relief from 14 CFR § 45.11, *Marking of products,* expressing concern about requirements for a fireproof marker on the aircraft fuselage and specific marks for propeller blades and hubs. However, 14 CFR part 45, Subpart B, *Marking of products and articles,* applies to products or articles produced under 14 CFR part 21 or items for export to the United States under the provisions of an agreement between the United States and another country or jurisdiction for the acceptance of products and articles. Thus, compliance with 14 CFR § 45.11 is not necessary.

Regarding the petitioner's requested relief from 14 CFR § 45.23(b) *Display of marks,* this marking is reserved for aircraft that are issued experimental certificates under 14 CFR § 21.191. The petitioner's UAS will not be certificated under § 21.191, and therefore the "experimental" marking is not required. Since the petitioner's UAS will not be certificated under § 21.191, a grant of exemption for § 45.23(b) is not necessary.

Regarding the petitioner's requested relief from 14 CFR § 45.25, *Location of marks on fixed wing aircraft,* the petitioner proposes to operate a hexacopter, with six rotors; therefore, relief from this regulation is not necessary.

The petitioner requested relief from 14 CFR § 45.29, *Size of marks,* stating "the marking requirements for sUASs are not specifically listed." The petitioner's UA 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 per § 45.29(f); therefore, relief is not necessary.

The petitioner has requested relief from 14 CFR §§ 47.3(b)(2), *Registration required* and 47.31(c), *Certificate of Aircraft Registration, Application,* however, the FAA has previously

determined that relief from these sections is not necessary. Relevant materials may be kept in a location immediately accessible to the PIC in compliance with the regulations.

The petitioner requested relief from 14 CFR part § 91.319(a)(1), *Aircraft having experimental certificates: Operating limitations*. The FAA's review determined the petitioner's UAS will not be certificated under § 21.191 and thus relief from § 91.319(a)(1) is not necessary.

Regarding the petitioner's requested relief from 14 CFR §§ 91.403 *General*, 91.405(a) *Maintenance required*, 1.407(a)(1) *Operation after maintenance, preventive maintenance, rebuilding, or alteration*, 91.409(a)(2) *Inspections*, and 91.417(a) and (b) *Maintenance records*, the FAA has determined that relief from § 91.409(a)(1) is also necessary because it is an alternate inspection requirement of § 91.409(a)(2). The FAA has evaluated the petitioner's request and determined that an exemption to these requirements is warranted, except for § 91.403 which is not necessary. The FAA notes that the petitioner's operating documents contain preflight and post flight checks for the UAS. The FAA finds that adherence to the operating documents, as required by the conditions and limitations below, is sufficient to ensure that safety is not adversely affected.

UAS Pilot in Command (PIC)

The petitioner stated that its PIC will hold at least at least a private pilot's certificate and a current third class medical certificate. While the petitioner did not request relief from 14 CFR § 61.113 *Private pilot privileges and limitations*, the FAA finds that relief from § 61.113 is necessary. Under current regulations, civil operations for compensation or hire require a PIC holding a commercial pilot certificate per 14 CFR part 61. Based on the private pilot limitations in accordance with pertinent parts of 14 CFR § 61.113(a) and (b), a pilot holding a private pilot certificate cannot act as a PIC of an aircraft for compensation or hire unless the flight is only incidental to a business or employment. However, in Grant of Exemption No. 11062 to Astraeus Aerial (Astraeus) (*see* Docket No. FAA-2014-0352), the FAA determined that a PIC with a private pilot certificate operating the Astraeus UAS would not adversely affect operations in the NAS or present a hazard to persons or property on the ground.

The FAA has analyzed the petitioner's proposed operation and has determined that it does not differ significantly from the situation described in Grant of Exemption No. 11062. The petitioner plans to operate in uncontrolled airspace and over private property with controlled access. Given: 1) the similar nature of the petitioner's proposed operating environment to that of Astraeus, 2) the parallel nature of private pilot aeronautical knowledge requirements to those of commercial requirements as discussed in Exemption No. 11062, and 3) the limited airmanship skills necessary to operate the UAS, the FAA finds that the additional manned airmanship experience of a commercially certificated pilot would not correlate to the airmanship skills necessary for the petitioner's specific proposed operations. The FAA finds

that a PIC holding a private pilot certificate and a third-class airman medical certificate, and who has completed petitioner's training program, can conduct the proposed UAS operations without adversely affecting the safety of the NAS. Upon consideration of the overall safety case presented by the petitioner and the concerns of the commenters, the FAA finds that relief from 14 CFR § 61.113(a) and (b) is granted, with the conditions and limitations outlined below.

As discussed above, all flights will be operated within VLOS of the PIC and VO. The conditions and limitations below stipulate that the PIC must ensure that the VO can perform the functions prescribed in the operating documents. Additionally, as discussed in Exemption No. 11109 to Clayco, Inc., there are no regulatory requirements for VO medical certificates. Although a medical certificate is not required for a VO, the UA must never be operated beyond the actual visual capabilities of the VO, and the VO and PIC must have the ability to maintain VLOS with the UA at all times. It is the responsibility of the PIC to be aware of the VO's visual limitations and limit operations of the UA to distances within the visual capabilities of both the PIC and VO. Moreover, the VO will not be operating the aircraft. Therefore, as in Grant of Exemption No. 11062 to Astraeus, the FAA does not consider a medical certificate necessary for the VO.

UAS Operating Parameters

While the petitioner did not request relief from 14 CFR § 91.7(a) *Civil aircraft airworthiness*, the FAA finds that relief from § 91.7(a) is necessary. While the petitioner's UAS will not require an airworthiness certificate in accordance with 14 CFR part 21, Subpart H, the FAA considers the petitioner's compliance with its operating documents to be a sufficient means for determining an airworthy condition. Therefore, relief from § 91.7(a) is granted. The petitioner is still required to ensure that its aircraft is in an airworthy condition – based on compliance with the operating documents prior to every flight, and as stated in the conditions and limitations below.

Additionally, in accordance with 14 CFR § 91.7(b), the PIC is responsible for determining whether the UA is in a condition for safe flight. The FAA, as in grant of Exemption No. 11062 to Astraeus, has determined that the operating documents include procedures to be used prior to each flight that can ensure compliance with § 91.7(b). The petitioner is required to ensure that its aircraft is in a condition for safe flight – based on compliance with the operating documents– prior to every flight.

Regarding the petitioner's requested relief from 14 CFR § 91.9(b)(2) *Civil aircraft flight manual, marking, and placard requirements* and 14 CFR § 91.203(a)(1) and (2) *Civil aircraft: Certifications required*, the FAA has previously determined in Grant of Exemption 11062, Astraeus Aerial, that relief from these sections is not necessary. Relevant materials may be kept in a location accessible to the PIC in compliance with the regulations.

The petitioner requested an exemption from 14 CFR § 91.9(c), stating that no person may operate a U.S.-registered civil aircraft unless that aircraft is identified in accordance with part 45 of this chapter. The FAA finds that relief is not necessary because § 91.9(c) references part 45 regarding identification and registration of the aircraft.

Regarding the petitioner's requested relief from 14 CFR § 91.103(b)(2) *Preflight Action*, the petitioner requires each PIC to take certain actions before flight to ensure the safety of the flight. The petitioner states the exemption is needed because *"FAA approved rotorcraft flight manuals will not be provided for the aircraft."* Although there will be no approved Airplane or Rotorcraft Flight Manual available, the FAA believes that the petitioner can comply with the other applicable requirements in § 91.103(b)(2). The procedures outlined in the operating documents address the FAA's concerns regarding compliance with § 91.103(b). The PIC will take all actions including reviewing weather, flight battery requirements, landings, and takeoff distances and aircraft performance data before initiation of flight. The FAA has imposed stricter requirements with regard to visibility and distance from clouds; this is to both keep the UA from departing the VLOS. The FAA also notes the risks associated with sun glare; the FAA believes the that PIC's and VO's ability to still see other air traffic, combined with the PIC's ability to initiate a return-to-home sequence, are sufficient mitigations in this respect. The PIC will also account for all relevant site-specific conditions in their preflight procedures. Therefore, the FAA finds that exemption for 14 CFR § 91.103 is not necessary.

The petitioner requested relief from 91.105 *Flight Crewmembers at stations* noting in "sUAS, the 'crewmember station' is separate from the actual aircraft (such as a station established on the ground). Therefore, compliance with the seat belt and shoulder harness requirements are [sic] not feasible." "Also, members of the crew (such as operators and observers) may reside in separate crewmember stations during takeoff and landing of the aircraft (for purposes of safely navigating the aircraft). Therefore, compliance with 'a(1)' may involve identification of multiple crewmember stations." The FAA has evaluated the petitioner's request and determined that granting the exemption is not necessary. The FAA notes the intent of the regulation is to ensure crewmembers are at the crew station that is necessary for them to perform their duties when operating the aircraft. The petitioner indicated its crew will be at their assigned stations while operating under this exemption. Additionally, because the ground control station is not equipped with a safety belt or shoulder harness, the requirement does not apply.

Regarding the petitioner's requested relief from 14 CFR § 91.109(a) *Flight instruction; Simulated instrument flight*, the petitioner did not describe training scenarios in which a dual set of controls would be utilized or required, i.e. dual flight instruction that would require to have fully functioning dual controls. Rather, the petitioner intends to accomplish training through the procedures referenced in the operating documents. Furthermore, the FAA is requiring the PIC to possess at least a private pilot's certificate and conduct training

operations only during dedicated training sessions. Thus, the FAA finds an equivalent level of safety will be achieved by the petitioner's training program. As such, the FAA finds that the petitioner can conduct its operations without the requested relief from § 91.109.

The petitioner has requested relief from 14 CFR § 91.113 *Right-of-way rules: Except water operations.* However, the petitioner has not provided any information to support how an exemption from this section would ensure an equivalent level of safety for all users of the NAS. Therefore, the FAA finds that an exemption from this section is not granted.

The petitioner requested relief from 14 CFR § 91.115 *Right-of-way rules: Water operations*. However, the petitioner indicates they do not intend to operate on any body of water, therefore relief is not granted.

Regarding the petitioner's requested relief from 14 CFR § 91.119(b) and (c) *Minimum safe altitudes*, the petitioner states it will not operate over congested areas and thus relief from § 91.119(b) is not granted.

The petitioner states that relief from § 91.119(c) is necessary because it proposes to operate below 500 feet above ground level. Section 91.119(c) states that no person may operate an aircraft below the following altitudes; *over other than congested areas*, an altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure. The petitioner states that it will operate pursuant to the following, self-imposed, restrictions related to § 91.119(c):

- All operations will avoid congested or populated areas.
- All operations will be conducted over property that is owned or controlled by petitioner or is a utility right-of-way.
- Notifications will be made in advance as well as to the Mayor's Office, Illinois Department of Transportation, and Sheriff's Office/Police Department.
- The operator will file a NOTAM for each flight.
- A pre-job brief will be conducted and must verify control of the flight area, including the absence of members of the public in the flight area.

Regarding stand-off distances from persons, vessels, vehicles and structures, 14 CFR § 91.119(c) requires that aircraft operate no closer than 500 feet to these persons or objects. As discussed in Exemption No. 11109 (Clayco, Inc.), operations conducted closer than 500 feet to the ground may require that the UA be operated closer than 500 feet to essential persons, or objects that would not be possible without additional relief. Therefore, the FAA is requiring that prior to conducting UAS operations, all persons not essential to flight operations (nonparticipating persons) must remain at appropriate distances. In open

areas, this requires the UA to remain 500 feet from all persons other than essential flight personnel (i.e. PIC, VO, operator trainees or essential persons).

The FAA has also considered the UA's maximum gross weight of approximately 18 pounds. If barriers or structures are present that can sufficiently protect nonparticipating persons from the UA or debris in the event of an accident, then the UA may operate closer than 500 feet to persons afforded such protection. The operator must also 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. When considering how to immediately cease operations, the primary concern is the safety of those nonparticipating persons. In addition, the FAA finds that operations may be conducted closer than 500 feet to vessels, vehicles and structures when the owner/controller of any such vessels, vehicles or structures grants permission for the operation and the PIC makes a safety assessment of the risk of operating closer to those objects and determines that it does not present an undue hazard.

Thus, the FAA finds that relief from § 91.119(c) is warranted provided adherence to the procedures in the operating documents and the FAA's additional conditions and limitations outlined below.

Regarding the petitioner's requested relief from 14 CFR § 91.121 *Altimeter Settings*, the UAS will not have a typical barometric altimeter onboard the aircraft rather it uses information generated from GPS to transmit altitude information to the PIC. As stated in the conditions and limitations below, the FAA requires any altitude reported to ATC to be in feet AGL. The petitioner may choose to set the GPS altitude indicator to zero feet AGL rather than local barometric pressure or field altitude before flight. Considering the limited altitude of the proposed operations, relief from 14 CFR § 91.121 is granted to the extent necessary to comply with the applicable conditions and limitations stated below.

Regarding the petitioner's requested relief from § 91.151(a) *Fuel requirements for flight in VFR conditions*, prior relief has been granted for manned aircraft to operate at less than prescribed minimums, including Exemption Nos. 2689, 5745, and 10650. In addition, similar UAS-specific relief has been granted in Exemption Nos. 8811, 10808, and 10673 for daytime, VFR conditions. The petitioner's only reference to this section is its commitment to land the UAS prior to 20% battery power remaining. The operating documents indicate that the PIC should not exceed 80-90% discharge of rated battery capacity and two warnings are provided before auto-land is initiated. The first results in an amber light warning, followed by red flashing lights. The UA has an automated function which results in immediate landing when a battery is low, however the operating documents states this may result in landing in a tree or lake. These factors provide the FAA with sufficient reason to grant the relief from 14 CFR § 91.151(a) in accordance with the conditions and limitations below. The PIC would be prohibited from beginning a flight unless (considering wind and forecast weather

conditions) there is enough power to fly to the intended landing point at normal cruising speed and land the UA with 20% battery power remaining.

Regarding an Air Traffic Organization (ATO) issued COA, the majority of current UAS operations occurring in the NAS are being coordinated through Air Traffic Control (ATC) by the issuance of a COA. This is an existing process that not only makes local ATC facilities aware of UAS operations, but also provides ATC the ability to consider airspace issues that are unique to UAS operations. The COA will require the operator to request a NOTAM, which is the mechanism for alerting other users of the NAS to the UAS activities being conducted. Therefore, the FAA believes that adherence to this process is the safest and most expeditious way to permit petitioner to conduct its proposed UAS operations. The conditions and limitations below prescribe the requirement for petitioner to obtain an ATO-issued COA.

The petitioner requested relief from 14 CFR § 91.215 *ATC transponder and altitude reporting equipment and use.* However, § 91.215(b)(3) includes provisions for aircraft not originally certificated with an engine-driven electrical system or which has not subsequently been certified with such a system installed. For UAS not equipped with a transponder, sub-paragraph (d)(3) authorizes requests for ATC authorized deviations made to the ATC facility having jurisdiction over the concerned airspace within the time periods specified. For operation of an aircraft that is not equipped with a transponder, the request must be made at least one hour before the proposed operation. The FAA finds relief is not necessary and adherence to the conditions and limitations below as well as compliance with the ATC issued COA will ensure compliance.

Public Interest

The FAA finds that this grant of exemption is in the public interest. The enhanced safety achieved using a 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.

The following summarizes the FAA's determinations regarding relief sought by the petitioner:

Relief considered (14 CFR)	**FAA determination (14 CFR)**
Part 21, Subpart H	Relief not necessary
43.7	Relief not necessary
43.11	Relief not necessary
45.11	Relief not necessary
45.23(b)	Relief not necessary
45.25	Relief not necessary

Relief considered (14 CFR)	FAA determination (14 CFR)
45.29	Relief not necessary
47.3(b)(2)	Relief not necessary
47.31(c)	Relief not necessary
61.113(a) and (b)	Relief granted with conditions and limitations
91.7(a)	Relief granted with conditions and limitations
91.7(b)	Relief not necessary
91.9(b)(2)	Relief not necessary
91.9(c)	Relief not necessary
91.103(b)(2)	Relief not necessary
91.105	Relief not necessary
91.109	Relief not necessary
91.113	Relied not granted
91.115	Relief not granted
91.119(b) and (c)	Relief not granted for paragraph (b); paragraph (c) relief granted with conditions and limitations
91.121	Relief granted with conditions and limitations
91.151	Relief granted for paragraph (a)(1), day, with conditions and limitations
91.203(a)(1) and (2)	Relief not necessary
91.215	Relief not necessary
91.319(a)(1)	Relief not necessary
91.403	Relief not necessary
91.405(a)	Relief granted with conditions and limitations
91.407(a)(1)	Relief granted with conditions and limitations
91.409(a)(1) and (2)	Relief granted with conditions and limitations
91.417(a) and (b)	Relief granted with conditions and limitations

The FAA's 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 USC 106 (f), 40113, and 44701, delegated to me by the Administrator, Commonwealth Edison Company is granted an exemption from 14 CFR 61.113(a) and (b); 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 the DJI S-900, six rotor hexacopter for the purpose of electric transmission and distribution utility system monitoring, inspections, and damage assessments.

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

Conditions and Limitations

Relative to this grant of exemption, petitioner is hereafter referred to as the operator.

The petition and the following supporting documentation are hereinafter referred to as the operating documents:

1) Commonwealth Edison S-900 Safety Job Briefing and Job Turnover Process;
2) Commonwealth Edison Safety Personal Protective Equipment Program;
3) Commonwealth Edison Time Out for Safety;
4) Commonwealth Edison DJI S-900 Pilot Operating Handbook; and
5) Commonwealth Edison UAV Aerial Inspection Flight Briefing Sheet.

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 following aircraft described in the operating documents which is a DJI S-900, six rotor hexacopter, weighing less than 8 pounds, with a maximum operating weight of 18 pounds. Proposed operations of any other aircraft will require a new petition or a petition to amend this grant.

2) UAS operations under this exemption are limited to conducting operations for the purpose of electric transmission and distribution utility system monitoring, inspections, and damage assessments.

3) The UA may not be flown at an indicated airspeed exceeding 50 knots.

4) 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.

5) 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 functions prescribed in the operating documents.

6) The operating documents and this grant of exemption must be accessible during UAS operations and made available to the Administrator upon request. If a discrepancy exists between the conditions and limitations in this exemption and the procedures outlined in the operating documents, the conditions and limitations herein take precedence and must be followed. Otherwise, the operator must follow the procedures as outlined in its operating documents. The operator may update or revise its operating documents. It is the operator's responsibility to track such revisions and present updated and revised documents to the Administrator upon request. The operator must also present updated and revised documents if 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.

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

8) Any UAS 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. The PIC who conducts the functional test flight must make an entry in the UAS aircraft records.

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

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

11) The operator must carry out its maintenance, inspections, and record keeping requirements in accordance with the operating documents. Maintenance, inspection, alterations, and status of replacement/overhaul component parts must 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.

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

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

14) The PIC must possess at least a private pilot certificate and a third-class airman medical certificate. The PIC must also meet the flight review requirements specified in 14 CFR 61.56 in an aircraft in which the PIC is rated on his or her pilot certificate.

15) The operator may 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 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). The VO is also required to complete the operator's training requirements. A record of training must be documented and made available upon request by the Administrator. Flights for the purposes of training the operator's PICs and VOs (training, proficiency, and experience-building), 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.

16) 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. Flights under special visual flight rules (SVFR) are not authorized.

17) The UA may 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 must be made available to the Administrator upon request.

18) 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.

19) 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 and land or be recovered in accordance with the operating documents.

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

21) The PIC is prohibited from beginning a UAS flight unless (considering wind and forecast weather conditions) there is enough power to fly at normal cruising speed to the intended landing pint and land the UA with at least 20% battery power remaining.

22) The operator must obtain an Air Traffic Organization (ATO) issued Certificate of Waiver or Authorization (COA) prior to conducting any operations under this grant of exemption. This COA will also require the operator to request a Notice to Airman (NOTAM) not more than 72 hours in advance, but not less than 48 hours prior to the operation. All operations shall be conducted in accordance with airspace requirements in the ATO issued COA including class of airspace, altitude level and potential transponder requirements.

23) 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.

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

25) The documents required under 14 CFR 91.9 and 91.203 must be available to the PIC at the Ground Control Station of the UAS any time the aircraft is operating. These documents must be made available to the Administrator or any law enforcement official upon request.

26) The UA must remain clear and yield the right of way to all other manned operations and activities at all times.

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

28) The UA may not be operated over congested or densely populated areas.

29) 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 and/or;
    b. The aircraft is operated near vessels, vehicles or structures where the owner/controller of such vessels, vehicles or structures has granted permission and the PIC has made a safety assessment of the risk of operating closer to those objects and determined that it does not present an undue hazard, and;
    c. Operations nearer to the PIC, VO, operator trainees or essential persons do not present an undue hazard to those persons per § 91.119(a).

30) 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.

31) 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.

Unless otherwise specified in this grant of exemption, the unmanned aircraft system (UAS), pilot in command (PIC), and operator must comply with all applicable parts of 14 CFR including, but not limited to, parts 45, 47, 61, and 91.

This exemption terminates on February 28, 2017, unless sooner superseded or rescinded.

Issued in Washington, DC, on February 24, 2015.

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