Albany
Atlanta
Brussels
Denver
Los Angeles
Miami
New York

McKenna Long & Aldridge LLP
1676 International Drive • Penthouse
McLean, VA 22102
Tel: 703.336.8800
mckennalong.com

Northern Virginia
Orange County
Rancho Santa Fe
San Diego
San Francisco
Seoul
Washington, DC

MARK E. MCKINNON
703.336.8708

EMAIL ADDRESS
mmckinnonf@mckennalong.com

September 5, 2014

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

Re: Petition of Phoenix Air UNMANNED, LLC for 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, Phoenix Air UNMANNED, LLC ("Phoenix Air UNMANNED"), hereby applies for an exemption from Federal Aviation Regulations ("FARs") identified below, to allow commercial operations of small unmanned aerial vehicles (*i.e.*, "small unmanned aircraft" or "sUAS").

This exemption is made based on the information in this petition, as well as the accompanying Phoenix Air UNMANNED UAS Operations Manual ("Operations Manual"). Petitioner submits the Operations Manual as a Confidential document under 14 C.F.R. § 11.35(b), as the entire Operations Manual contains confidential commercial and proprietary information that the Petitioner has not and will not share with others. The Manual contains operating conditions and procedures that are not 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 FAA Reform Act.

For your convenience, the petition is organized as follows:

I. Description of Petitioner
II. Relevant Statutory Authority
III. Qualifications for Approval Under Section 333 of the Reform Act
IV. Description of Proposed Operations

I. DESCRIPTION OF PETITIONER

Phoenix Air UNMANNED is a member of the Phoenix Air Group family of companies, and is sister corporation to Phoenix Air Group, Inc. ("Phoenix Air Group"), a part 135 carrier and special missions operator. Phoenix Air UNMANNED seeks to build on the Phoenix Air Group's years of successful and safe operations and leverage its skills and knowledge to build a company that can offer the widest possible range of UAS services in a safe and efficient manner.

Phoenix Air UNMANNED has adopted a philosophy that recognizes that UAS operations are a part of the complex, interconnected systems that make up the NAS. Accordingly, Phoenix Air UNMANNED has, to the greatest extent possible, adopted Phoenix Air Group's existing part 135 and special missions infrastructure as the model for its UAS operations. This allows Phoenix Air UNMANNED to fully integrate with the proven systems that govern all air operations, whether conducted under Part 91 or Part 135.

Phoenix Air UNMANNED seeks the requested exemptions and a Certificate of Authorization to permit it to offer on-demand commercial UAS operations for a host of industries and applications. These include:

- Flare stack inspection,
- Utility-power generation system inspections and patrolling,
- Pipeline inspection and patrolling,
- Filmmaking, cinematography, and videography,
- Precision agriculture,
- Wildlife and forestry monitoring,
- Aerial surveying,
- Construction site inspection and monitoring, and
- Public Entity Support Operations.

As set forth in more detail in the attached Operations Manual, Phoenix Air UNMANNED will provide a mission capable UAS, Pilot in Command (PIC), observer, sensor operator(s) and any additional flight crew members needed for the specific flight operation. Phoenix Air UNMANNED will retain operational control of all UASs, and each operation will be performed pursuant to a set of general procedures applicable to all flights, as well as additional flight procedures developed as suitable for each area of work. Because the Phoenix Air Group's family of companies has a long history in the aviation industry, each of these services can be offered more safely and reliably, with a full understanding of the requirements for operation in the NAS.

Over the past 30 years, Phoenix Air Group has become a world leader in providing unique air services to government and private industry, including electronic warfare training, international air ambulance services, and transportation of unique cargos such as explosives. In August 2014, Phoenix Air overnight became "The Most Famous Air Ambulance Company in the World" according to the world press, for its work transporting the first two Ebola virus infected medical workers from Western Africa to the United States for treatment. Within a month Phoenix Air was issued a sole source contract by the U.S. Department of State to become the U.S. Government's primary (and at this writing only) provider of air transport services for contagious patients (primarily USG employees on assignment overseas) and for deploying State Department security forces to U.S. Embassies under duress worldwide due to potential hostilities in the host country.

Phoenix Air's headquarters, Dispatch Center and heavy maintenance base are in Cartersville, just outside Atlanta, GA. The company also has offices and operating bases in four other states and Europe. Phoenix Air owns and operates all of its aircraft, which today number more than 35, and all flight crewmembers, maintenance and other support personnel are full-time employees.

In addition to owning and operating aircraft, Phoenix Air has full in-house maintenance facilities where specialists maintain the company's fleet at "depot level" readiness. While the company does not perform maintenance services for outside non-company-owned aircraft, it does keep busy maintaining its over 35 aircraft at factory levels. The company currently has Learjet 35/36 jets; Gulfstream G-I turbo props, G-IISP and G-IIB jets, G-III jets; and Embraer EMB-120 turbo prop aircraft in various passenger/cargo/combi/air ambulance configurations.

Phoenix Air also has a Special Missions Department that designs, develops and maintains a wide array of highly specialized electronic warfare equipment and related subsystems. Special Missions' employees also crew these highly specialized aircraft acting as Electronic Warfare Officers and Mission Specialists in the field. Other company engineers and maintenance technicians modify aircraft and aircraft components to meet certain contract requirements.

The company currently holds more than 15 federal contracts with various agencies of the U.S. Government. Phoenix Air is a "cleared facility" and half of its 230-plus employees hold U.S. Department of Defense security clearances. Some of the company's contracts, professional organization memberships and capabilities include:

- **Phoenix Air Group** is approved by the U.S. Department of Defense Commercial Airlift Review Board (CARB) to participate in U.S. DOD Air Transportation Programs.

- **Phoenix Air Group** is the premier commercial contractor providing high-power electronic combat warfare and communication jamming and training to U.S. Navy carrier and expeditionary strike groups.

- **Phoenix Air Group** is a prime contractor to the U.S. Navy Aegis Program.

- **Phoenix Air Group** is a contractor with Massachusetts Institute of Technology Lincoln Labs (MIT-LL) to perform major aircraft modifications on a U.S. Air Force Air Combat Command owned Gulfstream G-III aircraft to accept the Airborne Lidar Testbed (ALIRT) sensor package for operational deployment by the U.S. Government. Aircraft operates in support of the U.S. Department of Defense Intelligence, Surveillance, and Reconnaissance Task Force.

- **Phoenix Air Group** is contracted by the Defense Advanced Research Projects Agency (DARPA) to design and field a Gulfstream G-III aircraft capable of providing airborne telemetry acquisition support at the Missile Defense Agency (MDA)'s Barking Sands Test Range Facility in Kauai, Hawaii for use during DARPA Hypersonic Test Vehicle (HTV-2A) launch missions.

- **Phoenix Air Group** is under contract to the National Aeronautics and Space Administration (NASA) to provide "special missions" aircraft to support various scientific payload systems including viewing ports, internal power systems, external data gathering and other modifications made and designed by company technicians.

- **Phoenix Air Group** is approved by the FAA for worldwide air ambulance flights, and by U.S.A.F. Air Mobility Command (AMC) under contract to provide on-demand air ambulance service for all branches of the U.S. DOD, using both Learjet and Gulfstream G-III aircraft worldwide.

- **Phoenix Air Group** holds a multi-year contract with the Centers for Disease Control and Prevention (CDC) to provide domestic and international aircraft services in support of CDC personnel and specimen transport. This includes short notice emergency flights to anywhere in the world CDC personnel are needed in the event of disease outbreak.

- **Phoenix Air Group** is the prime contractor to U.S. Africa Command (AFRICOM) to provide multiple dedicated Gulfstream aircraft to transport U.S. Government personnel throughout the continent of Africa, close-by island nations and the Middle East.

- **Phoenix Air Group** is approved by three federal agencies to provide executive air transport services up to the President's Cabinet Secretary level – U.S. Department of Health and Human Services, U.S. Department of Energy and U.S. Department of the Interior.

- **Phoenix Air Group** is approved by the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration (PHMSA), to transport explosives by air under authority of Exemption DOT-SP 8826. This includes explosives that are forbidden for air transport by both U.S. and international regulations.

- **Phoenix Air Group** was awarded the Alber-Rowley Trophy by Gulfstream Aerospace Corporation as the 2009 Outstanding Flight Award recipient for commercial operators flying Gulfstream aircraft. Gulfstream Aerospace deemed Phoenix Air as having performed the most outstanding series of flights for 2009 for work Phoenix Air did for U.S. Africa Command (AFRICOM) under extremely challenging conditions and in harsh environments.

- **Phoenix Air Group** maintains full service training contracts with FlightSafety International for all aircraft captains and first officers, and mission specific maintenance personnel.

As can be seen, Phoenix Air Group routinely operates in challenging environments doing unique missions that few, if anyone else, can do. Phoenix Air Group has an unparalleled success rate and a long history of safe operations. For example, Phoenix Air Group provides transport services throughout the continent of Africa, the Middle East and close-by island nations to U.S. Africa Command (AFRICOM). Phoenix Air's success at maintaining a 99.9% mission completion rate under its two AFRICOM contracts was due to the company's long history of operating into some of the most difficult and challenging airspace and countries in the world.

Similarly, Phoenix Air Group provides passenger and specimen transport services to the Centers for Disease Control (CDC) and has maintained an aircraft and flight crew in fast response readiness mode for 5 years. The aircraft had to be ready to deploy anywhere in the United States with 2-hour notice 24/7 and worldwide with 8-hour notice 24/7. Phoenix Air Group has flown missions for the CDC in such challenging circumstances as the 2009 H1N1 Influenza outbreak and the 2010 Haiti Earthquake Response. Phoenix Air Group maintained a 100% mission completion rate throughout the contract.

Phoenix Air Group also flew successful missions earlier this year to transport two United States citizens who were infected with the Ebola virus while providing humanitarian medical services in West Africa. The missions required operation of a special sealed environment inside the transport aircraft to prevent any chance of the disease spreading. The transport was completely successful and led to a contract with the State Department to become the U.S. Government's only commercial provider of such services.

All aircraft, Phoenix Air Group equipment and employees are employed full time, and the company does not broker or use part-time employees. Its Dispatch Center operates around the clock coordinating aircraft throughout the world, and its maintenance facilities continue to maintain Phoenix Air aircraft in factory-level condition.

Finally, as part of its successful Part 135 operations, Phoenix Air Group maintains excellent relations with the Atlanta FSDO and other FAA offices overseeing flight operations. Phoenix Air UNMANNED is committed to continuing that relationship and intends to have the Atlanta FSDO involved in the collection and analysis of its operational data as a way to help improve FAA's ability to ensure safe integration of commercial UAS operations into the NAS.

The contact information for Petitioner is as follows:

Phoenix Air UNMANNED, LLC
Attn: William E. Lovett

100 Phoenix Air Dr.
Cartersville, GA 30120
Phone: (770) 387-2000 ext:232
e-mail: wlovett@phoenixair.com

II. RELEVANT STATUTORY AUTHORITY

This petition for exemption is submitted in accordance with the Section 333(a) through (c) of the FAA Modernization and Reform Act of 2012. 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 Airspace System ("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 its safety regulations and minimum standards when the Administrator decides a requested exemption is in the public interest. *See* 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).

III. QUALIFICATIONS FOR APPROVAL UNDER SECTION 333 OF THE REFORM ACT

The proposed operations in this petition for exemption qualify for expedited approval under Section 333 of the Reform Act. Each of the statutory criteria and other relevant factors are satisfied.

The proposed operations would permit the use of small and relatively inexpensive UAS under controlled conditions in airspace that is: (1) limited; (2) predetermined; (3) controlled as to

[1] *Id.* at § 333(b)(1).

access; and that (4) provides an increased level of safety beyond that existing when fixed or rotor wing aircraft are used to accomplish the same purpose. In addition many of these operations, such as flare stack and construction inspection would be alternately accomplished by sending an individual up into a structure to manually conduct a visual inspection. Such operations carry a much higher risk of serious bodily injury or death compared with conducing a photographic or video inspection from a small UAS.

Given the small size of the sUASs involved and the restricted environment within which they will operate, this petition exemption falls within the zone of safety, *i.e.*, an equivalent level of safety, in which Congress desired the FAA to permit commercial UAS operations by exemption pending completion of formal rulemaking. Also, due to the size of the sUASs and the restricted area in which the sUASs will operate, approval of the application presents no national security issue.

Considering the clear direction in Section 333 of the Reform Act, the authority contained in the Federal Aviation Act, as amended, the equivalent level of safety surrounding the proposed operations, and the significant public benefit, the grant of the requested exemptions is also in the public interest.

Accordingly, Petitioner respectfully requests the FAA grant the requested exemption without delay.

IV. DESCRIPTION OF PROPOSED OPERATIONS

As a sister company to the Phoenix Air Group, Phoenix Air UNMANNED will draw upon its vast aviation experience to provide UAS services to a wide host of industries. Detailed, industry specific procedures have been created and are set forth in the accompanying Operations Manual to ensure safe operation for each potential UAS application. To assist the FAA in its safety assessment of Petitioner's proposed sUAS operations, below is a summary of operational limitations and conditions which will ensure an equivalent or higher level of safety to operations conducted under current regulatory guidelines:

1. The UAS will weigh less than 55 pounds.

2. Flights will be operated within line of sight of a pilot and/or 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 above ground level ("AGL"), or no more than 100 feet above a structure being inspected if that

structure exceeds a height of 400'. As a result, the UAS flight will not be conducted within navigable airspace.

5. Flights will be operated at a lateral distance of least 100 feet from any inhabited structures, buildings, vehicles, vessels, or people not associated with the operation or who have not signed a waiver in advance of the operation.

6. 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 required.

7. The sUAS Pilot will hold an FAA commercial pilot's license with class 2 medical certificate.

8. The observer designated for any operation will have at least a class 2 medical certificate.

9. The UAS Pilot will be Pilot in Command ("PIC"). If a pilot certificate holder other than the UAS Pilot, who possesses the necessary PIC qualifications, is also present, that person can be designated as PIC.

10. The UAS will operate in accordance with the safety and operational requirements of the Manual.

11. Prior to the operation, a Safety Risk Analysis Plan (SRAP) will be created which includes all safety and operational information necessary to safely carry out the flight.

12. A briefing will be conducted in regard to the planned sUAS operations prior to each day's missions. It will be mandatory that all personnel who will be performing duties within the boundaries of the safety perimeter be present for this briefing.

13. Pilot, Visual Observer and Sensor Operator will at all times be able to communicate by voice.

14. Pilot, Visual Observer and Sensor Operator will have been trained in operations of UAS generally and will have experience in flying the particular UAS used for any operation.

15. 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.

16. The operator will file a FAA Form 7711-1, or its equivalent, as modified in light of the requested exemption, with the Atlanta Flight Standards District Office ("FSDO").

17. If the sUAS loses communications or loses its GPS signal, the sUAS will have the capability to return to a pre-determined location within the operational area and land.

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

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

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

Petitioner seeks an exemption from several interrelated provisions of 14 C.F.R. Parts 21, 45 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 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]

---

[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).

[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.

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

Petitioner seeks an exemption from 14 C.F.R. Part 21, Subpart H, which establishes the procedural requirements for the issuance of airworthiness certificates as required by 14 C.F.R. § 91.203(a)(1). The Federal Aviation Act and Section 333 of the Reform Act both authorize the FAA to exempt aircraft from the requirement for an airworthiness certificate, upon consideration of the size, weight, speed, operational capability, and proximity to airports and populated areas of the particular UAS.

All UAS operated by Phoenix Air UNMANNED will meet the requirements of a small UAS, i.e., have a gross take-off weight of less than 55 pounds. Given the size and limited operating area associated with the UAS operations, an exemption from Part 21, Subpart H, meets the requirements of an equivalent level of safety under Part 11 and Section 333 of the Reform Act.

In all cases, an analysis of these criteria demonstrates that the sUAS operated without an airworthiness certificate, in the restricted environment and under the conditions proposed, will be at least as safe as, or safer than, a conventional rotorcraft operating with an airworthiness certificate without the restrictions and conditions of the proposed sUAS operations.

Equivalent Level of Safety

The sUASs to be operated hereunder weigh less than 55 pounds with payload, carry neither a pilot nor passenger, carry no explosive materials or flammable liquid fuels, and operate exclusively within a secured and sterile area. Unlike other civil aircraft, the proposed operations will be controlled and monitored by the operator, as well as an observer and sensor operator, pursuant to the Manual's requirements. Moreover, the FAA will have advance notice of all operations conducted under this exemption.

These safety enhancements, which already apply to civil aircraft operated in connection with existing inspection operations, provide a greater degree of safety to the Petitioner's employees, members of the public, and property owners than conventional operations conducted with airworthiness certificates issued under 14 C.F.R. Part 21, Subpart H. Lastly, application of these same criteria demonstrates that there is no credible threat to national security posed by the sUAS, due to its size, speed of operation, lack of explosive materials or flammable liquid fuels, and inability to carry a substantial external load.

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 sUAS would otherwise require certification under Part 27, Petitioner seeks an exemption from Part 27's airworthiness standards for the same reasons identified in the exemption request from 14 C.F.R. Part 21, Subpart H.

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

Petitioner 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.

Exemption from 14 C.F.R. § 45.23(b) is warranted because the sUAS has no entrance to the cabin, cockpit, or pilot station on which the word "Experimental" can be placed. Moreover, given the size of the sUAS, two-inch lettering will be impossible. The word "Experimental" will be placed on the fuselage in compliance with 14 C.F.R. § 45.29(f).

Given the nature of the specific relief sought by this exemption request, Petitioner requires relief from the associated marking and identification requirements of § 45.27(a) and § 91.9(c), which would require compliance with § 45.23(b).

Equivalent Level of Safety

The equivalent level of safety for exemptions to the aircraft marking and identification requirements of §§ 91.9(c), 45.23(b) and 45.27(a) will be provided by having the sUAS marked on its fuselage as required by § 45.29(f).

The FAA has previously issued the following exemptions to the aircraft marking requirements of § 45.23(b): Exemption Nos. 10700, 10167 and 10167A.

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 not 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.

Phoenix Air UNMANNED 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

Petitioner seeks an exemption from 14 C.F.R. § 91.7(a), which requires that a civil aircraft be in airworthy condition to be operated. Inasmuch there will be no airworthiness certificate issued for the sUAS, should this exemption be granted, no FAA regulatory standard will exist for determining airworthiness.

Equivalent Level of Safety

The UASs will be fully maintained and operated in accordance with all specifications and requirements identified by the manufacturer. Phoenix Air UNMANNED will only operate sUAS that have a proven track record of reliability and safety. Further, given that no UAS will be operated by Phoenix Air UNMANNED with a weight of over 55 pounds, and no UAS will be flown unless it has been maintained and prepared for flight in accordance with the manufacturer's requirements, an equivalent level of safety will be provided.

The FAA has issued the following exemptions to this regulation: Exemption Nos. 8607, 8737, 8738, 9299, 9299A, 9565, 9565B, 10167, 10167A, 10602, 32827, and 10700.

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

Petitioner 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 reviewing weather, flight battery requirements, landing and takeoff distance, and aircraft performance data - before initiation of flight. The Aircraft 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

Petitioner 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." sUASs and remotely piloted aircraft, by their design, do not have functional dual controls. Instead, flight control is accomplished through the use of a box that communicates with the aircraft via radio communications.

Equivalent Level of Safety

Given the size and speed of the sUAS, an equivalent level of safe training can still be performed without dual controls because no pilot or passengers are aboard the sUAS, and all persons will be a safe distance away in the event that the sUAS experiences any difficulties during flight instruction.

The FAA has approved exemptions for flight training without fully functional dual controls for a number of aircraft and for flight instruction in experimental aircraft. Exemptions include: Nos. 5778K and 9862A.

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

Petitioner 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."

To provide the intended services, the sUAS is normally operated below 400 feet AGL. In circumstances where the UAS is used to survey or photograph a structure whose height exceeds 400 feet AGL, the UAS will not be operated more than 100' above the highest point on the structure. Additionally, due the nature of the proposed operations, the sUAS will maintain a lateral distance of at least 100 feet from inhabited structures, buildings, vehicles, and vessels, and from people not associated with the operation.

Equivalent Level of Safety

Compared to flight operations with rotorcraft weighing far more than the maximum sUAS weight 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. As set forth in the Manual, the sUAS will be operated in a restricted area. Furthermore, by operating at such lower altitudes, the sUAS will not interfere with other aircraft that are subject to the minimum safe altitude regulations.

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 sUAS does not have a barometric altimeter, but rather a GPS altitude read out.

Equivalent Level of Safety

An equivalent level of safety will be achieved by following the procedures set forth in the Manual. As prescribed in the Manual, the operator will confirm the altitude of the launch site shown on the GPS altitude indicator before flight. Moreover, the PIC will use the GPS altitude indicator to constantly monitor the sUAS's height, thus ensuring operation at safe altitudes.

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

Petitioner 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 sUAS battery power means that no meaningful flight operations can be conducted while still maintaining a 30 minute reserve. Phoenix Air UNMANNED 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

An equivalent level of safety will be achieved because the operations will be conducted on-site without significant transit time by the sUAS. All flights will be planned to be terminated with no less than 25% reserve battery power still available. This restriction would be more than adequate to return the sUAS safely to the ground and its planned landing zone from anywhere in its limited operating area even in the event of an unexpected occurrence. Operation of the sUAS with less than 30 minutes of reserve fuel does not include the type of risks that Section 91.151(a) was intended to alleviate given the size and speed of the small UAS, and the proximity of the flight operation to the landing zone. Moreover, operation will be limited to controlled areas where only people and property owners, or official representatives who have signed waivers, will be allowed.

This request for exemption falls within the scope of prior exemptions, including Exemption Nos. 10673, 2689F, 5745, 10673, and 10808.

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

Petitioner also 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 to these regulations is needed because Part 43 and these sections only apply to aircraft with an airworthiness certificate, which the sUAS 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 Aircraft Operations Manual. As provided in the Operations Manual, the operator will ensure that the sUAS is in working order prior to initiating flight, perform required maintenance, and keep a log of any maintenance performed. The operator is the person most familiar with the aircraft and best suited to maintain the aircraft in an airworthy condition to provide the equivalent level of safety.

If mechanical issues arise, the sUAS's size and carrying capacity, and the fact that flight operations will only take place in restricted areas for limited periods of time during daylight hours, creates less risk than that associated with conventional rotorcraft performing the same operation.

VI. DRUG AND ALCOHOL PROGRAM

As set forth in the Manual, Phoenix Air UNMANNED is committed to a drug-free work place and the right of the flying public it serves to safe and efficient air transportation. All employees of Phoenix Air UNMANNED who perform safety sensitive and/or security related functions are prohibited from performing work if they have alcohol or a prohibited drug in their system.

VII. PUBLIC INTEREST

Granting Phoenix Air UNMANNED's exemption request furthers the public interest. National policy set by Congress favors early integration of UAS into the NAS in controlled, safe working environments such as those proposed in this petition. In addition, maintaining industrial safety has been a priority of state and local governments for decades. By their nature, each of the

proposed uses of a sUAS offer superior safety to performing the same tasks with conventional aircraft or rotorcraft.

In addition, granting the exemption will help advance the knowledge base for conducting commercial UAS operations. Phoenix Air Group has an excellent, ongoing relationship with the Atlanta FSDO and Aviation Safety Inspector Mike Wilson, and Phoenix Air UNMANNED commits to working with the FSDO to share data from its operations. This additional data will help the FAA set future rules regarding UAS flight operations, maintenance, and crew qualifications. The public also has an interest in reducing the hazards and emissions associated with alternate use of helicopters to conduct similar inspection operations. The UAS in question is very light weight and does not carry any flammable fuel, further reducing the risk from any potential accident.

VIII. PRIVACY

All flights will occur in accordance with any state or local laws regarding privacy.

IX. FEDERAL REGISTRY 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:

Phoenix Air UNMANNED seeks an exemption from the following rules:

14 CFR Part 21, Subpart H; 14 CFR Part 27; 14 CFR 45.23(b); 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).

Approval of these exemptions will allow Phoenix Air UNMANNED to offer on-demand commercial UAS operations for a host of industries and applications. The exemptions will enhance safety by reducing risk to the general public and property owners from the hazards associated with performing equivalent work with conventional aircraft and rotorcraft.

X. CONCLUSION

Satisfaction of the criteria provided in Section 333 of the Reform Act of 2012—size, weight, speed, operating capabilities, proximity to airports and populated areas, operation within visual line of sight, and national security—provides more than adequate justification for the grant of the requested exemptions to permit Phoenix Air UNMANNED to operate sUASs and provide on-demand UAS services to a wide range of public and private entities.

Granting the requested exemption will benefit the public interest as a whole in many 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.

If you have any questions or require any additional information, please do not hesitate to call.

MCKENNA LONG & ALDRIDGE

Mark E. McKinnon, Esq.

Attachments: Phoenix Air UNMANNED Operations Manual (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).